18th

INTERNATIONAL LEPROSY CONGRESS

Hidden challenges

BRUSSELS, 16th-19th SEPTEMBER 2013

ILEP

World Health Organization

FINAL PROGRAMME AND BOOK OF ABSTRACTS

HIDDEN CHALLENGES

18th

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BRUSSELS, 16th-19th SEPTEMBER 2013

PROGRAMME AT A GLANCE

HIDDEN CHALLENGES

Programme at a Glance

Monday 16 September 2013

16:30 - 18:00	**Opening Ceremony** In the presence of HRH Princess Astrid of Belgium **Speakers:** *Jean-Pascal Labille, Minister for Development Cooperation – Kingdom of Belgium* *Kris Peeters, Minister President of the Flemish Government and Flemish Minister for Foreign Policy* *Hiroki Nakatani, WHO Assistant Director-General – HIV/AIDS, TB, Malaria and Neglected Tropical Diseases* *Yohei Sasakawa, WHO Goodwill Ambassador for Leprosy Elimination* *Jarbas Barbosa, Brazilian Deputy Minister* *René Staheli, President of ILEP* *Kofi Nyarko, Member of the Board of Directors of IDEA* *Cairns Smith, Chairman of the Scientific Committee of the 18th International Leprosy Congress.* *Marcos Virmond, President of ILA* Moderator: *Rigo Peeters, President of the Local Organising Committee* **Plenary Room A & B • Level 1**
18:00 - 19:30	**Welcome reception** **Foyer • Level 0**

Tuesday 17 September 2013

09:00 - 10:30	**Plenary Session 1**: **Leprosy in a changing context** **Chair:** *Etienne Declercq* **Speakers:** *Dr Sumana Barua, Dr Julie Jacobson, Dr Joseph Kawuma* **Plenary Room A & B • Level 1**					
10:30 - 11:00	*Coffee Break and ePoster sessions* **Foyer • Level 0**					
11:00 - 12:30	**Session 1**	**Session 2**	**Session 3**	**Session 4**	**Session 5**	**Session 6**
	Best Clinical Practice	**Stigma**	**Molecular Biology 1**	**Leprosy Control - Urban and Special Populations**	**Nerve Function and Impairments**	**Training in Leprosy**
	Room E & F	**Room C & D**	**Room 1 & 2**	**Plenary Room A & B**	**Room 3 & 4**	**Work Group Area**
12:30 - 14:00	*Lunch and ePoster sessions* **Foyer • Level 0**					
14:00 - 15:30	**Session 7**	**Session 8**	**Session 9**	**Session 10**	**Session 11**	**Session 12**
	Chemotherapy 1	**Information, Education and Communication**	**Immunology 1**	**Chemopro-phylaxis and Contacts**	**Footwear**	**Leprosy and NTDs**
	Room 1 & 2	**Room C & D**	**Work Group Area**	**Room E & F**	**Room 3 & 4**	**Plenary Room A & B**
15:30 - 16:00	*Coffee Break and ePoster sessions* **Foyer • Level 0**					
16:00 - 17:30	**Session 13**	**Session 14**	**Session 15**	**Session 16**	**Session 17**	**Session 18**
	ENL Reaction 1	**History of Leprosy 1**	**Microbiology**	**Epidemiological Surveillance**	**Prevention of Disability**	**Vaccines**
	Work Group Area	**Room E & F**	**Room 3 & 4**	**Room C & D**	**Plenary Room A & B**	**Room 1 & 2**
17:30 - 18:00	*Coffee Break* **Foyer • Level 0**					
18:00 - 19:30	**How to curb the incidence of leprosy?** Expert Group from Novartis Foundation and WHO **Plenary Room A & B • Level 1**					
19:30 - 20:30	**Cocktail reception** **Foyer • Level 0**					

Wednesday 18 September 2013

09:00 - 10:30	**Plenary Session 2: Improving quality of life** **Chair:** *Marcos Virmond* **Speakers:** *Dr Dierdre Prins-Solani, Prof Mitchell Weiss, Ms Zilda Maria Borges* — **Plenary Room A & B • Level 1**					
10:30 - 11:00	*Coffee Break and ePoster sessions* **Foyer • Level 0**					
11:00 - 12:30	**Session 19** **Relapse and Drug Resistance** **Room C & D**	**Session 20** **Social Sciences** **Work Group Area**	**Session 21** **New Diagnostic Tools** **Plenary Room A & B**	**Session 22** **Molecular Epidemiology** **Room E & F**	**Session 23** **Surgical Rehabilitation** **Room 1 & 2**	**Session 24** **Other Mycobacterial Diseases** **Room 3 & 4**
12:30 - 14:00	*Lunch and ePoster sessions* **Foyer • Level 0**					
14:00 - 15:30	**Session 25** **Chemotherapy 2** **Room C & D**	**Session 26** **Human Rights and Discrimination** **Room 3 & 4**	**Session 27** **Immunology 2** **Room E & F**	**Session 28** **Epidemiological Analyses** **Work Group Area**	**Session 29** **Nerve Injury in Leprosy** **Plenary Room A & B**	**Session 30** **Les progrès récents** *(Session in French only)* **Room 1 & 2**
15:30 - 16:00	*Coffee Break and ePoster sessions* **Foyer • Level 0**					
16:00 - 17:30	**Session 31** **ENL reaction 2 and Dermatology** **Room 1 & 2**	**Session 32** **History of Leprosy 2** **Room C & D**	**Session 33** **Molecular Biology 2** **Room 3 & 4**	**Session 34** **Promoting Early Diagnosis** **Plenary Room A & B**	**Session 35** **Social Aspects and Self-Care** **Work Group Area**	**Session 36** **Experiences of People and Communities** **Room E & F**
18:00 - 20:00	Movie projection **'Molokai, the true story of Father Damien'** — **Plenary Room A & B • Level 1**					

Thursday 19 September 2013

09:00 - 10:30	**Plenary Session 3: Reducing transmission** **Chair:** *Cairns Smith* **Speakers:** *Prof Stewart Cole, Prof Annemiek Geluk, Prof Jan Henrik Richardus* — **Plenary Room A & B • Level 1**					
10:30 - 11:00	*Coffee Break and ePoster sessions* **Foyer • Level 0**					
11:00 - 12:30	**Session 37** **Detection and Treatment of Reactions** **Work Group Area**	**Session 38** **Social Aspects and Quality of Life** **Room C & D**	**Session 39** **Genetics and Leprosy** **Room E & F**	**Session 40** **Leprosy Control** **Plenary Room A & B**	**Session 41** **Reconstructive Surgery** **Room 1 & 2**	**Session 42** **Specialised Centres** **Room 3 & 4**
12:30 - 14:00	*Lunch and ePoster sessions* **Foyer • Level 0**					
14:00 - 15:30	**Session 43** **Chemotherapy - Newer Drugs** **Work Group Area**	**Session 44** **Human Rights and Advocacy** **Room E & F**	**Session 45** **Immunology 3** **Room 3 & 4**	**Session 46** **Innovative Approaches** **Plenary Room A & B**	**Session 47** **Community Based Rehabilitation** **Room C & D**	**Session 48** **Eye in Leprosy** **Room 1 & 2**
15:30 - 16:00	*Coffee Break and ePoster sessions* **Foyer • Level 0**					
16:00 - 17:00	**Closing Ceremony** — **Plenary Room A & B • Level 1**					
17:00 - 18:00	**ILA General Meeting** — **Plenary Room A & B • Level 1**					

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VENUE MAP

Management Centre Europe (MCE)

WELCOME ADDRESS FROM THE PRESIDENT

WELCOME TO BRUSSELS

Esteemed colleagues,

Welcome to the **18th International Leprosy Congress**, hosted in the beautiful, EU city of Brussels. Here we are again, ready to further our understanding of the millenary disease that still afflicts human beings and challenge our curiosity. The International Leprosy Association (ILA), has a proud history of over 80 years.

The Association is also proud to recognise that, its International Congresses have been a privileged platform for intense and productive discussions on the progress achieved in scientific aspects of leprosy, in genetics, immunology, microbiology, epidemiology and other areas. The ILA would like to to acknowledge that, in large measure, these developments were and are being made by the members of our Association.

More interestingly, the International Congresses of ILA are equally open to non-members, highlighting that knowledge to neglected diseases, such as ours, should not impose boundaries. A reason for this, is that the ideal mission of the ILA is to be a neutral realm for sharing scientific developments; this is what makes the ILA an exceptional scientific organisation different from any others

There is no doubt that the global picture of leprosy is different now than it was 30 years ago. It is true that widespread use of MDT and improvements in patient care led to a reduction in case numbers worldwide and also to changes in the epidemiologic features of the disease. However, it is clear that leprosy continues to be a major problem in many countries. This is due not only to the continued transmission of the disease, but also because of the potential risk of developing disabilities and deformities, with devastating social and economic consequences. On one hand, mechanisms of disease transmission and the understanding for nerve damage are still obscure areas of our knowledge. On the other hand, figures for new case detection rates and the number of new cases with grade 2 disability are still shameful in some parts of the world; and the difficulties to access MDT services are of further concern. Moreover, provision of inadequate rehabilitation programs, assurance of dignity and human rights to the individuals affected by leprosy, are a few of the nagging problems which need our utmost attention.

Therefore, we are once again at a critical point in the history of leprosy. Where hidden challenges must be addressed. We are still in need to search for reduced prevalence in selected areas of the world and to guarantee quality control measures in areas with low numbers of cases. It is also important to sustain leprosy expertise within the health service as well as to address unsolved aspects of stigma and human rights in regards to individuals that are living with leprosy. The needs are such that it calls for a full mobilisation of partners around the globe. In this connection, the inclusion of leprosy in the group of neglected tropical diseases have created new possibilities of interaction and partnership, which must not be overlooked.

The **18th International Leprosy Congress** is a privileged occasion for such interaction and partnership. The International Leprosy Association looks forward to welcoming all those concerned with the burden of leprosy in the 21st century to share their experiences in Brussels. The Scientific Program, under the experienced guidance of Prof. William Cairns Smith, has been carefully prepared to fulfil all expectations from different trends within a multidisciplinary approach to leprosy as a disease, as a research model, and as a social concern.

The Damien Foundation, the host institution for the congress, has done a wonderful job to ensure that this important meeting will run smoothly and take place in a congenial atmosphere, which will surely deliver productive results.

I wish all participants a profitable stay and I hope that by the end of this meeting, your hearts and minds will be filled with renewed enthusiasm to address these hidden challenges.

Marcos Virmond
President of International Leprosy Association

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Information

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COMMITTEES

Scientific Committee

Cairns Smith – *Chair*
Etienne Declercq – *Vice Chair*
Marcos Virmond – *ILA President*
Rigo Peeters – *Chair of the Organising Committee*
Sumana Barua – *World Health Organisation*
Salvatore Noto – *ILA Vice President, Communication*

Marivic F Balagon – *Philippines*
Zilda Maria Borges – *Brazil*
Wim van Brakel – *Netherlands*
Alice Cruz – *Portugal*
Eliane Ignotti – *Brazil*
Christian Johnson – *Benin*
Diana Lockwood – *United Kingdom*
Indira Nath – *India*
Maria Leide W Oliveira – *Brazil*
David Scollard – *USA*
Samba Sow – *Mali*

Local Organising Committee

Etienne Declercq – *Damien Foundation*
Rigo Peeters – *Damien Foundation*
Carla Reynders – *Damien Foundation*
Koen Van den Abeele – *Damien Foundation*

ACKNOWLEDGEMENTS

The Scientific Committee acknowledges the contribution of the following:

Symposium Leaders

Digafe Alembo, Shyamala Anand, Maravic Anand, Mayara Barbosa, Zilda Maria Borges, Warwick Britton, Davendra Chauhan, Hugh Cross, Alice Cruz, Ebenezer Daniel, Bouke de Jong, Etienne Declercq, Sunil Deepak, Sunil Dogra, Malcolm Duthie, Mannam Ebenezer, Janine Ebenso, Paul Fine, Jose Garbino, Robert Gelber, Annemiek Geluk, Eliane Ignotti, Julie Jacobson, Christian Johnson, Joseph Kawuma, P Krishnamurthy, Ms Anwei Law, Maria Leide, Diana Lockwood, York Lunau, June Nash, Indira Nath, Shaik Noordeen, VV Pai, V Pannikar, Sathish Paul, MS Raju, JH Richardus, Jo Robertson, Paul Saunderson, Chris Schmotzer, David Scollard, Silatham Sermrittirong, Rahul Sharma, Bruno Silva, Douglas Soutar, Philip Suffys, Wim van Brakel and Marcos Virmond.

Reviewers for Scientific Abstracts

Abdelaziz Alahlafi, Mirta Antola, Warwick Britton, Arturo Cunanan, Artur Custódio Moreira de Sousa, P Krishnamurthy, York Lunau, Sinésio Talhari, Sunday Aboje, Sylvester Adallah, Linda Adams, Yasin Al-Qubati, Nacaird Aranzazu, Sian Arulanantham, Rajan Babu, Maravic Balagon, Jaison Barreto, Landry Bidé, Wim Brandsma, Jean-Pierre Brechet, Michael Chen, Andrea Clapasson, Javier Cormane Fandiño, Paul Courtright, Hugh Cross, Alice Cruz, Maria da Conceicao De Palma Caldas, José-Augusto Da Costa Nery, S-Cunha Da Graça, Mara Dacso, Ebenezer Daniel, Maria-Aparecida de Faria Grossi, Etienne Declercq, Sunil Deepak, Sunil Dogra, Malcolm Duthie, Gigi Ebenezer, Mannam Ebenezer, Jannine Ebenso, Ulla-Britt Engelbrektsson, Paul Fine, Marco-Andrey Frade, Jose Antonio Garbino, Bob Gelber, Annemiek Geluk, Tom Gillis, Agnaldo Gonçalves, P.K. Gopal, Jacques Grosset, Jörg Heukelbach, Margareet Hogeweg, Nicole-H. Holmes, Abdellatif Idrissi-Azzouzi, Eliane Ignotti, Kerri Inglis, Christian Johnson, Judith Justice, Indira Kahawita, Hk Kar, Joseph Kawuma, Ramanuj Lahiri, Anwei Law, Linda Lehman, Maria Leide, Diana Lockwood, Clovis Lombardi, M Matsuoka, Marcelo Mira, Alice Miranda, Elahe-Mahmudi, Moqadam, Jean-Norbet Mputu Luengu-B, Sandra Muvdi Arenas, Ben Naafs, Mahshid, Nasehi, Indira Nath, Peter Nicholls, Sarah Nikita, Gift Norman, Milton Ozório Moraes, Vv Pai, V Pannikar, Maria Pena, Maria-Lucia Penna, Françoise Portaels, Erik Post, Muthiah-Arokia Rajan, Jose Ramirez, P.V. Ranganadha Rao, Jh Richardus, Jo Robertson, Ana-Maria Sales, Claudio Salgado, Patrícia Sammarco Rosa, Euzenir Sarno, Paul Saunderson, Pieter Schreuder, David Scollard, Rahul Sharma, W. Smith, Lucia-Helena Soares-Camargo, Douglas Soutar, Samba Sow, Hiroe Soyagimi, John Spencer, H. Srinivasan, James Staples, Mariane Stefani, Geremew Tarekegne-Tsegaye, Maria Angela Trindade, Wim vanBrakel, Marcos Virmond, Magnus Vollset, Steve Walker, Cassandra White, Diana Williams, Hany Ziady.

INSTRUCTIONS FOR PRESENTERS

ORAL PRESENTATIONS

Presenters are allotted a 15 minute total presentation time. In an effort to synchronise the parallel sessions, session chairs have been instructed to require strict adherence to this time schedule. This is to allow participants to move from one session to another without missing any of the programme.

The official format of the presentation is via data projector using Microsoft PowerPoint. Presenters will not be allowed to connect their own computers to the data projectors at the Symposium.

All presenters are requested to bring their presentations on a USB stick, to be uploaded in the speaker ready room on Monday 16th September between 12:00 – 17:00. You are requested to arrive in the meeting room 15 minutes prior to the session start in order to test your presentation. Please ensure you bring your presentation on USB in case of any difficulties. Rehearsals and significant editing will not be allowed on the symposium computers.

It is the responsibility of the individual presenters (not the organisers) to check their presentation before presenting. An audio-visual technician will be available to assist if needed.

ePOSTER PRESENTATIONS

ePosters may be viewed at any time that the congress is in session, but specific times are set aside during the coffee breaks and lunch breaks daily for individual ePoster presentations. A total of 20 ePoster stations will be made available of which 10 are dedicated to individual ePoster presentations during the breaks only. All other screens will have presentations available for free viewing throughout the congress.

Each ePoster presenter has been designated 10 minutes to present their ePoster and answer questions during one of the breaks. The times where each ePoster will be presented are listed behind the Tuesday, Wednesday and Thursday sections in this programme.

Each ePoster has been assigned a unique number (e.g., P-101) that can be used in the search function of the ePoster system and is included in this book.

Please ensure that you have your ePoster number with you when making any uploads/changes to your ePoster once onsite at the symposium.

ABSTRACTS

Three-digit abstract identification numbers are provided throughout the programme; these numbers can be used to easily identify abstracts in the Symposium Proceedings USB, received upon registration.

Plenary = PL
Symposium Leader = L
Oral Presentation = O
ePoster = P

DISCLAIMER

This book of abstracts has been produced using author-supplied material. Editing has been restricted to minor spelling corrections where appropriate, otherwise every effort has been made to reproduce the abstracts as originally submitted. The organiser and publishers assume no responsibility for any injury and/or damage to persons or property as a matter of product liability, negligence or otherwise, or from any use of operation of any methods products, instructions or ideas contained in the material herein. In view of rapid advances in medical sciences, independent verification of diagnosis and drug doses is recommended.

SOCIAL PROGRAMME

SOCIAL PROGRAMME FOR DELEGATES & ACCOMPANYING PERSONS

Please make sure to wear your badge at all social events. Accompanying persons must be registered to attend the social events during the congress.

WELCOME RECEPTION ON MONDAY 16 SEPTEMBER 2013

Place: Management Centre Europe
MCE
Rue de l'Aqueduc 118
B-1050 Brussels
Time: 18:00 – 19:30
Dress Code: Casual

We invite all registered delegates, accompanying persons and sponsors to a cocktail reception in the congress venue. Drinks and savoury snacks will be served. Attendance to this function is included in the registration fee.

COCKTAIL RECEPTION ON TUESDAY 17 SEPTEMBER 2013

Place: Management Centre Europe
MCE
Rue de l'Aqueduc 118
B-1050 Brussels
Time: 19:30 – 20:30
Dress Code: Casual

The Novartis Foundation for Sustainable Development invites all registered delegates, accompanying persons and sponsors to a welcome drink following the special session on "How to curb the incidence of leprosy?" in the congress venue. Drinks and savory snacks will be served.

Novartis Foundation for Sustainable Development

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STUDENT AWARDS

YOUNG SCIENTIST AWARD

The 'Young Scientist Award' is an award presented to the 6 best Oral and ePoster presentations on the following six subjects. The recipients must be under the age of 40 at the time of the congress.

- Clinical
- Social
- Basic Science
- Epidemiology and Control
- Disability and Impairment
- Special Topics

The awards will be presented at the closing ceremony of the congress and the winners will receive a special prize.

GENERAL INFORMATION

ABOUT BRUSSELS – THE HOST CITY

Brussels is the ultimate European city. As the headquarters to the EU (European Union) and NATO it is often referred to as the capital of Europe. It is an international metropolis – a mosaic of languages, cultures, and traditions. Aside from the splendid and varied architectural styles of the city, Brussels also hosts over 80 museums, numerous tourist attractions, a vibrant nightlife, and more restaurants than you could count.

The starting point for any visit to Brussels is the Grand Place which was built as a merchant's market in the 13th century. It serves as the centre of the city and hosts numerous concerts and festivals. Shopping in the distinctive fashion boutiques, lingering over a delicious lunch in a bistro or a top restaurant, people watching from a street cafe, or picking up a unique antique on the Sablon - Brussels is a city you can call your own.

CONGRESS DATES & VENUE

The congress is held at the Management Centre Europe, from Monday, 16th September to Thursday, 19th September 2013.

ACCESS/SECURITY

Delegates and accompanying persons are requested to wear their badges at all times, including the social events and functions for security reasons. Please do not leave any of your personal belongings unattended during the congress. A cloakroom located on the ground floor will be available at the MCE.

CAR PARKING

Car parking facilities are available in the surroundings of the MCE (Place du Châtelain - *no reservations are possible - be careful on Wednesday night as there is a market taking place*).

OFFICIAL LANGUAGE

The official language of the congress is English. Simultaneous interpretation will be provided in French in the plenary room only. One symposium session will be in French only.

CERTIFICATE OF ATTENDANCE

A blank certificate of attendance is provided in your congress bag.

EXHIBITION

The exhibition is held in the foyer of the MCE as follows:

Opening hours:

Monday, 16th September 2013	14:30 - 19:30
Tuesday, 17th September 2013	08:30 - 20:30
Wednesday, 18th September 2013	08:30 - 18:00
Thursday, 19th September 2013	08:30 - 17:30

INSURANCE

It is strongly recommended that delegates take out adequate cover for health, travel and private liability insurance. The organisers cannot accept responsibility for personal injury, loss or damage to private property belonging to the congress delegates and accompanying persons.

DRESS CODE

Smart casual attire is requested for all scientific sessions and functions, unless otherwise stated.

CLIMATE

Brussels has a temperate, maritime climate with significant precipitation in all seasons, in September the average temperature is around 16 C° degrees.

CURRENCY

The currency in Brussels, Belgium is the EURO (EUR - €). Euro notes are issued in denominations of 5, 10, 20, 50, 100, 200 and 500. Coins come in denominations of 2 & 1 Euro, and 50, 20, 10, 5, 2 and 1 cent pieces.

Exchange offices can be found in airports, certain hotels and most banks. Please bare in mind that some counters require your passport for such transaction.

BANKS

Banks are open Monday through Friday, 09:00 - 16:00 and are closed on Saturdays, Sundays and national holidays. Most of the small branches may close at lunchtime, between 13:00 and 14:00. All major credit card providers are accepted (Visa, MasterCard, American Express, Diners Club and Eurocard) as well as Traveller's Checks. ATM machines are available throughout the city.

Credit card stops numbers:

- **MasterCard**: +32 (0)7 034 43 55
- **Visa**: +32 (0)7 034 43 55
- **American Express**: +32 (0)2 676 21 21
- **Diners Club**: +31 (0)2 206 98 00

ELECTRICITY

The electricity power supply in Belgium is 220 Volt with a European standard plug.

USEFUL TELEPHONE NUMBER

European Emergency call, Tel: 112

SAFETY RULES

As for any journey, prepare photocopies of your identity papers and keep them separately. Also keep a list of useful telephone numbers, in case you lose your credit card for example. It is always useful to know the details of diplomatic contacts for your country. Brussels is as safe as any other European tourist city. Therefore, participants are advised to take the usual prudent precautions.

SMOKING POLICY

The congress is smoke-free and smoking is not permitted inside the venue.

MOBILE PHONES

In Belgium, mobile phones use the frequency bands GSM-900 and GSM-1800.
As a courtesy to other participants, please turn off your mobile phone when entering any of the meeting rooms.

PHOTOGRAPHER

An official photographer is present during the Congress. Some photographs will be available on the event's website after the event. By registering you agree to have your picture taken.

TAXES & TIPPING

Tipping is not required in restaurants, bars, taxis and for most other services, as service charges are normally included in the price. For exceptional services, a small tip is welcomed.

TAXIS

Taxis may be picked up at ranks, may be hailed in the street by signaling to the driver (but only if you are more than 100 meters from a taxi rank) or ordered by calling one of the taxi call centres, which will send you a vehicle.

To order a taxi, please call the following number(s):

- Taxi Verts: +32-2 349 49 49
- Taxi Bleus: +32-2 268 00 00

TIME ZONE

The time in Brussels in September is GMT+2. Belgium is six hours ahead of Eastern Standard Time and nine hours ahead of Pacific Standard Time.

PLENARY SPEAKER BIOGRAPHIES

Speaker: Dr Sumana Barua

Title: **'The current global status of leprosy and the 'Enhanced global strategy for further reducing the disease burden due to leprosy (2011-2015)'**

Dr Sumana Barua, is the Team Leader of the WHO's Global Leprosy Programme (GLP). Prior to joining the GLP, Dr Barua served as the Regional Advisor for Leprosy Programme of WHO's South-East Asia Region (2007 to 2011) and as the Medical Officer and Regional Focal Person for WHO's Western Pacific Region from April 2002 to July 2007. Before joining WHO, he was engaged in teaching at the universities in Bangladesh and in Japan.

Dr Barua has a PhD in International Health Policy and Planning (in 1999) and obtained a Masters in Public Health degree in 1996, both from the University of Tokyo. Before becoming a Doctor in Medicine (MD) from the University of the Philippines in 1989, Dr Barua obtained a Bachelor of Science in Community Health degree from the same University.

Speaker: Dr Julie Jacobson

Title: **'Leprosy within the context of Neglected Tropical Diseases'**

Julie Jacobson currently supports grants working towards the control of neglected tropical diseases and works with the development and implementation of new vaccines. As former Scientific Director of Immunization Solutions and Director of PATH's Japanese encephalitis (JE) project, she managed a grant to accelerate the control of JE in endemic countries. Previously, she was responsible for prioritising and designing field activities for PATH's Children's Vaccine Project in the areas including yellow fever and rotavirus. Prior to joining PATH, Dr. Jacobson worked at the U.S. Centers for Disease Control and Prevention as an Epidemic Intelligence Officer. Dr. Jacobson is a physician with training in clinical tropical medicine and applied epidemiology.

Speaker: Dr Herman Joseph Ssekamatte Kawuma

Title: **'Delivering leprosy services within the context of general health services'**

Dr. Herman Joseph Ssekamatte Kawuma is currently employed as Medical Advisor, German Leprosy and TB Relief Association (GLRA/DAHW) in Uganda. He is a member (out-going Chair) of the WHO Technical Advisory Committee (TAG) on Leprosy.

He was a member of the WHO Expert Panel on Leprosy (1997-2000, 2011) and the Technical Reference Panel of TLMI (2001-2005).

He participated in the 12th to 17th International Leprosy Congresses and was a Councilor of ILA 1994-2008. Between 1983 and 2002 he was Medical Superintendent, Clinician and Trainer at Uganda's national referral and training centre for leprosy. For part of that time he was also Deputy Manager of the National TB/Leprosy Programme.

Speaker: Dr Diedre Prins-Solani

Title: **'Human rights and justice'**

Deirdre Prins-Solani a University of Cape Town alumni has worked and practiced as an educationist, heritage practitioner, museologist and international heritage consultant.

She championed the development of experimental heritage educational programmes together with international partners and interdisciplinary team members and has numerous publications. Was Chairperson of the South African Museums Association (SAMA), the International Council of African Museums (AFRICOM) a committee member of the Institutions of Public Culture, and a member of the South African Qualifications Authority (SAQA) National Standards Body.

She is a Salzburg Global Seminar Fellow and faculty member and an expert to the UNESCO 2003 Convention on Intangible Cultural Heritage. As a 1972 World Heritage Convention expert, she trains heritage professionals in its implementation and assists various states parties in nomination dossier development.

Her work in capacity building for custodians of heritage has spanned the African continent and globally. Currently she manages the Museum of AIDS in Africa, experimental programme: "Healing through Memory" and works with IDEA in developing a heritage conservation programme for sites related to peoples and stories of Hansen's Disease.

Speaker: Prof Mitchell Weiss

Title: **'Understanding stigma and self-esteem'**

Mitchell Weiss is a health social scientist at the Swiss Tropical and Public Health Institute, and a professor at the University of Basel. His research group has developed integrated quantitative and qualitative research methods for a cultural epidemiology of suicide, tuberculosis, malaria, leprosy and other neglected tropical diseases. The approach focusses on the role of culture and the patterns of experience and meaning of illness, with reference to the community effectiveness of interventions and services for disease control in India and Africa. Stigma, gender and the impact of media are cross-cutting interests of his research.

Speaker: Ms Zilda Maria Borges

Title: **'Understanding being affected by leprosy'**

Zilda Maria Borges is a pedagogue; a psychologist specialised in Public and Family Health. She has worked in communities with the periphery Education Program Popular Health, and is president of the Brazilian Association of Psychosocial Accompaniment to Diginidade Integration and Economic Advancement (IDEA), an association which offers counselling to individuals affected by leprosy and child victims of violence and neglect. She also helps coordinate the Psychological Accompaniment Project for people affected by Hansen´s disease and Tuberculosis, and works with people suffering from autism and schizophrenia. All the projects Zilda is involved in endeavor to build dignity for those who are suffering prejudice because of a disease.

Speaker: Prof Stewart Cole

Title: **'Mycobacterial and human host genomics in transmission of leprosy'**

Professor Stewart Cole is an international authority in bacterial molecular-genetics and genomics. He has made outstanding contributions in several fields including: bacterial anaerobic electron transport; genome analysis of retroviruses and papillomaviruses; antibiotic resistance mechanisms; and the molecular microbiology of toxigenic clostridia. His studies on isoniazid and multidrug resistance in Mycobacterium tuberculosis, together with his pioneering work on the pathogenicity, evolution and genomics of the tubercle and leprosy bacilli, have made him an undisputed leader in the field of mycobacterial research. The findings of his research are of direct relevance to public health and disease-control in both the developing world and the industrialised nations. He has published over 250 scientific papers and review articles, and holds many patents.

Professor of Microbial Pathogenesis
Head of UPCOL, a world-class research unit dedicated to TB drug discovery, unravelling the pathogenesis of tuberculosis and studying the phylogeography of leprosy. Director of the Global Health Institute

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Speaker: Prof Annemieke Geluk

Title: **'Immunodiagnostic tools for leprosy: exposure, infection and disease'**

Dr. Annemieke Geluk, is an immunologist and chemist, she worked at the University of Virginia, Charlottesville, USA (1988) and at Cytel Corporation, San Diego, USA (1993) and obtained her PhD from the University of Leiden, The Netherlands (1995). She received postdoctoral training at the Mayo Clinic, Rochester, USA (1996/1997). In 1996 the Royal Dutch Academy of Sciences acknowledged her a fellowship during which she focused on Immunology of Leprosy and TB.

Her current research focusses on Immunodiagnostics of Leprosy including basic-, translational, applied- as well as field research. She is a SC-member of the IDEAL consortium and European TBVI consortium.

Speaker: Prof Jan Henrik Richardus

Title: **'Contacts centred strategies to reduce transmission'**

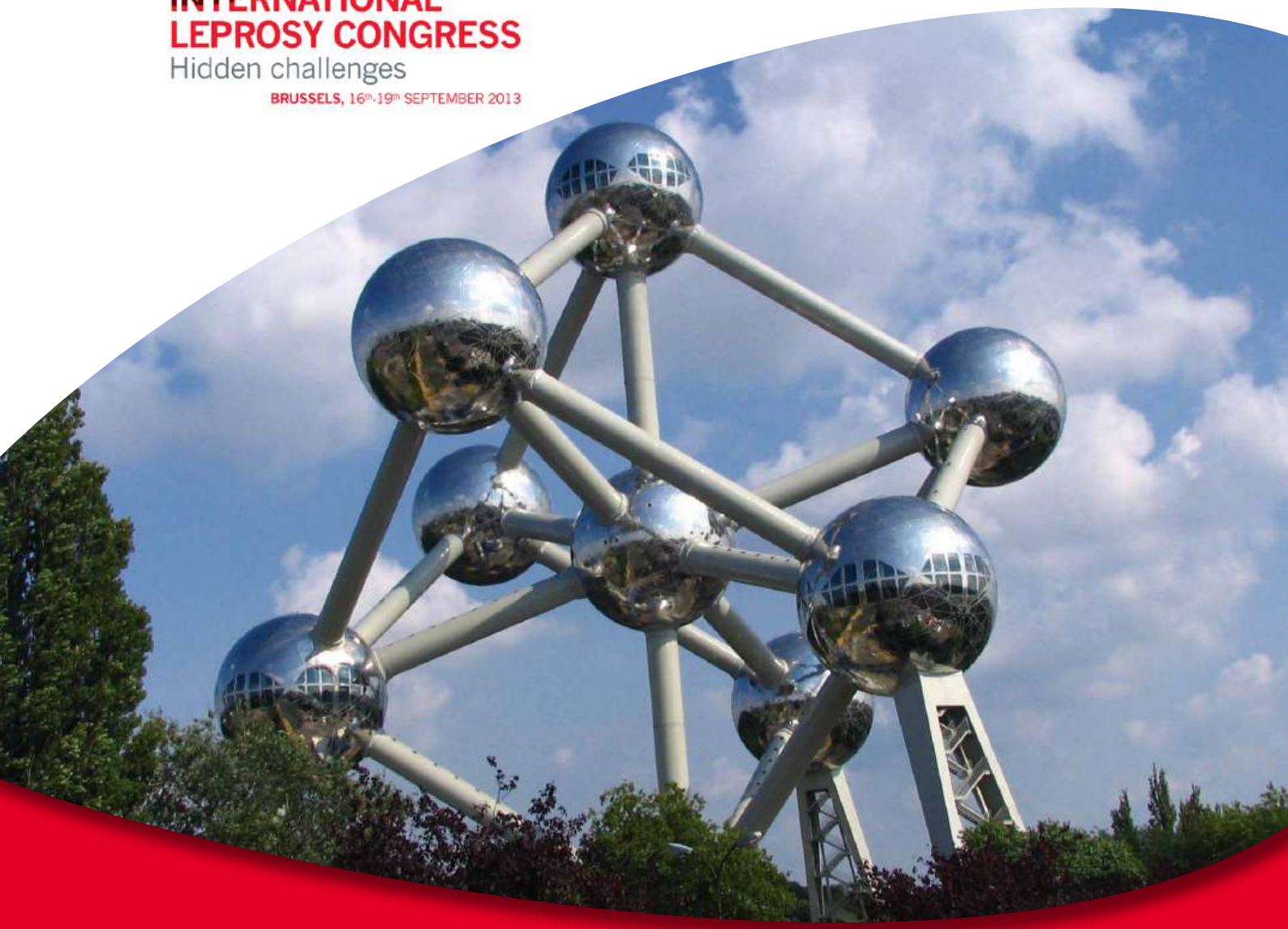
Prof. Jan Henrik Richardus a professor in infectious diseases and public health. His current research activities focus on infectious disease control, in particular the development and assessment of control strategies using epidemiological methods such as mathematical modeling. He has also initiated studies focusing on social and behavioral aspects of prevention of infectious diseases. Prof. Jan Henrik Richardus has special interest in infectious diseases with a chronic course and long-term complications, e.g. the mycobacterial diseases tuberculosis and leprosy, and viral hepatitis B. Due to his previous work overseas; he has a longstanding experience with leprosy. His areas of expertise are the epidemiology of transmission of M. leprae and the prevention of disabilities in leprosy patients.

18th

INTERNATIONAL LEPROSY CONGRESS

Hidden challenges

BRUSSELS, 16th-19th SEPTEMBER 2013



Monday 16 September 2013

Programme

DAY AT A GLANCE

Monday 16 September 2013

16:30 - 18:00	**Opening Ceremony** In the presence of HRH Princess Astrid of Belgium **Speakers:** Jean-Pascal Labille *Minister for Development Cooperation – Kingdom of Belgium* Kris Peeters *Minister President of the Flemish Government and Flemish Minister for Foreign Policy* Hiroki Nakatani *WHO Assistant Director-General – HIV/AIDS, TB, Malaria and Neglected Tropical Diseases* Yohei Sasakawa *WHO Goodwill Ambassador for Leprosy Elimination* Jarbas Barbosa *Brazilian Deputy Minister* René Staheli *President of ILEP* Kofi Nyarko *Member of the Board of Directors of IDEA* Cairns Smith *Chairman of the Scientific Committee of the 18th International Leprosy Congress* Marcos Virmond *President of ILA* **Moderator:** Rigo Peeters *President of the Local Organising Committee*	**Plenary room A & B • Level 1**
18:00 - 19:30	**Welcome Reception**	**Foyer • Level 0**

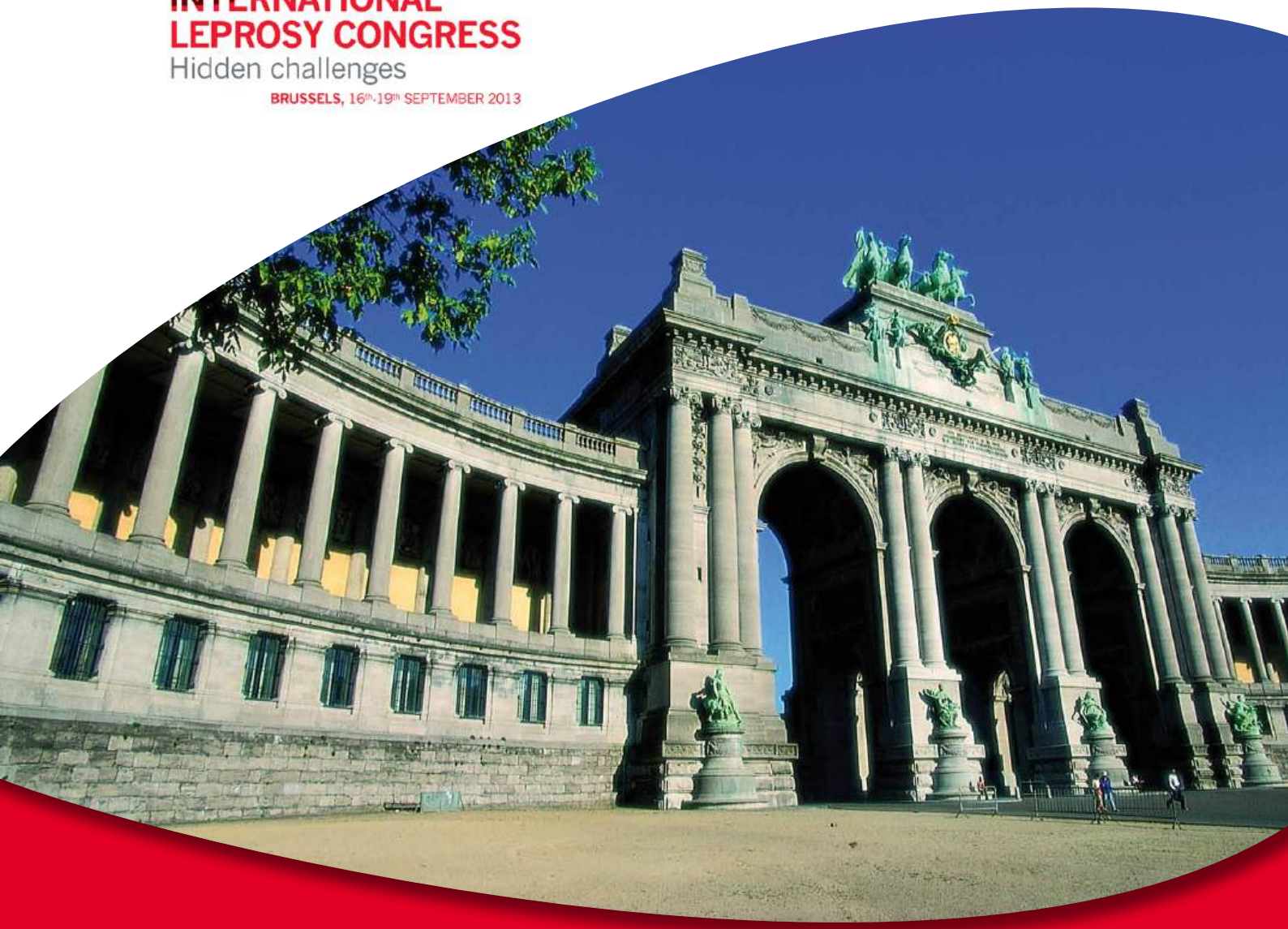
MONDAY 16 SEPTEMBER 2013

18th

INTERNATIONAL LEPROSY CONGRESS

Hidden challenges

BRUSSELS, 16th-19th SEPTEMBER 2013



Tuesday 17 September 2013

Programme

DAY AT A GLANCE

Tuesday 17 September 2013

09:00 - 10:30	**Plenary Session 1: Leprosy in a changing context** **Chair:** *Etienne Declercq* **Speakers:** *Dr Sumana Barua, Dr Julie Jacobson, Dr Joseph Kawuma* — **Plenary Room A & B • Level 1**					
10:30 - 11:00	*Coffee Break and ePoster sessions* **Foyer • Level 0**					
11:00 - 12:30	**Session 1**	**Session 2**	**Session 3**	**Session 4**	**Session 5**	**Session 6**
	Best Clinical Practice	**Stigma**	**Molecular Biology 1**	**Leprosy Control - Urban and Special Populations**	**Nerve Function and Impairments**	**Training in Leprosy**
	Room E & F	**Room C & D**	**Room 1 & 2**	**Plenary Room A & B**	**Room 3 & 4**	**Work Group Area**
12:30 - 14:00	*Lunch and ePoster sessions* **Foyer • Level 0**					
14:00 - 15:30	**Session 7**	**Session 8**	**Session 9**	**Session 10**	**Session 11**	**Session 12**
	Chemotherapy 1	**Information, Education and Communication**	**Immunology 1**	**Chemopro-phylaxis and Contacts**	**Footwear**	**Leprosy and NTDs**
	Room 1 & 2	**Room C & D**	**Work Group Area**	**Room E & F**	**Room 3 & 4**	**Plenary Room A & B**
15:30 - 16:00	*Coffee Break and ePoster sessions* **Foyer • Level 0**					
16:00 - 17:30	**Session 13**	**Session 14**	**Session 15**	**Session 16**	**Session 17**	**Session 18**
	ENL Reaction 1	**History of Leprosy 1**	**Microbiology**	**Epidemiological Surveillance**	**Prevention of Disability**	**Vaccines**
	Work Group Area	**Room E & F**	**Room 3 & 4**	**Room C & D**	**Plenary Room A & B**	**Room 1 & 2**
17:30 - 18:00	*Coffee Break* **Foyer • Level 0**					
18:00 - 19:30	**How to curb the incidence of leprosy?** Expert Group from Novartis Foundation and WHO — **Plenary Room A & B • Level 1**					
19:30 - 20:30	**Cocktail Reception** — **Foyer • Level 0**					

TUESDAY 17 SEPTEMBER 2013

LIST OF ABSTRACTS

11:00 – 12:30

Best Clinical Practise

Chair: *Dr Maria Leide*
Room: E & F

O-001
IS COUNTING LESIONS ENOUGH: THE SIGNIFICANCE OF SLIT SKIN SMEARS AND BIOPSY HISTOPATHOLOGY IN THE CLINICAL DIAGNOSIS, TREATMENT AND CLASSIFICATION OF LEPROSY PATIENTS
Presenter: *Dr Deanna Hagge*

O-002
COUNTING LESIONS IN THE PHILIPPINES OFTEN MISCLASSIFIES PATIENTS AS PB THAT ARE MB BY EARLIER CRITERIA
Presenter: *Robert Gelber*

O-003
"TRACK" IMPAIRMENTS & DISABILITIES – AN INNOVATIVE TECHNIQUE TO TEACH SELF-CARE IN THE COMMUNITY LEVEL
Presenter: *Mr Sathish Paul*

O-004
SHORT EXTENSION OUTRIGGER SPLINT TO RELEASE PROXIMAL INTERPHALANGEAL (PIP) JOINT CONTRACTURES IN CLAWED FINGERS IN LEPROSY
Presenter: *Mr Karthikeyan Govindasamy*

O-005
METABOLIC DISORDERS IN SUBSIDED CASES OF MULTIBACILLARY TYPES OF LEPROSY
Presenter: *Dr Valenti Naumov*

Stigma

Chair: *Dr Wim van Brakel*
Room: C & D

O-006
MEASURING STIGMA AND SOCIAL PARTICIPATION AMONG PERSONS AFFECTED BY LEPROSY IN THE SARI PROJECT, CIREBON DISTRICT, INDONESIA
Presenter: *Wim van Brakel*

O-007
ROLES OF LAY COUNSELORS IN REDUCING SELF STIGMA RELATED LEPROSY IN THE STIGMA ASSESSMENT REDUCTION OF IMPACT (SARI) PROJECT IN CIREBON, INDONESIA
Presenter: *Mimi Iusli*

O-008
SARI PROJECT METHODS AND BASELINE STUDIES
Presenter: *Wim van Brakel*

O-009
COMPARING THE QUALITY OF LIFE OF LEPROSY AFFECTED AND THOSE WITH OTHER STIGMATISED DISEASES
Presenter: *Priya Gangadharan*

O-010
COMPARING THE ATTITUDE AND PERCEPTION OF COMMUNITY MEMBERS REGARDING LEPROSY AND TUBERCULOSIS RELATED STIGMA
Presenter: *Niyom Kraipui*

Molecular Biology 1

Chair: *Dr Rahul Sharma*
Room: 1 & 2

O-012
MYCOBACTERIUM LEPRAE GENOTYPING IN A HIGHLY ENDEMIC AREA IN BRAZIL: AN INTRAPATIENT COMPARISON BY VNTR TYPING
Presenter: *Ligia Kerr*

O-015
ARMADILLO: AN OLD MODEL NEWLY EMERGING
Presenter: *Rahul Sharma*

O-016
GENOME-WIDE SCREENING OF MIRNA AND MRNA EXPRESSION IN LEPROSY
Presenter: *Cleverson Teixeira Soares*

O-017
MYCOBACTERIUM LEPRAE INFECTION TRIGGERS A TYPE-I INTERFERON-DEPENDENT OLIGOADENYLATE SYNTHETHASE-LIKE (OASL) ANTI-MICROBICIDAL GENE
Presenter: *Thiago Toledo*

Leprosy Control – Urban and Special Populations

Chair: *Dr Maravic Balagon*
Room: A & B

O-018
IDENTIFICATION AND SHARING OF EXPERTISE & GOOD PRACTICES IN URBAN LEPROSY
Presenter: *Dr Ma Victoria Balagon*

O-019
FEED BACK FROM PERSONS AFFECTED ON LEPROSY SERVICES IN URBAN AREAS -A RAPID ASSESSMENT STUDY
Presenter: *Venkata Ranganadha Rao Pemmaraju*

O-020
GENDER DIFFERENCES IN INTOLERANCE TO MULTI-DRUG THERAPY (MDT) FOR LEPROSY
Presenter: *Mauricio Nobre*

O-021
"LEPROSY EPIDEMIC" IN A RURAL SRI LANKAN COMMUNITY
Presenter: *Dr T M E Dabrera*

O-022
LEPROSY IN UNDER-PRIVILEGED TRIBAL POCKET IN SOUTH INDIA
Presenter: *Mr S Madhan*

O-023
SPECIAL AWARENESS DRIVE FOR NEW CASE DETECTION IN URBAN SLUMS OF MUMBAI
Presenter: *Dr Atul Shah*

Nerve Function and Impairments

Chair: *Dr Jose Garbino*
Room: 3 & 4

O-024
PREVALENCE AND CHARACTERISTICS OF LEPROSY-RELATED NEUROPATHIC PAIN: VALIDATION OF TWO TOOLS
Presenter: Dr Irina Raicher

O-025
SOFTWARE FOR ASSESSING NERVES IN LEPROSY
Presenter: Jose Garbino

O-026
TECHNICAL SPECIFICATIONS FOR REHABILITATION DEVICES PROVIDED FOR LEPROSY AFFECTED PATIENTS BY THE LEPROSY MISSION TRUST INDIA – A REVIEW
Presenter: Mr Sathish Paul

O-027
EFFECT OF TACTILE SENSORS IN DETECTING PRESSURE THRESHOLD OF ANESTHETIC HANDS
Presenter: Mr Sathish Paul

O-028
THE EFFECTIVENESS OF MODIFIED FELTED FOAM DRESSING IN CHRONIC PLANTAR ULCER TREATMENT IN PERSONS AFFECTED BY LEPROSY AT RAJ PRACHA SAMASAI INSTITUTE, SAMUTPRAKAN PROVINCE
Presenter: Thanyakittikul Pojana

O-029
ASSOCIATION DEGREE OF PHYSICAL DISABILITY AND POSTURAL CONTROL IN SUBJECTS WITH LEPROSY
Presenter: Clarice Tanaka

Training in Leprosy

Chair: *Dr Chris Schmotzer*
Room: Work Group Area

O-030
BUILDING CAPACITY AND COMPETENCE FOR LEPROSY WITHIN INTEGRATED PROGRAMMES
Presenter: Chris Schmotzer

O-031
SUSTAINABILITY OF LEPROSY SERVICES AND FINANCIAL SELF-RELIANCE OF AN ERSTWHILE LEPROSY HOSPITAL: SHARING EXPERIENCES FROM TLM COMMUNITY HOSPITAL AT DELHI METROPOLIS INDIA.
Presenter: Stephen Levi

O-032
EFFECTIVENESS OF TRAINING OCCUPATIONAL THERAPY AND PHYSIOTHERAPY INTERNS IN LEPROSY
Presenter: Mrinmoy Karmakar

O-033
THE EXPERIENCE OF LEPROSY DERMATOSIS TRAINING FOR FAMILY HEALTH PROFESSIONALS IN PIRAÍ, RIO DE JANEIRO
Presenter: Artur Gosling

O-034
THE DEVELOPMENT OF A TRAINING NEEDS ANALYSIS IN LEPROSY CONTROL FOR NATIONAL PROGRAMMES
Presenter: Mr Henk Eggens

14:00 – 15:30

Chemotherapy 1

Chair: *Dr Digafe Alembo*

Room: 1 & 2

O-035

PRIMARY RESULTS OF CLINICAL TRIAL OF UNIFORM MULTIDRUG THERAPY FOR LEPROSY PATIENTS IN BRAZIL (U-MDT/CT-BR): REACTIONS FREQUENCY IN MULTIBACILLARY PATIENTS
Presenter: *Maria Lucia Penna*

O-036

PHARMACOKINETICS OF CLOFAZIMINE WITH MULTIPLE DOSE ADMINISTRATION IN LEPROSY PATIENTS
Presenter: *Krishnamurthy Venkatesan*

O-037

CLINICAL CHARACTERISTICS AND OUTCOME IN MULTIBACILLARY(MB) LEPROSY PATIENTS TREATED WITH 12 MONTHS WHO MULTIDRUG THERAPY MB REGIMEN (MDT MBR): A RETROSPECTIVE ANALYSIS OF 730 PATIENTS FROM INDIA.
Presenter: *Bhushan Kumar*

O-038

EFFICACY OF UNIFORM MULTI-DRUG THERAPY (U-MDT) FOR LEPROSY: PRELIMINARY EVIDENCE FROM WHO / TDR INTERNATIONAL OPEN TRIAL
Presenter: *Sanjay Mehendale*

O-039

EFFECTIVENESS OF SINGLE DOSE CHEMOTHERAPY IN PAUCIBACILLARY LEPROSY PATIENTS: SUMMARY OF EVIDENCE FROM CLINICAL TRIALS IN INDIA
Presenter: *Dr Ponnaiah Manickam*

O-040

'PATIENTS WITH PROBLEMS' IN A COHORT OF 482 LEPROSY CASES RELEASED FROM WHO - MDT BETWEEN APRIL 2005 AND MARCH 2010 IN 2 AREAS IN MAHARASHTRA STATE, INDIA.
Presenter: *Vanaja Shetty*

Information, Education and Communication

Chair: *Dr June Nash*

Room: C & D

O-041

WHAT THE PARENTS SHOULD KNOW WHILE THEIR CHILD IS ON MDT? : INSIGHTS FROM A QUALITATIVE STUDY IN EASTERN INDIA
Presenter: *Vivek Lal*

O-042

LEPROSY CASE DETECTION THROUGH SCHOOL SURVEY IN POST-INTEGRATION PHASE IN INDIA
Presenter: *Shibu George*

O-043

MODERNISING THE FIGHT AGAINST LEPROSY – PILOT ON SCHOOLS DEBATES
Presenter: *Joseph Chukwu*

O-044

HOUSEHOLD SURVEY ABOUT THE PERCEPTIONS OF POPULATION ABOUT HANSEN'S DISEASE IN A HIPERENDEMIC AREA FROM BRAZIL
Presenter: *Francisco Carlos Lana*

O-045

CHANGES IN THE LEVEL OF KNOWLEDGE, ATTITUDE AND PRACTICE OF COMMUNITY MEMBERS REGARDING LEPROSY AND DIABETES MELLITUS THROUGH INTENSIVE COMMUNITY SENSITIZATION PROGRAM.
Presenter: *Dr Mannam Ebenezer*

Immunology 1

Chair: *Professor Warwick Britton*

Room: Work Group Area

O-046

INCREASED EXPRESSION OF REGULATORY T CELLS LEPROMATOUS LEPROSY
Presenter: *Indira Nath*

O-048

ROLE OF TH17 CELLS IN THE LEPROSY SPECTRUM
Presenter: *Indira Nath*

O-049

REGULATORY T CELLS IN LEPROMATOUS LEPROSY
Presenter: *Kidist Bobosha Aboma*

Chemoprophylaxis and Contacts

Chair: *Professor JH Richardus*

Room: E & F

O-050

THE COMBINED EFFECT OF CHEMOPROPHYLAXIS WITH RIFAMPICIN AND IMMUNOPROPHYLAXIS WITH BCG, IN THE PREVENTION OF LEPROSY IN CONTACTS: A RANDOMIZED CONTROLLED TRIAL
Presenter: *Mr. Khorshed Alam*

O-051

CHEMOPROPHYLAXIS WITH SINGLE-DOSE RIFAMPICIN FOR CONTACTS OF PATIENTS WITH LEPROSY: AN OPERATIONAL STUDY IN SAMPANG, INDONESIA
Presenter: *Dr Christina Widaningrum*

O-052

PATIENT-RELATED FACTORS PREDICTING THE EFFECTIVENESS OF RIFAMPICIN CHEMOPROPHYLAXIS IN CONTACTS: 6 YEAR FOLLOW UP OF THE COLEP COHORT IN BANGLADESH
Presenter: *Sabiena Feenstra*

O-053

ACCEPTABILITY OF CHEMOPROPHYLAXIS FOR HOUSEHOLD CONTACTS OF LEPROSY PATIENTS IN BANGLADESH: A QUALITATIVE STUDY
Presenter: *Sabiena Feenstra*

O-054

EFFECTIVENESS OF SINGLE DOSE RIFAMPICIN IN PREVENTION OF LEPROSY AMONG HIGH RISK COMMUNITY CONTACTS
Presenter: *Krisada Mahotarn*

O-055

LATE LEPROSY CONTACT EXAMINATION MAY HAVE LOW IMPACT IN THE TRANSMISSION RATE
Presenter: *Nádia Duppre*

Footwear

Chair: *Dr Sathish Paul*

Room: 3 & 4

O-056

PROTECTIVE FOOTWEAR SUPPLY TO FOUR NORTHERN STATES UNDER THE DISABILITY PREVENTION & MEDICAL REHABILITATION (DPMR) ACTIVITIES OF THE NATIONAL LEPROSY ERADICATION PROGRAM (NLEP) IN INDIA
Presenter: *Mr Sathish Paul*

O-057

PRELIMINARY STUDY ON PLANTAR SKIN RESILIENCE AND PLANTAR PADDING IN THE ANAESTHETIC FOOT IN LEPROSY
Presenter: *Dr Mannam Ebenezer*

O-058

STUDY OF SATISFACTION LEVEL OF PATIENTS WITH MICRO CELLULAR RUBBER FOOTWEAR IN BIHAR & JHARKHAND, INDIA
Presenter: *Rajni Singh*

O-059

MOULDED INSOLE FABRICATION FOR FOOT DEFORMITIES IN LEPROSY AFFECTED PATIENTS USING COMPUTER TOMOGRAPHIC IMAGES
Presenter: *Mr Sathish Paul*

O-060

ACCEPTABILITY AND CURRENT PRACTICE REGARDING FOOTWEAR FOR PEOPLE WITH INSENSITIVE FEET DUE TO LEPROSY
Presenter: *Mr Sathish Paul*

O-061

"LOOKING BEYOND THE HORIZON" – THE LEPROSY MISSION TRUST INDIA MICRO CELLULAR RUBBER UNIT
Presenter: *Mr Sathish Paul*

Leprosy and NTDs

Chair: *Dr Julie Jacobson*

Room: A & B

O-062

ENSURING THAT INDIVIDUALS AFFECTED BY NEGLECTED TROPICAL DISEASES ARE CONSIDERED EQUAL PARTNERS IN TRANSLATING THE LONDON DECLARATION INTO ACTION: A PILOT PROJECT
Presenter: *Ms Shehu S/Fada*

O-063

LEISHMANIA SPP/MYCOBACTERIUM LEPRAE COINFECTION IN CHOLUTECA (HONDURAS) AND CHINANDENGA (NICARAGUA)
Presenter: *Lucrecia Acosta*

O-064

IMPACT OF MORBIDLY CARE MANAGEMENT IN ELEPHANTIASIS (LYMPHATIC FIALARISASIS) IN FIVE DISTRICTS OF BIHAR
Presenter: *Rajni Singh*

O-065

INFECTIOUS CO-MORBIDITIES IN HANSEN'S DISEASE(HD) PATIENTS IN THE US: IMPLICATIONS FOR TREATMENT
Presenter: *Winnie Ooi*

O-066

LEPROSY HIV CO-INFECTION OBSERVATIONAL STUDY IN ETHIOPIA
Presenter: *Digafe Tsegaye*

16:00 – 17:30

ENL Reaction 1

Chair: *Professor Diana Lockwood*
Room: Work Group Area

O-067

THERE IS SIGNIFICANT MORTALITY ASSOCIATED WITH ERYTHEMA NODOSUM LEPROSUM (ENL) AT ALERT HOSPITAL, ETHIOPIA – A FIVE YEAR RETROSPECTIVE STUDY
Presenter: *Stephen Walker*

O-068

EPIDEMIOLOGICAL ASPECTS OF TYPE - 2 REACTIONS IN LEPROSY - A STUDY AT A REFERRAL HOSPITAL IN ANDHRA PRADESH, SOUTH INDIA
Presenter: *Kameswara Rao Adiraju*

O-069

TYPE 2 REACTIONS OR ERYTHEMA NODOSUM LEPROSUM (ENL) IN LEPROSY: A HOSPITAL-BASED STUDY OF CLINICAL DEMOGRAPHICS AND TREATMENT PATTERNS
Presenter: *Dr Deanna Hagge*

O-070

COMPARATIVE EFFICACY OF FOUR TREATMENT REGIMENS IN TYPE 2 LEPROSY REACTIONS (PREDNISOLONE ALONE, THALIDOMIDE ALONE, PREDNISOLONE PLUS THALIDOMIDE AND PREDNISOLONE PLUS CLOFAZAMINE)
Presenter: *Dr Hemanta Kumar Kar*

O-071

THE FEATURES OF ERYTHEMA NODOSUM LEPROSUM (ENL) IN THE INFIR COHORT
Presenter: *Stephen Walker*

History of Leprosy 1

Chair: *Dr Jo Robertson*
Room: E & F

O-072

THE BEGINNING OF INTERNATIONAL EFFORTS TO CONTROL LEPROSY
Presenter: *Jo Robertson*

O-073

FOUR PILLARS OF COLLABORATION: ORGANIZING INTERNATIONAL LEPROSY RESEARCH, 1897-1933
Presenter: *Magnus Vollset*

O-074

LEPROSY, DEMOCRACY AND CITIZENSHIP IN KOREA UNDER AMERICAN OCCUPATION (1945 - 1948)
Presenter: *Dr Jane Kim*

O-075

A HISTORY TORN BETWEEN "PROVIDING RELIEF" AND "INFLICTING HARM": MISSIONARY WORK FOR HANSEN'S DISEASE SUFFERERS AND LOCAL COMMUNITIES IN MODERN JAPAN FROM THE 1880S TO THE 1940S
Presenter: *Waka Hirokawa*

O-076

TWO DUTCH PROTESTANT LEPROSARIA IN DUTCH EAST INDIA 1900-1940
Presenter: *Leo van Bergen*

Microbiology

Chair: *Dr Davendra Chauhan*
Room: 3 & 4

O-077

COMPLEMENT INHIBITION IS NEUROPROTECTIVE IN A MOUSE MODEL OF LEPROSY
Presenter: *Nawal Bahia El Idrissi*

O-078

NOVEL METHODOLOGY FOR ASSESSING THE VIABILITY OF MYCOBACTERIUM LEPRAE IN SAMPLES FROM MULTIBACILLARY PATIENTS TREATED WITH MDT-WHO IN THE FEDERICO LLERAS ACOSTA DERMATOLOGY CENTER IN BOGOTA COLOMBIA
Presenter: *Martha Guerrero*

O-079

EXPRESSION ANALYSIS OF GENES RELATED TO METABOLISM AND VIRULENCE OF MYCOBACTERIUM LEPRAE DURING INFECTION IN HUMAN HOST BY MICROARRAY.
Presenter: *Davendra Chauhan*

O-080

INTERACTION OF MYCOBACTERIUM LEPRAE WITH HUMAN AIRWAY EPITHELIAL CELLS: ADHERENCE, INVASION, SURVIVAL AND IDENTIFICATION OF POTENTIAL ADHESINS BY SURFACE PROTEOME ANALYSIS
Presenter: *Carlos Adriano Matos e Silva*

O-081

M. LEPRAE MODULATES GLUCOSE UPTAKE AND METABOLISM IN THE HOST CELL
Presenter: *Flavio Lara*

O-082

MYCOBACTERIUM LEPRAE INDUCES CHOLESTEROL ACCUMULATION IN INFECTED MACROPHAGES BY UPREGULATING THE EXPRESSION OF LOW DENSITY LIPOPROTEIN RECEPTORS AND THE DE NOVO CHOLESTEROL SYNTHESIS
Presenter: *Marcia Moreira*

Epidemiological Surveillance

Chair: *Dr Etienne Declercq*
Room: C & D

O-083

PREVALENCE OF DISABILITY IN PREVIOUSLY UNDETECTED LEPROSY CASES: RESULTS OF A POPULATION SURVEY IN TWO STATES OF INDIA
Presenter: *Kumar Anil*

O-084

CLINICAL AND SEROLOGIC COHORT IN HYPERENDEMIC AREAS OF THE BRAZILIAN AMAZON REGION: HIGH RATE OF UNDIAGNOSED LEPROSY AND SUBCLINICAL INFECTION
Presenter: *Josafá Barreto*

O-085

VALIDATING DISEASE BURDEN DUE TO LEPROSY FROM EPIDEMIOLOGICAL PERSPECTIVE IN 31 LOW ENDEMIC BLOCKS OF 12 HIGH ENDEMIC DISTRICTS IN MAHARASHTRA STATE, INDIA
Presenter: *Ashutosh Prabhavalkar*

O-086

COMPARATIVE TREND ANALYSIS OF NEW LEPROSY CASES REPORTED TO TERTIARY INSTITUTION OF ENDEMIC DISTRICT AND STATE OF CENTRAL INDIA (2001-12) : HOW FAR IS ELIMINATION ?
Presenter: *Aparna Pandey*

O-087

DEVELOPMENT OF LEPROSY DATA BASE USING UCHA AND GEOGRAPHICAL INFORMATION SYSTEM OF LEPROSY CONTROL IN THAILAND
Presenter: *Dr.Boosbun Chua-Intra*

O-088

IN SEARCH OF REMAINING FOCI: MAPPING NEWLY REGISTERED LEPROSY CASES IN 14 STATES IN SOUTHERN NIGERIA
Presenter: *Anthony Meka*

Prevention of Disability in Leprosy

Chair: *Dr Hugh Cross*
Room: A & B

O-089

INTEGRATED PREVENTION OF DISABILITY (IPOD) PROGRAMME IN RURAL SET UP OF MUNGER DISTRICT, BIHAR (INDIA)
Presenter: *Rajni Singh*

O-090

TWO RANDOMIZED CONTROLLED CLINICAL TRIALS TO STUDY THE EFFECTIVENESS OF PREDNISOLONE TREATMENT IN PREVENTING AND RESTORING CLINICAL NERVE FUNCTION LOSS IN LEPROSY: THE TENLEP STUDY PROTOCOLS
Presenter: *Inge Wagenaar*

O-091

FACTORS CONTRIBUTING TO ADDITIONAL DISABILITIES DURING TREATMENT IN LEPROSY PATIENTS IN THAILAND
Presenter: *Thanyakittikul Pojana*

O-092

EVOLUTION OF DISABILITIES IN INDIVIDUALS WITH LEPROSY REACTIONS AFTER RELEASE FROM MULTIDRUG THERAPY IN BRAZIL
Presenter: *Maria De Jesus Alencar*

O-093

REVISITING THE WORSENING OF NERVE IMPAIRMENT AFTER MDT
Presenter: *Marcia Jardim*

Vaccines

Chair: *Dr Malcolm Duthie*
Room: 1 & 2

O-094

IS THERE A ROLE FOR A VACCINE IN LEPROSY CONTROL?
Presenter: *Malcolm Duthie*

O-095

A NOVEL VACCINE DEVELOPMENT AGAINST LEPROSY
Presenter: *Masahiko Makino*

O-096

IMPACT OF PGL-1 SEROPOSITIVITY ON THE IMMUNE RESPONSE TO MYCOBACTERIUM LEPRAE ANTIGENS
Presenter: *Roberta Pinheiro*

O-097

EVOLUTION OF THE ANTIBODY RESPONSE IN HEALTHY HOUSEHOLD CONTACTS THAT PROGRESSED TO CLINICALLY DIAGNOSED HANSEN'S DISEASE
Presenter: *John Spencer*

10:30 – 11:00

Best Clinical Practice

Screen 1, 10:30 - 10:40 P-001

POST CALAZAR DERMAL LEISHMANIASIS AND ERYTHEMA NODOSUM LEPROSUM: CASE REPORT AND LITERATURE REVIEW
Presenter: *Maria Angela Trindade*

Screen 1, 10:40 - 10:50 P-003

IRON-CONTAINING PROTEINS AS A MARKER OF M.LEPRAE PERSISTENCE IN LEPROSY PATIENTS IN THE CLINICAL REGRESSION STAGE
Presenter: *Prof. Dr Oleg Degtyarev*

Screen 1, 10:50 - 11:00 P-006

PREVALENCE AND CHARACTERISTICS OF NEUROPATHIC PAIN IN TREATED LEPROSY PATIENTS IN A TERTIARY CARE REFERENCE HOSPITAL
Presenter: *Artur Gosling*

Epidemiological Surveillance

Screen 2, 10:30 - 10:40 P-161

CLINICAL AND EPIDEMIOLOGICAL LEPROSY PROFILE AMONG CHILDREN BELOW 15 YEARS OLD DIAGNOSED AT THE FUNDACAO ALFREDO DA MATTA IN MANAUS, BRAZIL FROM JANUARY 2006 TO DECEMBER 2011
Presenter: *Maria Da Graca Cunha*

Screen 2, 10:40 - 10:50 P-168

THE ACTUAL STATE OF LEPROSY IN ESTONIA – AN UPDATE REPORT AFTER 20 YEARS
Presenter: *Attyla Drabik*

Screen 2, 10:50 - 11:00 P-163

A SYSTEMATIC REVIEW ON THE EPIDEMIOLOGICAL DATA OF ERYTHEMA NODOSUM LEPROSUM, A TYPE 2 LEPROSY REACTION
Presenter: *Erik Post*

Epidemiological Surveillance

Screen 3, 10:30 - 10:40 P-211

SEROPOSITIVITY ANTI PGL-I IN HOUSEHOLD CONTACTS OF CASES DIAGNOSED WITH LEPROSY
Presenter: *Ana Paula Carvalho*

Screen 3, 10:40 - 10:50 P-214

DEGREE OF DEFORMITY IN LEPROSY CASES DIAGNOSED IN CHILDREN UNDER 15 YEARS OLD AND ITS RELATIONSHIP WITH OPERATIONAL AND EPIDEMIOLOGICAL FACTORS
Presenter: *Angélica Fabri*

Screen 3, 10:50 - 11:00 P-213

DEATHS BY LEPROSY AS THE UNDERLYING CAUSE MATO GROSSO FROM 2000 TO 2007.
Presenter: *Eliane Ignotti*

Prevention of Disability

Screen 4, 10:30 - 10:40 P-225

KEY MODALITIES OF FIELD AREA DISABILITY CARE
Presenter: *Dr Atul Shah*

Screen 4, 10:40 - 10:50 P-226

DPMR CAMPS - A PRAGMATIC APPROACH TO RENDER DISABILITY CARE SERVICES AND TRAIN HEALTH CARE STAFF
Presenter: *Dr Atul Shah*

Screen 4, 10:50 - 11:00 P-227

MONITORING OUTCOMES AT THE END OF ANTIBIOTIC TREATMENT USING BU01, POD AND BUFLS FORMS WITH 23 NEW CASES IN 2012 AT KUKUOM HEALTH CENTER ASUNAFO SOUTH DISTRICT, BRONG AHAFO REGION OF GHANA
Presenter: *Linda Lehman*

Leprosy Control - Urban and Special Populations

Screen 5, 10:30 - 10:40 P-038

CHILD CARE CAMPS FOR DISABILITY PREVENTION AND CARE FOR RFT CASES
Presenter: *Dr Atul Shah*

Screen 5, 10:40 - 10:50 P-039

IMPARTING AWARENESS ABOUT LEPROSY AMONG CHILDREN OF MADRASAS SCHOOLS, AS A NEW CASE DETECTION METHOD
Presenter: *Abraham Selvasekar*

Screen 5, 10:50 - 11:00 P-041

RELAPSE OF HANSEN'S DISEASE DIAGNOSED BY LEPROMA IN NASAL CAVITY·A CASE REPORT·
Presenter: *Yoshiko OKANO*

Leprosy Control - Urban and Special Populations

Screen 6, 10:30 - 10:40 P-058

EPIDEMIOLOGICAL SITUATION OF LEPROSY IN URBAN AREAS IN INDIA - A RAPID ASSESSMENT STUDY
Presenter: *Venkata Ranganadha Rao Pemmaraju*

Screen 6, 10:40 - 10:50 P-059

TREND OF SMEAR POSITIVE CASES IN THE URBAN SLUMS OF MUMBAI – A FIELD STUDY IN MUMBAI
Presenter: *Vivek Pai*

Screen 6, 10:50 - 11:00 P-060

TWO WOMEN FROM THE SAME FAMILY WITH SIMILAR EXPERIENCES WITH LEPROSY
Presenter: *Nicole Holmes*

History of Leprosy

Screen 7, 10:30 - 10:40 P-124

HISTORY OF LEPROSY IN SPAIN
Presenter: *Jose Terencio de las Aguas*

Screen 7, 10:40 - 10:50 P-125

DIVERSITY OF MYCOBACTERIUM LEPRAE ON THE BASIS OF REPETITIVE SEQUENCES OF TTC FROM ANCIENT BONES FOUND IN BALI AND EAST NUSA TENGGARA, EAST INDONESIA
Presenter: *Bimo aksono*

12:30 – 14:00

Screen 7, 10:50 - 11:00 P-127

THE RISE AND FALL OF CHAULMOOGRA OIL
Presenter: *Mamina Turegano*

Microbiology

Screen 8, 10:30 - 10:40 P-143

METABOLOME ANALYSIS OF MYCOBACTERIUM LEPRAE
Presenter: *Yuji Miyamoto*

Screen 8, 10:40 - 10:50 P-152

SIGNIFICANCE OF SLIT SKIN SMEARS FACILITY IN A TERTIARY CARE REFERRAL CENTRE: TLM COMMUNITY HOSPITAL SHARING ITS EXPERIENCES FROM NATIONAL CAPITAL TERRITORY OF DELHI
Presenter: *Abraham Selvasekar*

Screen 8, 10:50 - 11:00 P-146

SEMI-AUTOMATED PROTOCOL FOR PURIFICATION OF MYCOBACTERIUM LEPRAE USING THE GENTLEMACSTM DISSOCIATOR
Presenter: *Thomas Gillis*

Molecular Biology

Screen 9, 10:30 - 10:40 P-030

RELAPSES AMONG LEPROSY CASES IN YEMEN: 10 YEARS OF OPERATIONAL REVIEW AND FIRST MOLECULAR EPIDEMIOLOGICAL ANALYSIS.
Presenter: *Abudl Rahim AL-Samie*

Screen 9, 10:40 - 10:50 P-031

DISTRIBUTION OF MYCOBACTERIUM LEPRAE STRAINS IN PERNAMBUCO, BRAZIL.
Presenter: *Dr Amanda Fontes*

Screen 9, 10:50 - 11:00 P-032

SINGLE NUCLEOTIDE POLYMORPHISM BASED MOLECULAR TYPING OF M. LEPRAE FROM MULTI-CASE FAMILIES OF LEPROSY PATIENTS AND THEIR SURROUNDINGS TO UNDERSTAND THE TRANSMISSION OF LEPROSY
Presenter: *Ravindra Turankar*

Chemotherapy

Screen 10, 10:30 - 10:40 P-081

OBSERVATIONS ON EFFECTIVENESS OF UNIFORM MULTIDRUG THERAPY AMONG MB LEPROSY PATIENTS IN 4 YEARS AFTER STOPPING TREATMENT
Presenter: *Dr Jianping Shen*

Screen 10, 10:40 - 10:50 P-082

CAUSES OF DEATH AMONG PATIENTS OF CLINICAL TRIAL FOR UNIFORM MULTIDRUG THERAPY FOR LEPROSY PATIENTS IN BRAZIL (U-MDT/CT-BR)
Presenter: *Maria Araci Pontes*

Screen 10, 10:50 - 11:00 P-083

ASSESSMENT OF THE FIXED DURATION MULTIDRUG THERAPY IN LEPROSY: A HISTOPATHOLOGICAL AND IMMUNOHISTOCHEMISTRY ANALYSIS
Presenter: *Marcos Floriano*

Best Clinical Practice

Screen 1, 12:30 - 12:40 P-005

HOW TO SET UP PAINLESS SKIN SMEAR FOR AFB AT YOUR CLINIC
Presenter: *Dr Kiran Koduri*

Screen 1, 12:40 - 12:50 P-004

OROPHARYNGEAL DISEASE AS THE INITIAL PRESENTATION OF LEPROSY
Presenter: *Mamina Turegano*

Screen 1, 12:50 - 13:00 P-007

COMMITMENT OF THE TWENTY NAILS IN A PATIENT WITH LEPROSY: SIX MONTHS AGO, PATIENT COMPLAINED OF NUMBNESS IN LEGS AND INVOLVEMENT OF THE NAILS;CUTANEOUS LYMPH SMEAR POSITIVE;HISTOLOGY:ZIEHL-NEELSEN ACID-FAST BACILLI POSITIVE;NAIL PLATE DISTROPHIC
Presenter: *Prof Mecciene Rodrigues*

Screen 1, 13:00 - 13:10 P-008

HISTOID LEPROSY: A RETROSPECTIVE STUDY OF THE CLINICAL EVOLUTION OF PATIENTS DIAGNOSED IN MANAUS, BRAZIL FROM 1990 TO 2010
Presenter: *Maria Maroja*

Screen 1, 13:10 - 13:20 P-012

FEATURES OF LEPROSY PATIENTS WITH DIABETES MELLITUS
Presenter: *Dr Viacheslav Tsemba*

Screen 1, 13:20 - 13:30 P-013

USAGE OF SYSTEMIC ENZYME THERAPY IN THE COMPLEX TREATMENT OF CHRONIC HEPATITIS IN LEPROSY PATIENTS
Presenter: *Dr Olga Mesniankina*

Screen 1, 13:30 - 13:40 P-014

COST EFFECTIVE AESTHETIC PROSTHESIS FOR THE ABSORBED DIGITS DUE TO LEPROSY
Presenter: *Mr Manivannan Govindarajlu*

Screen 1, 13:40 - 13:50 P-016

CLINICOPATHOLOGICAL CORRELATION IN LEPROSY: 5 YEAR RETROSPECTIVE ANALYSIS IN A TERTIARY CARE CENTRE OF NORTH INDIA
Presenter: *Vijay Jain*

Screen 1, 13:50 - 14:00 P-017

CLINICOHISTOPATHOLOGICAL CORELATION IN HANSEN'S DISEASE-A STUDY OF 150 CASES IN SOUTH INDIA
Presenter: *Dr.Shamanth S*

Epidemiological Surveillance

Screen 2, 12:30 - 12:40 P-164

POST ELIMINATION SCENARIO IN LEPROSY
Presenter: *Amar Kant Jha Amar*

Screen 2, 12:40 - 12:50 P-165

LEPROSY AMONG MIGRANT WORKERS: ENSURING PROPER TREATMENT
Presenter: *Yasin Alqubati*

12:30 – 14:00

Screen 2, 12:50 - 13:00 P-166

LEPROSY ELIMINATION IN BANGLADESH:
WHAT CHANGED AND WHAT NOT?
Presenter: *Shahed Hossain*

Screen 2, 13:00 - 13:10 P-167

THE LEPROSY SITUATION IN LIBERIA: THE NEED
FOR URGENT INTERNATIONAL ACTION
Presenter: *Ayodele Awe Poster*

Screen 2, 13:10 - 13:20 P-162

CHINA'S GUIZHOU QIANNAN LEPROSY POP AND
SURVIVORS LIVING SITUATION INVESTIGATION
Presenter: *Dr Minghong Gu*

Screen 2, 13:20 - 13:30 P-169

ESTIMATES OF PERSONS WITH GRADE 2 RESIDUAL
MORBIDITY ATTRIBUTABLE TO LEPROSY
Presenter: *Venkata Ranganadha Rao Pemmaraju*

Screen 2, 13:30 - 13:40 P-170

"CLINCO- EPIDEMIOLOGICAL FEATURES OF NEW LEPROSY CASES
AT CENTRAL LEPROSY TEACHING AND RESEARCH INSTITUTE,
CHENGALPATTU, INDIA" – A THREE YEAR PROSPECTIVE STUDY
Presenter : *Vivekanand Giri*

Screen 2, 13:40 - 13:50 P-171

CURRENT SITUATION ON LEPROSY IN RUSSIA
Presenter: *Dr Victor Duiko*

Screen 2, 13:50 - 14:00 P-173

FREQUENCY AND CAUSES OF RELAPSES IN LEPROSY PATIENTS
LIVING IN THE REGION OF LOW LANDS OF THE VOLGA-RIVER
Presenter: *Dr Vera Anokhina*

Epidemiological Surveillance

Screen 3, 12:30 - 12:40 P-212

EVALUATION OF THE EFFECTIVENESS OF THE FAMILY
HEALTH STRATEGY ON THE ENDEMICITY OF LEPROSY-
REVIEW OF THE LITERATURE REVIEW AND PRESENTATION
OF THE STATE OF SÃO PAULO, BRAZIL
Presenter: *Maria Angela Trindade*

Screen 3, 12:40 - 12:50 P-215

ASPECTS ET MORPHOLOGIE DES LÉSIONS CUTANÉES CHEZ
LES PATIENTS NOUVELLEMENT DÉPISTÉS DE LA LÈPRE
DANS 4 PROVINCES ENDÉMIQUES DU BURUNDI
Presenter : *Sawadogo Michel*

Screen 3, 12:50 - 13:00 P-216

MYCOBACTERIUM LEPRAE EXISTENCE IN COASTAL AND
AGRICULTURAL ENVIRONMENT OF LEPROSY ENDEMIC
AREA IN NORTHERN EAST JAVA, INDONESIA.
Presenter: *Ratna Wahyuni*

Screen 3, 13:00 - 13:10 P-217

THE ROLE OF FREE LIVING AMOEBA AS AN ENVIRONMENTAL
HOST FOR MYCOBACTERIUM LEPRAE
Presenter: *Dinar Adriaty*

Screen 3, 13:10 - 13:20 P-218

RISK FACTORS ANALYSIS ON SUBCLINICAL STAGE OF
LEPROSY AMONG ELEMENTARY SCHOOL CHILDREN
IN LEPROSY ENDEMIC AREA OF EAST JAVA
Presenter: *Mr Adam Iswahyudi*

Screen 3, 13:20 - 13:30 P-223

DEATHS ATTRIBUTED TO LEPROSY IN BRAZIL (2000-2007)
Presenter: *Eliane Ignotti*

Screen 3, 13:30 - 13:40 P-220

MYCOBACTERIUM LEPRAE IN DAILY USED WATER IN ENDEMIC
AREA; ITS QUANTIFICATION AND EVALUATION OF THE VIABILITY
Presenter: *Masanori Matsuoka*

Screen 3, 13:40 - 13:50 P-221

INVESTIGATING THE CONUNDRUM OF LEPROSY TRANSMISSION:
A LITERATURE REVIEW FOCUSSING ON THE TRANSDERMAL ROUTE
Presenter: *Erik Post*

Screen 3, 13:50 - 14:00 P-222

TRENDS IN LEPROSY RESEARCH: A BIBLIOMETRIC ANALYSIS OF
MEDLINE PUBLICATIONS DURING PRE-MDT AND POST-MDT PERIOD
Presenter: *Srinivas Govindarajulu*

Prevention of disability

Screen 4, 12:30 - 12:40 P-229

PHYSICAL DISABILITY IN PEOPLE AFFECTED BY
LEPROSY AFTER TREATMENT COMPLETION
Presenter: *Layana Guimarães*

Screen 4, 12:40 - 12:50 P-230

COMPARISON BETWEEN DIFFERENT METHODS OF
MONOFILAMENT TEST IN MULTIBACILLARY LEPROSY.
Presenter: *Dr Penvadee Pattanaprichakul*

Screen 4, 12:50 - 13:00 P-247

STRENGTHENING REFERRAL SYSTEM BY INVOLVING PRIMARY
HEALTH CARE PERSONNEL TO PROMOTE REFERRALS FOR
QUALITY LEPROSY SERVICES AT LEPROSY REFERRAL CENTRES
THROUGH OUTREACH CAMPS: A PILOT INITIATIVE IN 3
TRIBAL DISTRICTS OF MAHARASHTRA & CHATTISGARH
Presenter: *Ashutosh Prabhavalkar*

Screen 4, 13:00 - 13:10 P-234

PHYSICAL DISABILITY AND SOCIAL PARTICIPATION IN PEOPLE
AFFECTED BY LEPROSY AFTER MULTIDRUG THERAPY
Presenter: *Artur Gosling*

Screen 4, 13:10 - 13:20 P-235

A POPULATION BASED REGISTRY– A POSSIBLE STRATEGY
FOR LEPROSY IN URBAN AREAS?
Presenter: *Dr G Pitchaimani*

Screen 4, 13:20 - 13:30 P-236

ANALYSIS OF DISABLED HANDS AMONG 5627
PEOPLE AFFECTED BY LEPROSY
Presenter: *Prof Liangbin Yan*

Screen 4, 13:30 - 13:40 P-237

PREVENTION OF DISABILITY IN LEPROSY: EVOLUTION OF THE DEGREE OF PHYSICAL DISABILITY IN COHORT PAUCIBALICAR AND MULTIBACILLARY, 2010 AND 2011
Presenter: *Jurema Brandão*

Screen 4, 13:40 - 13:50 P-238

ASSESSMENT OF DISABILITY CARE SERVICES AND ITS IMPACT – A FIELD BASED STUDY IN RURAL AREAS OF THANE DISTRICT, MAHARASHTRA STATE, INDIA
Presenter: *Vivek Pai*

Screen 4, 13:50 - 14:00 P-240

QUALITY OF LIFE AND ITS DOMAINS IN LEPROSY PATIENTS AFTER NEUROLYSIS
Presenter: *Felipe Reis*

Leprosy Control - Urban and Special Populations

Screen 5, 12:30 - 12:40 P-042

LEPROSY CONTROL IN TRIBAL POPULATION: HOW TO OVERCOME THE HIDDEN CHALLENGES?
Presenter: *Shivakumar Mugudalabetta*

Screen 5, 12:40 - 12:50 P-045

LEPROSY AMONG INTERNALLY DISPLACED YEMENIS IN URBAN AREA OF YEMEN
Presenter: *Abdul Samid Al-Kubati*

Screen 5, 12:50 - 13:00 P-046

DIAGNOSIS AND TREATMENT OF LEPROSY REACTIONS IN INTEGRATED SERVICES - THE PATIENTS' PERSPECTIVE IN NEPAL.
Presenter: *Dr Diana Lockwood*

Screen 5, 13:00 - 13:10 P-047

LEPROSY ELIMINATION IN A TRIBAL AREA: NGO-GO PARTNERSHIP
Presenter: *Sudhakar Bandyopadhyay*

Screen 5, 13:10 - 13:20 P-050

HYPOPHYSIS-THYROID AXIS AND AGING OF LEPROSY PATIENTS
Presenter: *Dr Eugene Balybin*

Screen 5, 13:20 - 13:30 P-051

CHILDHOOD LEPROSY: FACTS REVEALED
Presenter: *Priya di waker*

Screen 5, 13:30 - 13:40 P-054

THE ANALYSIS OF LEPROSY CONTROL FOR SIXTY YEARS IN WUHAN
Presenter: *Dr Zhong Liu*

Screen 5, 13:40 - 13:50 P-053

ROLE OF PRIVATE MEDICAL PRACTITIONER IN PROVIDING LEPROSY SERVICES IN AN URBAN METROPOLIS IN INDIA
Presenter: *Dr. Abraham Selvasakar*

Screen 5, 13:50 - 14:00 P-055

USE OF A TOLL FREE NUMBER AS AN INNOVATIVE METHOD TO SPREAD AWARENESS REGARDING HANSEN'S DISEASE
Presenter: *Dr. Abraham Selvasakar*

Detection and Treatment of Reactions

Screen 6, 12.30 - 12.40 P-375

TYPE 1 LEPROSY REVERSAL REACTION TREATED WITH TOPICAL TACROLIMUS AS AN ADJUNCTIVE THERAPY
Presenter: *Thaverit Sittiwakin*

Leprosy and NTDs

Screen 6, 13:00 - 13:10 P-118

PREVALENCE OF INFECTIOUS COMORBIDITIES IN DIAGNOSIS OF PATIENTS WITH LEPROSY
Presenter: *Dr Isabela M. B. Goulart*

Screen 6, 13:10 - 13:20 P-119

CO-INFECTION OF HANSEN'S DISEASE AND HIV: ANALYSING REPORTS OF AN INTEGRATED COUNSELLING AND TESTING CENTRE (ICTC) FUNCTIONING FROM AN ERSTWHILE LEPROSY REFERRAL HOSPITAL IN DELHI METROPOLIS
Presenter: *Dr Abraham Selvasekar*

Screen 6, 13:20 - 13:30 P-278

IDENTIFICATION OF POTENTIAL ANTIGENS AND BIOMARKERS DETECTING M. LEPRAE EXPOSURE
Presenter: *Kidist Bobosha Aboma*

Screen 6, 13:30 - 13:40 P-279

EVALUATION OF MAJOR MEMBRANE PROTEIN-I FOR THE SERODIAGNOSIS OF LEPROSY
Presenter: *Ms Yumiko Tsukamoto*

Screen 6, 13:40 - 13:50 P-280

EVALUATION AND MONITORING OF HOUSEHOLD CONTACTS OF LEPROSY PATIENTS: CLINICAL EXAMINATION, INTRADERMAL MITSUDA REACTION, SEROLOGY FOR DETECTION OF ANTI-PGL-1 ANTIBODIES AND MULTI-EPITOPES OF RECOMBINANT MYCOBACTERIUM LEPRAE PROTEINS
Presenter: *Eliane Silva*

Screen 6, 13:50 - 14:00 P-281

CHILD HANSEN`S DISEASE IN VENEZUELA
Presenter: *Elsa Rada*

History of Leprosy

Screen 7, 12:30 - 12:40 P-126

MYTHS ABOUT LEPROSY: RESULTS OF A SURVEY OF PERCEPTIONS ABOUT THE INFECTION
Presenter: *Prof Charlotte Roberts*

Screen 7, 12:40 - 12:50 P-128

LEPROSY IN ARS HISTORY OF LEPROSY
Presenter: *Jose Terencio de las Aguas*

Screen 7, 12:50 - 13:00 P-130

LEPROSY IN LIBERIA: A BRIEF HISTORICAL REVIEW OF PREVALENCE AND DISTRIBUTION, WITH A SURVEILLANCE UPDATE
Presenter: *Richard Nisbett*

12:30 – 14:00

Screen 7, 13:00 - 13:10 P-131

ROLE OF THE SANATORIUM OF FONTILLES FROM ITS INAUGURATION IN 1909 UP TO THE USE OF THE FIRST EFFECTIVE DRUG AGAINST LEPROSY (PROMIN, 1945)
Presenter: *Fàtima Moll Cervera*

Screen 7, 13:10 - 13:20 P-132

CONTROL OF LEPROSY IN THE VILLAGES SURROUNDING THE SANATORIUM OF FONTILLES WITH NO EFFECTIVE TREATMENT AVAILABLE
Presenter: *Fàtima Moll Cervera*

Screen 7, 13:20 - 13:30 P-134

ORGANIZATIONAL RELEVANCE THROUGH RESPONSIVENESS TO THE CHANGING NEEDS OF PEOPLE AFFECTED BY LEPROSY - 138 YEARS OF THE LEPROSY MISSION IN INDIA
Presenter: *Dr Annamma John*

Screen 7, 13:30 - 13:40 P-135

SOME REFLECTIONS CONSIDERING THE PALEOPATHOLOGICAL DIAGNOSIS OF LEPROMATOUS AND TUBERCULOID LEPROSY ON HUMAN SKELETAL REMAINS
Presenter: *Vitor Matos*

Screen 7, 13:40 - 13:50 P-137

THE JOURNEY OF A MEDIEVAL EPIDEMIC IN BRITAIN
Presenter: *Dr Richard DE SOLDENHOFF*

Screen 7, 13:50 - 14:00 P-140

MILESTONES IN LEPROSY
Presenter: *Mr Michaelsamy Rajenderen*

Microbiology

Screen 8, 12:30 - 12:40 P-145

AN ATTEMPT TO CULTIVATE MYCOBACTERIA ISOLATED FROM LEPROSY LESIONS ON MINIMAL NUTRIENT MEDIA
Presenter: *Dr Mikhail Yushin*

Screen 8, 12:40 - 12:50 P-147

MOLECULAR TESTING FOR DRUG RESISTANCE ON SLIT SKIN SAMPLES OF NEW LEPROSY PATIENTS-A COMMUNITY BASED STUDY FROM ODISHA, INDIA
Presenter: *Aparna Srikantam*

Screen 8, 12:50 - 13:00 P-148

ANALYSIS OF PERSISTENCE OF MYCOBACTERIUM LEPRAE IN AMBLYOMMA CAJENNENSE AND RHODNIUS PROLIXUS AFTER INFECTION BY ARTIFICIAL FEEDING
Presenter: *Flavio Lara*

Screen 8, 13:00 - 13:10 P-149

DETERMINATION OF MYCOBACTERIUM LEPRAE VIABILITY USING 16S RRNA
Presenter: *Ida Maria Dias Baptista*

Screen 8, 13:10 - 13:20 P-150

OLD DISEASE NEW INSIGHT: THE DISCOVERY, PHYLOGENY, AND SIGNIFICANCE OF THE SECOND LEPROSY AGENT MYCOBACTERIUM LEPROMATOSIS
Presenter: *Xiang-Yang Han*

Screen 8, 13:20 - 13:30 P-151

METABOLIC AND IMMUNOLOGICAL PROFILES OF AIRWAY RESPIRATORY EPITHELIAL CELLS DURING INTERACTIONS WITH MYCOBACTERIUM LEPRAE
Presenter: *Rosana Ferreira*

Screen 8, 13:30 - 13:40 P-144

SCHWANN CELLS ARE DAMAGED BY MYCOLACTONE PRODUCED BY MYCOBACTERIUM ULCERANS - MECHANISM OF PAINLESSNESS IN BURULI ULCER
Presenter: *Junichiro EN*

Screen 8, 13:40 - 13:50 P-153

CELL POPULATION IN THE SPECTRUM OF LEPROSY AND REACTIONAL FORMS: EXPRESSION OF M1 AND M2 MACROPHAGES.
Presenter: *Ms Luciana Fachin*

Screen 8, 13:50 - 14:00 P-155

ANGIOGENESIS AND LYMPHANGIOGENESIS IN THE SPECTRUM OF LEPROSY AND ITS REACTIONAL FORMS
Presenter: *Dr Cleverson Soares*

Molecular Biology

Screen 9, 12:30 - 12:40 P-033

STUDY ON GENOTYPING OF MYCOBACTERIUM LEPRAE IN GUANGDONG PROVINCE CHINA
Presenter: *Dr Ming Li*

Screen 9, 12:40 - 12:50 P-034

EVALUATION OF REAL-TIME PCR TARGETING RLEP FOR DETECTION OF M. LEPRAE DNA IN PARAFFIN-EMBEDDED SKIN BIOPSY SPECIMENS FOR EARLY DIAGNOSIS OF LEPROSY
Presenter: *Yan Wen*

Screen 9, 12:50 - 13:00 P-035

DRUG RESISTANCE STUDY AND GENOTYPING IN M. LEPRAE STRAINS FROM MALI AND BENIN, WEST AFRICA
Presenter: *Philippe Busso*

Screen 9, 13:00 - 13:10 P-036

THE ROLE OF HLA IN BORDERLINE LEPROSY PATIENTS FROM SÃO PAULO STATE. PRELIMINARY RESULTS
Presenter: *Fabiana Santana*

Screen 9, 13:10 - 13:20 P-037

EXTRACTION OF MYCOBACTERIUM LEPRAE DNA FROM SKIN SMEAR STAINED BY THE ZIEHL-NEELSEN METHOD FOR AMPLIFICATION OF GENES ASSOCIATED WITH DRUG RESISTANCE IN LEPROSY
Presenter: *Patricia S Rosa*

Screen 9, 13:20 - 13:30 P-495

SEQUENCE COMPARISON AND QUANTITATIVE EXPRESSION OF GENES INVOLVED IN LIPID AND CARBOHYDRATE METABOLISM IN MYCOBACTERIUM LEPRAE
Presenter: *Thomas Gillis*

Screen 9, 13:30 - 13:40 P-496

MOLECULAR-BASED RT-PCR ASSAYS FOR DETERMINING MYCOBACTERIUM LEPRAE VIABILITY IN TISSUES OF EXPERIMENTALLY INFECTED MICE
Presenter: *Thomas Gillis*

15:30 – 16:00

Screen 9, 13:40 - 13:50 P-499

MYCOBACTERIUM LEPRAE STRAIN TYPES IN NEPAL
Presenter: *Deanna Hagge*

Screen 9, 13:50 - 14:00 P-498

LEPROSY IN CEBU, PHILIPPINES: INSIGHTS FROM MOLECULAR EPIDEMIOLOGY APPROACHES ON GEOGRAPHIC DISTRIBUTION, DRUG RESISTANCE AND TRANSMISSION DURING 2002-2010
Presenter: *Dr Marivic Balagon*

Chemotherapy

Screen 10, 12:30 - 12:40 P-084

COMPARISON OF PROFILE OF PATIENTS WHO WERE RESTARTED ON MDT AND THOSE WHO WERE STARTED ON MDT FOR THE FIRST TIME
Presenter: *Mannam Ebenezer*

Screen 10, 12:40 - 12:50 P-085

BRAZILIAN CLINICAL TRIAL OF UNIFORM MULTIDRUG THERAPY FOR LEPROSY PATIENTS (U-MDT/CT-BR - THE CORRELATION BETWEEN CLINICAL DISEASE TYPES AND ADVERSE EFFECTS
Presenter: *Prof. Dr Heitor Gonçalves*

Screen 10, 12:50 - 13:00 P-086

GENETIC POLYMORPHISMS OF NAT2, CYP2E1 AND ADVERSE EFFECTS ON DAPSONE THERAPY IN LEPROSY PATIENTS
Presenter: *Bruna Gouveia*

Screen 10, 13:00 - 13:10 P-087

EVALUATION OF MULTIBACILLARY PATIENTS ADMINISTERED ALTERNATIVE MULTIDRUG THERAPY
Presenter: *Anna Maria Sales*

Screen 10, 13:10 - 13:20 P-088

ANTILEPROTIC ACTIVITY OF SOME PLANTS OF ASTRAKHAN REGION
Presenter: *Prof Guzel Genatullina*

Screen 10, 13:20 - 13:30 P-089

ANALYTICAL STUDY OF DEFAULTERS IN LEPROSY AT A TERTIARY LEPROSY CENTER IN SOUTH INDIA
Presenter: *Dr.Sanjana Shivashankar*

Screen 10, 13:30 - 13:40 P-090

PLANNING PROJECT MANAGEMENT IN CLINICAL TRIALS: A BRIEF GUIDE OF ESSENTIALS
Presenter: *Attyla Drabik*

Screen 10, 13:40 – 13:50 P-091

ASSESSMENT OF COMPLETE BLOOD COUNT PROFILE OF LEPROSY PATIENTS BEFORE MULTIDRUG THERAPY
Presenter: Dr Isabela M. B. Goulart

Molecular Epidemiology

P-500

MYCOBACTERIUM LEPRAE DNA IN PERIPHERAL BLOOD OF LEPROSY PATIENTS, HOUSEHOLD CONTACTS AND CONTROLS MAY INDICATE A BACILLI MIGRATION ROUTE AND AN UNUSUAL MODE OF TRANSMISSION
Presenter: *Dr Isabela M. B. Goulart*

P-501

MOLECULAR INVESTIGATION OF THE ROUTE OF INFECTION AND TRANSMISSION OF M. LEPRAE
Presenter: *Dr Isabela M. B. Goulart*

Epidemiological Surveillance

Screen 2, 15:30 - 15:40 P-172

DETECTION OF IMMUNOGLOBULINS G TO DIS-BSA-SPECIFIC SEMI-SYNTHETIC ANTIGEN OF MYCOBACTERIUM LEPRAE IN BLOOD SERA FROM DONORS OF ASTRAKHAN REGION OF RUSSIAN FEDERATION
Presenter: *Dr Mikhail Yushin*

Screen 2, 15:40 - 15:50 P-174

LEPROSY IN CHILDREN UNDER FIFTEEN YEARS IN BRAZIL, 2011
Presenter: *Magda Ievantezi*

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LEPROSY IN TAJIKISTAN
Presenter: *Azizullo Kosimov*

Epidemiological Surveillance

Screen 3, 15:30 - 15:40 P-219

LEPROSY IN CEBU, PHILIPPINES: SEARCH FOR DEMOGRAPHIC, ECONOMIC AND WATER USAGE RISK FACTORS FOR TRANSMISSION
Presenter: *Dr Marivic Balagon*

Screen 3, 15:40 - 15:50 P-224

THE PRESENCE OF M. LEPRAE IN ENVIRONMENT AND RELATION WITH WEATHER VARIABLES: SYSTEMATIC REVIEW
Presenter: *Eliane Ignotti*

Prevention of Disability

Screen 4, 15:30 - 15:40 P-239

EARLY DETECTION OF SENSORY NERVE FUNCTION IMPAIRMENTS IN THE FIELD
Presenter: *Dr Annamma John*

Screen 4, 15:40 - 15:50 P-241

A SURVEY ON DISABILITY, ECONOMIC, AND SOCIAL PROBLEM OF LEPROSY AFFECTED PERSONS IN LOW PREVALENT AREA: KANCHANABURI PROVINCE, THAILAND
Presenter: *Siramas Rodchan*

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HIGH DISABILITY RATE AMONG NEW LEPROSY PATIENTS IN NIGERIA: A 10 YEARS REVIEW STUDY (2001 TO 2011) IN OSUN STATE, NIGERIA
Presenter: *Osman El tayeb*

Leprosy Control - Urban and Special Populations

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LITERATURE REVIEW - LEPROSY CONTROL IN URBAN SETTINGS
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MEDICAL CAMPS AS A NEW CASE DETECTION STRATEGY IN AN URBAN METROPOLIS IN INDIA
Presenter: *Dr. Abraham Selvasakar*

15:30 – 16:00

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SCREENING OF POPULATIONS IN NIGHT SHELTERS IN NATIONAL CAPITAL TERRITORY OF NEW DELHI – AN INNOVATIVE NEW CASE DETECTION STRATEGY!
Presenter: *Dr. Abraham Selvasakar*

New Diagnostic Tools

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DETECTION OF M.LEPRAE SPECIFIC PSR TESTING OF LEPROSY PATIENTS AND HOUSEHOLDS CONTACTS
Presenter: *Prof Liudmila Saroyants*

Screen 6, 15:40 - 15:50 P-283

EXPERIENCE ON GENOTYPING FOR DRUG RESISTANCE OF MYCOBACTERIUM LEPRAE IN BRAZIL
Presenter: *Philip Suffys*

Screen 6, 15:50 - 16:00 P-284

ROLE OF CYTOLOGY IN STUDY OF LEPROSY.
Presenter: *Vithal jadhav*

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SOCIAL INFLUENCING
Presenter: *Raj kumar Shah*

Microbiology

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SINGLE PLAQUE LESION SUSPECTED OF LEPROSY: DO MOLECULAR ASSAYS AID DIAGNOSIS?
Presenter: *Mrs AM Sales*

Screen 8, 15:40 - 15:50 P-156

DERMATOFIBROMA ORIGINATING IN CUTANEOUS LESIONS OF LEPROSY: REPORT OF 18 CASES
Presenter: *Dr Cleverson Soares*

Screen 8, 15:50 - 16:00 P-157

DETERMINATION OF TRANSMISSION PATTERNS OF CIRCULATING MYCOBACTERIUM LEPRAE STRAINS AMONG LEPROSY PATIENTS IN AREAS OF HIGH LEPROSY PREVALENCE IN INDIA USING VNTR AND SNP TYPING
Presenter: *Mallika Lavania*

Training in Leprosy

Screen 9, 15:30 - 15:40 P-068

TRAINING IN LEPROSY AT THE SANATORIUM OF FONTILLES (SPAIN)
Presenter: *Fàtima Moll Cervera*

Screen 9, 15:40 - 15:50 P-070

LOW PREVALENCE AREA SOCIETY, INVESTIGATION ON LEPROSY COGNITION OF MEDICAL STUDENTS AND DOCTORS OF THE DEPARTMENT OF DERMATOLOGY
Presenter: *Mr Yanjun Wang*

Screen 9, 15:50 - 16:00 P-071

HOW LARGE IS THE KNOWLEDGE AND ATTITUDE DEFICIT ON LEPROSY: A SURVEY OF FINAL YEAR MEDICAL STUDENTS AND MEDICAL DOCTORS IN SOUTHEASTERN NIGERIA
Presenter: *Joseph Chukwu*

Chemotherapy – Newer Drugs

Screen 10, 15:30 - 15:40 P-459

ONE YEAR EVALUATION OF PREVENTIVE TREATMENT IN SUBCLINICAL STAGE OF LEPROSY
Presenter: *Indropoagusni*

Screen 10, 15:40 - 15:50 P-460

LEPROSY AFTER TREATMENT WITH INFLIXIMAB AND ADALIMUMAB
Presenter: *Marcos Floriano*

Screen 10, 15:50 - 16:00 P-458

EVALUATION OF NERVE FUNCTION IMPAIRMENT (NFI) IN MULTIBACILLARY (MB) LEPROSY PATIENTS ON MULTIDRUG THERAPY (MDT-MB) ALONG WITH OR WITHOUT PREDNISOLONE.
Presenter: *Dr H.K Kar*

18th

INTERNATIONAL LEPROSY CONGRESS

Hidden challenges

BRUSSELS, 16th-19th SEPTEMBER 2013

Tuesday 17 September 2013

Abstracts

PLENARY SPEAKERS

PL – 001

Speaker: Dr Sumana Barua

THE CURRENT GLOBAL STATUS OF LEPROSY AND THE 'ENHANCED GLOBAL STRATEGY FOR FURTHER REDUCING THE DISEASE BURDEN DUE TO LEPROSY (2011-2015)

Leprosy, nearly three decades ago, precisely in 1985, was a disease prevalent in large numbers in more than 122 countries, whereas in 2013, only 16 countries report more than 1 000 cases annually. WHO Global Leprosy Programme (GLP) annual statistics for the year 2012, show detection of 232 857 new cases as reported from members states. 14 409 new cases had visible deformities or grade 2 disabilities (G 2 D). 95% of leprosy is from 16 top endemic countries.

Early detection of cases, timely enough to register them for multidrug therapy (MDT) by the national leprosy programme remains the key strategy for leprosy control. WHO GLP brought out two global leprosy strategies over the past 10 years in continuum to previous ones essentially to reduce the disease burden due to leprosy. The current one is "Enhanced Global Leprosy Strategy for Further Reducing Disease Burden due to Leprosy (2011-2015)". The strategies were developed in consultation with partner organizations and member states and its principles and strategies were imbibed in their respective national programme guidelines.

The 'enhanced global strategy' mentions a few elements which needs to be enhanced during the implementation period between 2011-2015 like, sustaining political commitment, strengthening referral services and introducing innovative approaches to for early case detection and so on. Sustaining the political commitment was given due importance by GLP and organized an International leprosy summit in July 2013, which brought out a landmark declaration. The remaining challenges in programme implementation and other key strategic areas were deliberated in the summit to improve the leprosy programme implementation in an integrated approach.

PL – 002

Speaker: Dr Julie Jacobson

LEPROSY WITHIN THE CONTEXT OF NEGLECTED TROPICAL DISEASES

Leprosy is an ancient disease that has been experienced around the world in diverse settings and has commonly been associated with poverty. In this session we will look at Leprosy and its broader association with the diseases of poverty, the neglected tropical diseases (NTDs). First we will hear about the global context that the leprosy program is now happening within following the London Declaration on NTDs and the opportunity this presents. This will be followed by a series of diverse talks on the leprosy from the experience of the individual through to the pathogen's interaction with other infections. We will then close with a discussion of leprosy within the broader context of the NTDs and how to use this to ensure that the elimination of leprosy and the care or those afflicted will be strengthened moving ahead.

PL-003

Speaker: Dr. Joseph Kawuma

THE PLACE OF LEPROSY IN PRESENT DAY NATIONAL HEALTH SYSTEMS

H.-J. S. Kawuma [1,*]

[1]MEDICAL ADVISOR, GERMAN LEPROSY AND TB RELIEF ASSOCIATION, KAMPALA, Uganda

Introduction: According to serial WHO recommendations, leprosy services should be integrated into the general public health services. That notwithstanding many countries in Africa developed National Leprosy Control / Elimination Programmes in order to maximize the benefit of the WHO recommended MDT and at the same time accelerate the change from treatment in isolation camps and leprosaria to ambulatory community based care. The Elimination strategy in the early 2000 led to a dramatic decrease in numbers of patients registered for treatment but in many settings did not significantly affect the new case detection rate at the same rate. From a combination of misunderstanding of the elimination goal and the apparent reduction in the leprosy disease burden, countries are now challenged with having to sustain leprosy care activities for an indefinite period of time since leprosy cannot yet be considered an eradicable disease. At the same time a number of new health challenges have emerged even in the developing world including HIV AIDS, the upsurge of TB and the increasing incidence of non-communicable diseases. Integrated approaches where leprosy control activities are carried out by multipurpose settings by general health workers already exist but need to be improved. The health service managers of different countries are challenged with the need to develop the most cost-effective strategies to deal with the remaining leprosy burden. This presentation reviews the experiences gained thus far and discusses options for the way forward.

Methods: The documented information on leprosy related interventions within the health system of Uganda and of 10 other African countries with different levels of leprosy endemicity is reviewed.

Results: There is no single approach that fits all countries but nearly all are working in integrated systems. The merits and challenges related to the various approaches adapted by different countries will be discussed and compared.

Conclusion: So long as leprosy cannot yet be considered an eradicable disease, all health systems need to commit financial and other resources to a surveillance system, preferably one that is integrated into the Primary Health Care (PHC) services including leprosy as an integral entity.The easiest information to collect using routine Health Information Management Systems seems to be on new cases and their characteristics. Provision of treatment and other care can be organized within the PHC services but needs to linked to anefficient referral system. Such a referral system, among others, engages the services of expert teams or individuals dealing with leprosy and other neglected tropical diseases that share control strategies with leprosy. Similarly, the leprosy services can be utilized to cover other conditions. Dedicated centers or departments will continue to be required to provide tertiary referral services, training and to participate in research initiatives that must continue for purposes of providing operational and basic solutions to the knowledge gaps in the leprosy field. If the disease burden continues to diminish, the specialist services may be only conveniently located at regional level and taking advantage of new advances in communication. All meningful interventions should be planned and implemented with the involvement of leprosy affected persons.

SYMPOSIUM LEADERS

L-001

Presentation Time: **Tuesday 17/09/2013 at 11:00 – 12:30**
Symposium Session: **Best Clinical Practices**
Presenter: Dr. Maria Leide

BEST PRACTICES:FROM A BROAD APPROACH TO FIELD APPLICATION ON LEPROSY PATIENT CARE

Maria Leide W. Oliveira, Nurimar C.Fernandes

Medical School /Federal University of Rio de Janeiro

It appears that the approach to "best practices" (BP) is a way of perceiving the world, under one complex perspective of universal ethics. Best practices are linked to sustainability and ecology, as an essence of human actions to conduct management practices. In this view (BP) could be linked to accountability in different areas. The Centre for International Research and Advisory Networks (CIRAN) and Management of Social transformations Programme (MOST) chose 27 best practices (7 from health area, no one in leprosy) with the following criteria: they are innovative; (ii) they make a difference: (iii) they have a sustainable effect; (iv) they have the potential for replication.

Applied in a "Good Clinical Research Practice" (GCP) is a process that incorporates established ethical and scientific quality standards for the design, conduct, recording and reporting of clinical research involving the participation of human subjects. Compliance with GCP principles, provides public assurance that the rights, safety, and well-being of research. Health policy decisions, including high level prioritization decisions, formulation of health benefits packages or deployment of high cost technology in health systems. Health Technology Assessment (HTA) plays an essential role in modern health care, supporting evidence-based decisions in health policy and practice. Ministry of Health from many countries has been adopting this methodology to formulate their public health policies.

It is well documented by systematic review that leprosy presents many gaps in all different applications of (BP) concepts, despite some worldwide initiatives. This is clearly seen in the results of the last two systematic reviews of current scientific evidence on leprosy, undertaken by ILEP Technical Commission (2002 and 2009). A very few recommendation of both became visible in implemented research, as can be seen in research trials portals (Figure1). Thus, best clinical practices (BCP) in a specific field of leprosy should follow: 1) Technical or consensual guidelines based on reliable existing knowledge. The planning and organization of care could be adequate for specific context to take effect, but the principle must use a good quality of registers that it will also allow a reliable analysis, besides a good quality of care.

2) Standardised protocols related to the previous knowledge weakness on different leprosy issues, in order to measure and compare outcomes and so generate a new and consistent knowledge, and

3) Multicentric trials on operational research linked to basic research centers in order to provide those priority gaps on leprosy knowledge.

No least important is professional training to increase the adherence to the clinical evidence-based studies, and humanization principles of care, specially the doctors. Their involvement in BCP is strategically important to avoid a practice linked not only to meet the urgent needs of the public or private health care systems. Nowadays there are multiple and accessible virtual information "called" evidence-based studies that could be utilized by health professionals anywhere. One helpful possibility would be a management of a virtual online network with the purpose of connecting all reliable leprosy sources and ongoing BCP, promoting information exchanges between research centers, reference units and professionals in the field.

L-002

Presentation Time: **Tuesday 17/09/2013 at 11:00 – 12:30**
Symposium Session: **Training in Leprosy**
Presenter: Dr. Chris Schmotzer

BUILDING CAPACITY AND COMPETENCE FOR LEPROSY WITHIN INTEGRATED PROGRAMMES

Dr. Chris Schmotzer

Introduction: The objective of this paper is to contribute to building capacity and competence for leprosy within integrated programmes.

Background: With decreasing prevalence and incidence worldwide, capacity and competence building in leprosy is a challenge. Leprosy control can only be sustained in integrated programmes with reliable partners, relevant stakeholders, fitting into the national/sub-national health care structures. All stakeholders are in need of building capacity and competence. The roles of different levels of health care workers in leprosy control must be clearly defined and addressed accordingly.

Strategies:
1. Development of national conceptual framework for leprosy control
2. Community mobilization in hyper-endemic areas
3. Awareness programmes for primary health care
4. Linking leprosy control with basic dermatology
5. Needs-based, task-oriented training
6. Reliable expertise at national/regional resource centres
7. Continued political commitment

Recommendations
1. Conduct situation analysis and training needs assessment
2. Review national guidelines for leprosy control
3. Net-work with capacity building in basic dermatology
4. Strengthen National Resource Centres for Leprosy

Conclusion: Adequate capacity and competence building in leprosy now is essential for the future of leprosy control

L-003

Presentation Time: **Tuesday 17/09/2013 at 14:00 – 15:30**
Symposium Session: **Information, Education, Communication**
Presenter: Dr June Nash

From information overload to effective communication through better practice

Objective: to discuss the present state and practice of IEC and look towards new initiatives

Summary: The presentation will consider the present state of IEC looking at recently published papers.
It will then consider ways to improve our practice including
- Working with communities and individuals
- Planning programmes and approaches
- Participatory methods
- Improved evaluation and measurement of efficacy

And finally consider the opportunities that social media may present for the future particularly in urban settings.

L-004

Presentation Time: **Tuesday 17/09/2013 at 14:00 – 15:30**
Symposium Session: **Chemoprophylaxis and Contacts**
Presenter: Dr. Chris Schmotzer

POSSIBLE APPLICATIONS OF CHEMOPROPHYLAXIS IN LEPROSY CONTROL

Prof. Jan Hendrik Richardus, MD, PhD, Department of Public Health Erasmus MC, University Medical Center Rotterdam, Rotterdam, the Netherlands

Rifampicin is a strongly bactericidal antibiotic against *M. leprae* and a single dose can prevent leprosy disease in contacts of leprosy patients. Trial evidence shows a more than 50% reduction in leprosy among contacts of newly diagnosed patients within two years after receiving a single dose of rifampicin (SDR) as prophylactic treatment. SDR is a promising preventive intervention for contacts of leprosy patients, but more information is necessary regarding its acceptability and feasibility in multiple field settings. Because no appropriate and reliable test is yet available to determine infection with *M. leprae* before clinical signs of the disease develop, SDR can only be provided to people with a perceived high risk based on epidemiological risk assessment without knowing whether they are really infected. Proximity to and blood relationship with an index patient, age of the contact, and bacterial load of the index patient are known risk factors for leprosy in contacts, yet SDR is most effective in contact groups with relatively low perceived a priori risks because it is much more effective in contact groups of PB index patients, in contacts who are not living in the same household or have no close blood relationship to the index patient. Infected contacts in these groups have probably had less exposure and therefore lower bacterial loads than those who are closer to an index patient, rendering treatment with SDR more successful. These findings challenge the design of routine chemoprophylaxis interventions, because distant contacts are less approachable due to leprosy stigma related factors. It is important to establish which contact groups benefit most from SDR and how they can be reached best.

L-005

Presentation Time: **Tuesday 17/09/2013 at 16:00 – 17:30**
Symposium Session: **ENL Reaction 1**
Presenter: Prof Diana Lockwood

THE CHALLENGES OF ERYTHEMA NODOSUM LEPROSUM

Diana NJ Lockwood, London School of Hygiene & Tropical Medicine

Erythema Nodosum Leprosum (ENL) continues to be a major challenge for leprosy services. This condition is still poorly understood pathologically and patients with ENL are challenging to manage clinically. I shall review the data on pathology of ENL; the continuing lack of evidence for treatments and the opportunities afforded by the establishment of a new global network to study ENL.

The immuno-pathology of ENL is complex and there is evidence that immune complexes, B cell activation, T cell and neutrophils all have some role in imitating and maintianing inflammatory episodes [1]. Having a high BI is a consistent risk factor for ENL and ENL often only subsides when mycobacterial antigen loads decrease in the skin.

Patients require long treatment courses with immuno-suppressive drugs to control ENL. Measuring severity of ENL and monitoring severity and control of ENL is complex and patients are best classified into having acute single ENL, acute recurrent or chronic ENL [2]. There is an absence of clinical trials on ENL (Cochrane and other reviews) [3]. Thalidomide is an effective drug but it is not available in many leprosy endemic countries. Data on adverse effects associated with all the immune-suppressive drugs used in the managing ENL is needed.

The Erythema Nodosum Leprosum International STudy Group (ENLIST) is a global network to study ENL and centres will be reporting their initial data in this workshop [1]. These data will illustrate the severity of the problem and allow the development of adequately powered multi-centre pathological and interventional studies on ENL.

References
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2. Pocaterra L, Jain S, Reddy R, Muzaffarullah S, Torres O, Suneetha S, et al. Clinical course of erythema nodosum leprosum: an 11-year cohort study in Hyderabad, India. Am J Trop Med Hyg. 2006 May;74(5):868-79. PubMed PMID: 16687695.
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L-006

Presentation Time: **Tuesday 17/09/2013 at 16:00 – 17:30**
Symposium Session: **Prevention of Disability**
Presenter: Dr. Hugh Cross

THE DEVELOPMENT OF GUIDELINES TO CLARIFY AND SIMPLIFY THE WHO THREE GRADE DISABILITY GRADING SYSTEM.

Hugh Cross PhD, Programme Director (Asia), American Leprosy Missions

Introduction: Through a survey conducted by Professor Cairns Smith it became apparent that the issue of WHO disability assessment and grading required attention. Professor Smith elicited responses from 332 people, 73% of whom reported that they had more than 5 years experience in leprosy while 91% reported that they had been trained in leprosy and that the training had included disability assessment. Form his analysis Professor Smith drew the following conclusions:

- there was considerable over-reporting of grade 2 disability
- a common reason for over-reporting was that visible changes that were not exclusive to eyes, hands or feet were included in the grading
- while 72% of respondents reported that their patient form included the EHF score, only 41% gave the correct EHF score (78% were within 1 point of the correct score)
- specific recommendations on skin cracks, healed ulcers, muscle weakness and eye changes would be helpful.
- simple, clear guidance on disability assessment could improve the consistency in grading.

The ILEP technical Commission (ITC) discussed the outcome of the survey and agreed that the implications of the findings were salutary. The ITC also agreed that a concerted effort was required, first to clarify those aspects of assessment that were currently unclear; and then to formulate a simple guide which can be used by health workers to assist them in the assessment procedure.
The ITC, (with the knowledge of Dr Sumana Barua , Team Leader at the Global Leprosy Programme) agreed that such an exercise should be undertaken, not to change the essential criteria for WHO disability grading, but to develop a consensus on definitions of the characteristics that decide precisely how an eye, hand or foot should be graded.

Method: A Delphi exercise was undertaken to establish an expert consensus on how to clarify and standardize the WHO three grade disability grading system. A Delphi panel was recruited which comprised 13 individuals. Recognised as general experts in the prevention of disability in leprosy, each panel member also had extensive experience of working with health workers who were responsible for the assessment and grading of disability and were therefore aware of issues with the system. On completion of the task of drafting the guidelines further advice and comment was sought from selected ophthalmologists for the purpose of further refining the guidelines on the assessment of the eye.

Results: The Delphi panel pursued a three stage process through which a consensus was developed on clear definitions of the characteristics that decide precisely how an eye, hand or foot should be graded. From that consensus guidelines to realign and standardize procedures and interpretations were developed. The resultant guidelines explain how assessment procedures should be undertaken and give instruction on how findings should be recorded. Although contemporized, the essential features of the three grade disability grading system remain intact. The Delphi panel, however, did recommend one additional criterion for grading; muscle weakness without visible muscle atrophy should be classified as WHO Grade 1 disability.

Conclusion: The principle objective of the process was that guidelines couched in simple terms would be developed to assist health workers who are required to assess and grade disabilities presented by people with leprosy. Reflecting the consensus of a group of acknowledged experts the new guidelines can be applied with confidence.

ORAL PRESENTATIONS

O-001

Presentation Time: **Tuesday 17/09/2013 at 11:00 – 12:30**
Symposium Session: **Best Clinical Practice**
Presenter: Dr Deanna Hagge

IS COUNTING LESIONS ENOUGH: THE SIGNIFICANCE OF SLIT SKIN SMEARS AND BIOPSY HISTOPATHOLOGY IN THE CLINICAL DIAGNOSIS, TREATMENT AND CLASSIFICATION OF LEPROSY PATIENTS

D. A. Hagge [1,*], P. Thapa [1], I. R. Shrestha [1], K. Neupane [1], I. B. Napit [2], L. Rajan [3], J. Ponnaiya [3], M. Shah [2]

[1]Mycobacterial Research Laboratory, [2]Anandaban Hospital, Kathmandu, Nepal, [3]Schieffelin Institute of Health Research & Leprosy Centre, Karigiri, Tamil Nadu, India

Introduction: Diagnosis of leprosy primarily relies upon the detection of leprosy lesions, peripheral neuropathy or bacterial detection. Within endemic areas, the option to perform lab related analyses such as slit skin smear and skin biopsy histology may be limited. In addition, research into immunologically relevant issues such as diagnostics development, neuropathology and reactions rely on accurate diagnostic reporting for results interpretation. We wanted to investigate if the presence or absence of these lab tests impacts accuracy in clinical diagnosis, treatment and Ridley-Jopling classification of patients.

Methods: In order to evaluate the effective contribution of slit skin smears and skin biopsy histopathology in leprosy diagnosis, patient medical charts from 2000-2006 were assessed. Clinician diagnosis following initial physical exam was compared to 1) diagnosis assigned after slit skin smear results became available and 2) comprehensive diagnosis after the clinician had access to both slit skin smears and skin biopsy histopathology reports.

Results: Physical exam of 625 cases resulted in 426 MB (68%) and 199 PB (32%) diagnoses. Clinician consideration of slit skin smear results shifted those diagnoses by 32 cases (5.1%) from PB to MB. Comprehensive diagnosis inclusive of physical exam alongside slit skin smear and biopsy histopathology results shifted diagnoses as follows: 49 PB to MB (7.8%), 63 PB to not leprosy (10.1%), 20 MB to not leprosy (3.2%), 3 PB to resolving leprosy (0.5%), 27 MB to resolving leprosy (4.3%) and 8 relapse to not relapse (1.3%). Leprosy reactions (145) were often complementarily detected between clinical (85.5%) and histopathological (38.6%) assessments. While 61.4% of reactions were detected by physical exam alone, a separate 14.5% of reactions were indicated by histopathology alone. Physical exam assignment for Ridley-Jopling classification correlated with histopathological assignment as follows: tuberculoid, TT (24%); borderline tuberculoid, BT (53%); borderline lepromatous, BL (46%) and lepromatous, LL (80%).

Conclusion: When clinicians had access to both slit skin smears and skin biopsy histopathology results, 27.2% of patients received different diagnoses altering treatment: roughly 8% of cases required more treatment (PB to MB) and 19% of cases did not require MDT at all (13.4% not leprosy, 4.9% resolving leprosy and 1.3% not relapse). Clinician access to only slit skin smear results increased diagnostic accuracy by 5% (MB misdiagnosed as PB). Ridley-Jopling classified LL patients were most commonly recognized by clinicians for clinic-histopathological correlation (80%); however, physical exam correlation for other forms was much less. PB/MB diagnosis by lesion count may be the only option for field clinics lacking access to lab services; however, whenever possible, clinicians, hospitals and specialized leprosy services should utilize minimally slit skin smear and optimally comprehensive diagnosis for provision of best clinical care. If 27% of patients can be misdiagnosed when lab results are unavailable, not only would those individual patients potentially receive wrong treatment; but case reporting and research findings would be significantly obfuscated, making the eradication of the causes and effects of leprosy more difficult to achieve.

O-002

Presentation Time: **Tuesday 17/09/2013 at 11:00 – 12:30**
Symposium Session: **Best Clinical Practice**
Presenter: Robert Gelber

COUNTING LESIONS IN THE PHILIPPINES OFTEN MISCLASSIFIES PATIENTS AS PB THAT ARE MB BY EARLIER CRITERIA

R. Gelber [1,*], F. E. F. Pardillo [1], T. T. Fajardo [1], R. M. Abalos [1], D. Scollard [2]

[1]Leprosy research, The Leonard Wood Memorial, Cebu, Philippines, [2]Leprosy research, Gillis W. Long Hansens Disease Center, Baton Rouge, United States

Introduction: In the 19th century Danielsen and Boeck noted that leprosy appears in two sharply distinguishable forms – "nodular" and "anesthetic" which correspond respectively to what is now termed lepromatous and tuberculoid leprosy. In the 20th century the lepromatous form was associated with a high number of bacteria and the absence of a cellular immune response to *M. leprae*, while the tuberculoid form had few bacilli and a salutary cellular immunological response to *M. leprae*. Thus, in the dapsone monotherapy era, lepromatous patients were treated more intensively, lifelong, and tuberculoid cases for five years.
In 1982 the WHO advocated the use of 2 different regimens of multidrug therapy of varying intensity for the treatment of leprosy. Treatment regimens were originally assigned on the basis of the Ridley-Jopling classification, which defined I, TT, and BT cases of leprosy as being paucibacillary (PB), and BB, BL, and LL cases of leprosy as being multibacillary (MB). A BI value >2 at any skin site indicated therapy for MB leprosy and a BI value <2 indicated therapy for PB leprosy. By 1988, a positive skin-smear result at any site became sufficient to indicate treatment of MB leprosy. Currently, the WHO advocates the field-friendly method of counting skin lesions to determine whether patients should be treated for PB or MB leprosy (PB leprosy, <5 lesions; MB leprosy >5 lesions).

Methods: In this current report classification by lesion counting was compared using dermatopathological classifications, as well as skin-smear positivity and a BI value >2 at any site. For statistical analysis, we used the $\chi 2$ test to compare proportions. The study population of this report focuses on the 58 patients of the total 284 patients with active leprosy who were found to be PB by lesion counting and presented with active leprosy to the Clinical Branch of the Leonard Wood Memorial Leprosy Research Center (Cebu, Philippines) from July 2003 to July 2005.

Results: Of the 58 patients who had <5 skin lesions, 22, fully 38%, had leprosy that was histologically determined to be BB (1 patient), BL (16 patients), or LL (5 patients). Also, 33 (57%) of the patients with <5 lesions were skin-smear positive at >1 site, and 18 (31%) had a BI value >2 at >1 site. The criteria of skin-smear positivity at any site resulted in a significantly greater frequency of patients whose leprosy was classified as PB by lesion counting who were considered to have MB leprosy by Ridley-Jopling classification (38%; $P = .04$) or by a BI value >2 (31%; $P = .005$). In these patients, there was no significant discrepancy in disease classification found between histological analysis and a BI value >2 at any site.

Conclusion: This study has demonstrated that leprosy classification by lesion counting can result in misclassification of leprosy patients as PB who by previous criteria would have been considered MB. This is of considerable concern, because the risk of relapse has been observed to be highest in patients with MB leprosy who are wrongly classified as having PB leprosy and are, therefore, under treated. Thus, we recommend that skin-smears and biopsies be reinstituted to classify patients for treatment purposes.

O-003

Presentation Time: **Tuesday 17/09/2013 at 11:00 – 12:30**
Symposium Session: **Best Clinical Practice**
Presenter: Dr Sathish Paul

"TRACK" IMPAIRMENTS & DISABILITIES – AN INNOVATIVE TECHNIQUE TO TEACH SELF-CARE IN THE COMMUNITY LEVEL

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Introduction: The nerve damage in a leprosy affected person causes significant impairments if not detected and treated early. Impairments further leads to difficulty in carrying out their normal activities of daily living. Many of the patients with these secondary impairments and deformities have settled and are living in colonies. The TLM hospital in Delhi is surrounded by 30 such leprosy colonies. The ignorance and the lack of knowledge and understanding about the patient's own impairment and disabilities have many times lead to the worsening and neglect of the condition. The stigma of having the disabilities has lead to self isolation of the patients even within the colonies. The knowledge and the better understanding of their own impairment will help in dealing with the challenges in a better way.

Methods: A team comprising of Physiotherapist, Occupational therapist, Nurse & a counselor along with the project implementation facilitator visited a colony on daily basis. Orientation on the methods of teaching self-care was given to all the staff before visiting the community. The patients were motivated to meet the hospital team in any of the patient's house daily by the members of self-help group functioning in the community. Through individual patient self-care the patients were made to identify the type of impairment & Disability they are having and the reasons for the impairment & Disability. The patients were also assessed by the hospital team to see if any adverse effects or any challenges the patient face in the community they live through Participation & SALSA scales. Finally the knowledge of the self-care was assessed using a questionnaire given to the patients.

Results: The initiative which was initiated by the TLM hospital, Delhi along with the community based project was able to identify motivated self-help groups to associate themselves in reducing impairments among patients in their own community. Of the 10 patients who were regularly attending the self-care sessions 5 persons were healed of their ulcers, 25 persons were assessed and protective footwear were provided, 3 patients were identified and motivated for reconstructive surgery.

Conclusion: The TRACK method will be an effective tool to teach self care for patients living with impairments. The method will help the patient understand and find their own effective way of overcoming the challenges faced due to their impairments. This method will reduce the patient's dependence on health professionals for treatment but will be able to understand that simple life style modifications will prevent new impairments from reoccurring.

O-004

Presentation Time: **Tuesday 17/09/2013 at 11:00 – 12:30**
Symposium Session: **Best Clinical Practice**
Presenter: Mr Karthikeyan Govindasamy

SHORT EXTENSION OUTRIGGER SPLINT TO RELEASE PROXIMAL INTERPHALANGEAL (PIP) JOINT CONTRACTURES IN CLAWED FINGERS IN LEPROSY

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Introduction: Claw fingers are most common primary impairment in leprosy, when neglected it can lead to PIP joint contractures, ulcers and absorption. PIP joint contracture may originate from skin, capsule and tendon. Muscle balance operations in claw fingers fail often due to contracture. This places the emphasis on the importance of release of all the contractures before surgery. A cylindrical splint (CS) and sophisticated thermoplastic splints has been used to correct PIP joint contractures in leprosy. Thermoplastics are expensive, while correction by CS is time consuming, need considerable skill, has short lever arm and risk of blisters. The loss of sensation in leprosy is a challenge and ill fitting splint may cause complications. Hence, an ideal splint would be the one which is easy to use, has good lever arm and reduces complications. Therefore, the aim of this paper is to determine the effectiveness of an aluminium short extension outrigger (SEO) splint to release PIP joint contracture as compared to CS.

Methods: The comparative trial was carried out during November 2011 to August 2012 at The Leprosy Mission Hospital, Naini a large referral centre for reconstructive surgery in leprosy. The SEO and CS were randomly allocated in two different groups. The SEO was applied 4-6 sessions in a day for 20 minutes. The CS was applied in the evening and left overnight and removed in the morning. The stretching exercise and massage was common for both the groups. The time taken to release contractures and rate of incidence of blisters were the outcome measures.

Results: Totally 47 fingers of a 33 patients included in the study, 23 for SEO and 24 for CS. The mean(SD) time taken (in days) to release contracture were 10.5 (5) and 15.4 (10), in SEO and CS, respectively and the difference was statistically significant (p=.036). The risk of blisters was 2 times less in SEO as compared to CS and difference was statistically significant (p=.0173).

Conclusion: The aluminium SEO is simple to use and reduces significantly the treatment period and risk of blisters in PIP joint contracture release in clawed fingers.

O-005

Presentation Time: **Tuesday 17/09/2013 at 11:00 – 12:30**
Symposium Session: **Best Clinical Practice**
Presenter: Dr Valentin Naumov

METABOLIC DISORDERS IN SUBSIDED CASES OF MULTIBACILLARY TYPES OF LEPROSY

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Introduction: It is known, that oxygen species play a significant role in inflammation processes and damage of visceral organs tissues in leprosy. It is also known, that protease–antiprotease imbalance plays a significant role in tissue injury. Chronic hepatitis is one of the basic consequences of leprosy and long duration chemotherapy. Aim: To investigate oxidative stress indices and antiproteases level in subsided cases of multibacillary types of leprosy.

Methods: Fifty multibacillary leprosy patients with subsided leprosy after long duration of antibacterial multidrug therapy (MDT) were studied. Chronic hepatitis was observed in 14 from these patients. Lipid peroxidation products (LPO) were determined in heptane-isopropanol extracts of blood plasma by ultraviolet spectrometry method. Malondialdehyde (MDA) levels were also investigated. Concentration of α-1-antitrypsin (α1AT), α-1-acid glycoprotein (α1GP), α-2-macroglobulin (α2MG) and haptoglobin (HP) were determined in blood serum by immunoturbidimetric method. We have compared the significance in the mean ± standard deviation values of LPO, MDA and the levels of α1AT, α1GP, α2MG, HP using one way analysis of variance between leprosy patients with chronic hepatitis and other patients. The results were significant at P<0.05.

Results: The levels of LPO and MDA increased significantly in leprosy patients with chronic hepatitis in comparison with other patients (P<0.01). It means presence of high free radicals activity in these patients. Concentrations of α1AT, α1GP, α2MG, and HP were also significantly elevated in these patients (P<0.05). Connection between degree of hepatitis activity and increase of antiproteases, LPO and MDA level is revealed.

Conclusion: High levels of LPO, MDA, α1AT, α1GP, α2MG, HP are of great diagnostic importance at subsided leprosy patients with chronic hepatitis and reflect a degree of oxidative stress and chronic hepatitis activity. It serves as a criterion for application suitable anti-oxidant therapy for these patients to prevent liver tissue injury.

O-006

Presentation Time: **Tuesday 17/09/2013 at 11:00 – 12:30**
Symposium Session: **Stigma**
Presenter: Wim van Brakel

MEASURING STIGMA AND SOCIAL PARTICIPATION AMONG PERSONS AFFECTED BY LEPROSY IN THE SARI PROJECT, CIREBON DISTRICT, INDONESIA

W. H. Van Brakel [1, 2,*], D. Dadun [3], R. M. Peters [2], B. Miranda Galarza [2], M. Lusli [4], M. B. Zweekhorst [2], I. Irwanto [5], J. G. Bunders [2]

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Introduction: Leprosy-related stigma plays an important role in the management and control of leprosy. For persons affected by leprosy and their families, stigma is a source of fear and social exclusion and often leads to human rights violations. Stigma also hampers public health programmes providing leprosy services. The Stigma Assessment and Reduction of Impact (SARI) Project, carried out in Cirebon District, West Java, Indonesia, is a randomised controlled trial of three stigma reduction interventions. Multiple types of stigma and impacts of stigma are being assessed as outcome measures. The instruments used have been submitted to a rigorous process of cultural validation. The results of two measures used with persons affected by leprosy are presented.

Methods: We measured anticipated stigma, disclosure concerns, internalised stigma and experienced stigma using the SARI Stigma Scale (SSS; based on the Berger HIV stigma scale). In addition, we assessed the impact on social participation using the Participation scale (P-scale). The former was new to the Indonesian context, so a full cultural validity testing protocol was used to test and adapt the instrument. The latter has been validated in Indonesia before and therefore only psychometric properties were tested. We evaluated conceptual, item, semantic, operational and measurement equivalence, involving members of the target group and measurement experts. For the latter we tested internal consistency, factor structure, percentage missing values, floor and ceiling effects, reliability and agreement and interpretability.

Results: The P-scale had been previously tested regarding its cultural validity, so only measurement equivalence was evaluated. Internal consistency was good, with an alpha of 0.87 (n=586). The two-factor structure was confirmed. Inter-tested reliability was good with an ICC of 0.85 (n=96). The Standard Error of Measurement (SEM) was 5.1, giving a Smallest Detectable Change (SDC) of 14 points on the scale of 0-90. No floor or ceiling effects were present and only 0.4% missing values were recorded. Various subgroup means will be presented. The SSS underwent important changes as part of the cultural validation process. Several items were omitted, changes were made to the formulation of several items and the statement format of the items was changed to a question format. The final 22-item format of the SSS showed good internal consistency was good, with an alpha of 0.89 (n=590). The four-factor structure was confirmed. Inter-tested reliability of the overall scale was adequate with an ICC of 0.72 (n=140). The SEM was 6.4, giving an SDC of 18 points on the scale of 0-88. No floor or ceiling effects were present and only 0.03% missing values were recorded. Various subgroup means will be presented.

Conclusion: The P-scale showed good measurement properties. The original Berger HIV stigma scale had to be modified very considerably to achieve cultural validity. The modified scale, now called the SARI Stigma Scale, showed adequate measurement properties. Stigma and its impact on social participation can be reliably measured using the SARI Stigma Scale and the P-scale.

0-007

Presentation Time: **Tuesday 17/09/2013 at 11:00 – 12:30**
Symposium Session: **Stigma**
Presenter: Mimi Lusli

ROLES OF LAY COUNSELORS IN REDUCING SELF STIGMA RELATED LEPROSY IN THE STIGMA ASSESSMENT REDUCTION OF IMPACT (SARI) PROJECT IN CIREBON, INDONESIA

M. Lusli [1, 2,*], B. M. Galarza [2], E. Seda [1], D. phui [1], I. Irwanto [1], R. Peters [2], M. Zweekhorst [2], W. V. Brakel [2], J. Bunders [2]

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Introduction: Cirebon: a district in West Java, Indonesia still concerns on Leprosy. Medical treatments through community health officers have been worked well to reduce the number of persons who have leprosy. But Health Department of West Java showed 310 new cases in year 2012. It is still a significant number even in year 2000 Indonesia has achieved prevalence rate below 1. However in real life, persons affected by leprosy in Cirebon are not facing medical problems that contributes to their different behaviour that make them labeled themselves as they experience the reaction of other people that made them be vulnerable to internalising negative attitude and developing self-stigma. But particularly, either persons who have been cured or are having medication still faced social problems due to stigmatisation. Self-stigma plays in self area that make them are not involved in social activities. They feel self-stigma in the form guilty and shame in family and community. SARI Project works on stigma reduction,and counseling is one of the strategies to reduce self-stigma. To effectively apply this strategy, persons affected by leprosy are getting involved as lay counselors play roles that is working successffuly in counseling intervention programs of SARI Project in terms of self-stigma reduction.

Methods: Qualitative methods were applied for this research. It took 13 months research from January 2012 to January 2013. Using in depth interview during counseling sessions to persons affected by leprosy who was being candidate of lay counselors. Learning reflection method was applied during lay counselors training. Dairy notes, progress reports and periodically meeting were regularly observed.

Results: 11 persons affected by leprosy have been selected and trained as lay counselors. They are now actively be a part of SARI Project team, and till January 2013, they have given counseling to 206 clients in 15 sub districts of Cirebon. They focused on self-stigma reduction strongly help their friends who affected by leprosy to understand self-stigma. Self-stigma that they faced in the form guilty and shame coming from ignorance and fear due to lack of information and understanding on leprosy. A success story of counseling facilitated by lay counselor affected by leprosy, shared by S as a lay counselor and J as a client. J stopped taking medicine and he let himself with the disease and facing barriers to medical and social participation. J was afraid since after he took medicine, his urine color turned to red, and he knew he has blood in his urine. Moreover, his family spontaneusly gave negative reaction labeling him that made him feeling guilty and shame of his family. When S Came to his house and did 5 sessions of counseling, J understood and he could reduce his self-stigma by building knowledge on leprosy and having information on the side effect of the medicine that he had.

Conclusion: Persons affected by leprosy depend with the medication, even they have been cured, sometime they still need medical treatments. Lack of information and poor knowledge on leprosy and its effects to the body and environment are the main sources occuring self-stigma. Counseling is a therapy conversation could meet the needs of persons who still have a problem caused by self-stigma. With social participation of lay counselors who are affected persons, their experience add values in terms of developing knowledge toward confidence to reduce self-stigma.

0-008

Presentation Time: **Tuesday 17/09/2013 at 11:00 – 12:30**
Symposium Session: **Stigma**
Presenter: Wim van Brakel

SARI PROJECT METHODS AND BASELINE STUDIES

W. H. Van Brakel [1, 2,*], D. Dadun [3], R. M. Peters [1], B. Miranda Galarza [1], M. Lusli [4], R. Damayanti [3], M. B. Zweekhorst [1], I. Irwanto [4], J. G. Bunders [1]

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Introduction: Leprosy-related stigma continues to be a major problem in most leprosy-endemic countries, despite the availability of free treatment and education messages that leprosy is curable. Stigma affects people at a personal and family level and often leads to human rights violations. It also hampers public health programmes providing leprosy services. Attempts to reduce stigma have focussed on knowledge-based interventions. Little is known about their effectiveness. Other strategies used in the field of mental health and HIV/AIDS include contact with affected people, counselling and empowerment through socio-economic development (SED). Actual evidence of their effectiveness is scarce, but promising. We designed a study to examine the effect of these strategies, the Stigma Assessment and Reduction of Impact (SARI) Project, carried out in Cirebon District, West Java, Indonesia.

Methods: We use a randomised controlled cluster trial design with four arms testing various combinations of interventions. In the first group, contact and counselling are implemented; in the second, contact and SED; in the third, SED and counselling. The fourth is the control area. Respondents were selected with the help of registers at the health centres where persons affected by leprosy are treated. An exploratory study was done with two objectives. The first was to understand the leprosy-related experiences of persons affected in Cirebon, in particular regarding stigma and social exclusion. The second was to look for and generate local initiatives and ideas for how the intervention strategies could be operationalized. People were interviewed 3 times, to build sufficient rapport to discuss sensitive issues. Focus group discussions (FGD) and key informant interviews were also done. Next, a validation study was done to test the cultural equivalence of a carefully selected battery of stigma assessment tools. Those examining the affected person's perspective are the SARI Stigma Scale (based on the Berger HIV stigma scale), Participation scale and WHOQOL-BREF. The community perspective is assessed using the EMIC stigma scale and the Social Distance Scale. Following the validation study and necessary adaptions of the tools, a baseline study was carried out of eligible persons affected by leprosy and of a sample of community members in each intervention area. The baseline study used both qualitative and quantitative methods.

Results: During the exploratory study, 53 persons were interviewed, including women, men and children affected by leprosy, health workers and key informants, and 20 FGDs were held. The validation study comprised 436 interviews. During the baseline study, 596 persons affected by leprosy and 301 community members were interviewed. In-depth qualitative interviews were done on a sub-sample of 80 leprosy-affected persons and 60 community members. Many accounts of stigma were recorded, although a large group has been cured without visible residual signs or social problems. All forms of stigma were reported, including internalised, perceived, experienced and enacted stigma. Many people still struggled with disclosure and exclusion, even years after completing leprosy treatment. The community reported a high level of stigma, both in attitudes and in reported or expected discriminatory behaviour.

Conclusion: Leprosy still has a major impact on the lives of many persons affected by leprosy. All types of stigma were reported. Interventions such as are being tested in the SARI Project are needed to mitigate the impact and tackle stigma at it roots.

0-009

Presentation Time: **Tuesday 17/09/2013 at 11:00 – 12:30**
Symposium Session: **Stigma**
Presenter: Priya Gangadharan

COMPARING THE QUALITY OF LIFE OF LEPROSY AFFECTED AND THOSE WITH OTHER STIGMATISED DISEASES

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Introduction: Leprosy has always been considered as a stigmatizing disease. Other diseases which also carry a stigma are those with Human Immunodeficiency Virus (HIV) and Tuberculosis (TB). The present study aims to determine the quality of life (QOL) of leprosy affected compared with the patients with diseases like HIV and TB.

Methods: The Schieffelin Institute of Health-Research and Leprosy Centre (SIHR&LC), Karigiri provides care for persons especially Leprosy affected in four blocks of Vellore- Katpadi, KV Kuppam, Gudiyatham and Pernambet. This study was a cross sectional study done on all Leprosy, Tuberculosis and HIV affected individuals from 30 panchayats which were selected to fit the criteria of where there is no access to health care facilities, high prevalence of people with disease and disability. All the leprosy, TB and HIV affected individuals were visited at their homes by social workers and informed consent was obtained. The WHO Quality of Life questionnaire was administered. This questionnaire explores the following four domains: physical health; psychological well being; social relationships and environment. The socioeconomic status of each subject's household was also assessed using comprising of 22 questions and dividing the score into six categories. The impact of leprosy, TB & HIV on the quality of life is compared to see if there is any difference in the quality of life among these three stigmatizing diseases.

Results: There were 264 leprosy affected who were interviewed, of which 82 had Grade 2 Disability (G2D). There were 30 patients with Tuberculosis and HIV. In the physical domain, the mean quality of life score for the leprosy affected was 10.84 while for the TB/ HIV group the mean score was 12.27 and this difference was statistically significant (p=0.000).There was no significant difference in the mean scores between the two groups in the psychological and social domains. Those who were leprosy had a lower mean score in the environmental domain, mean score 11.06 as compared to the TB/HIV group where the mean score was 11.93 and this was statistically significant (p=0.000). When leprosy with G2D was compared with the TB/HIV group the mean quality of life scores was lower in the leprosy affected group in all four domains. In the physical domain the mean score for leprosy with G2D was 9.35, while for HIV/TB it was 12.27. This difference was statistically significant, (p=0.000). In the psychological domain also, the Leprosy with G2D had a mean score

of 10.18 while mean score of TB/HIV was 12.00 which again was significant, (p=0.000). In the social domain, the mean score for Leprosy with G2D was10.66, while it was 12.31 for the TB/HIV group. This difference was significant (p=0.000). In the environmental domain the mean score for Leprosy with G2D was 10.34 while it was 11.93 for the TB/HIV group. This also was significant (p=0.000).

Conclusion: This study shows that even among stigmatizing diseases, Leprosy affected especially those with visible disabilities have a poorer quality of life.

0-010

Presentation Time: **Tuesday 17/09/2013 at 11:00 – 12:30**
Symposium Session: **Stigma**
Presenter: Niyom Kraipui

COMPARING THE ATTITUDE AND PERCEPTION OF COMMUNITY MEMBERS REGARDING LEPROSY AND TUBERCULOSIS RELATED STIGMA

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Introduction: It is gradually recognized by health professionals at all levels about the impact of stigma on case detection and treatment of various health conditions among which are leprosy and tuberculosis. These diseases are common in terms of being identified as chronic disease which prone to stigmatization. Many attempts have been made to reduce stigma attached to leprosy and tuberculosis. However, it is unclear whether stigma attached to leprosy and tuberculosis actually decreased. Stigma is still present. Leprosy-affected persons were stigmatized by health providers and their neighbors. Some leprosy patients were shunned and refused treatment of their ulcers by nurse aids, resulted in delay in diagnosis and poor compliance to treatment in many of them. Tuberculosis patients perceived tuberculosis as a dreadful, disgusting disease of death. They responded to this perception by denying the truth and by isolating themselves. The aim of this study was to assess the perception of community members towards stigma related to leprosy and tuberculosis in order to verify and compare the existence of stigma towards these two diseases in community, and to provide baseline data for those who are interested in launching de-stigmatizing interventions.

Methods: This study was done in four sub-districts of Chaiyaphum province. Community members were interviewed using Explanatory Model Interview Catalogue (*EMIC*) stigma scale. Frequency was used to describe the characteristics of study subjects and to describe the attitude or perception of community members on particular statement. A T-test was applied to compare between the mean EMIC scores of community members regarding leprosy and the mean EMIC scores of the same group regarding tuberculosis. A p-value of <0.05 was considered indicative of a statistically significant difference or association.

Results: It was found that community members had negative attitudes towards both leprosy and tuberculosis. They perceived that people affected by leprosy and tuberculosis had been stigmatized by community. However, it was found that community member had more negative attitude and more perception of community stigma in leprosy than in tuberculosis particularly in terms of social interaction, and marriage and job opportunity.

Conclusion: The stigma against leprosy and tuberculosis may result in reduced quality of life of those affected and may reduce their access to health care services. De-stigmatizing interventions taking local attitude and perception into consideration have been initiated by the authors.

0-012

Presentation Time: **Tuesday 17/09/2013 at 11:00 – 12:30**
Symposium Session: **Molecular Biology 1**
Presenter: Ligia Kerr

MYCOBACTERIUM LEPRAE GENOTYPING IN A HIGHLY ENDEMIC AREA IN BRAZIL: AN INTRAPATIENT COMPARISON BY VNTR TYPING

C. C. Frota [1], L. S. Kerr [2,*], L. Lima 1, V. Vissa [3], P. Suffys [4], A. Fontes [4], R. Mota [5], C. Kendall [6], A. Pontes [7], H. Gonçalves [7], W. Li [8], P. Brennan [8]

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Introduction: Nasal carriage of *Mycobacterium leprae* has been shown in leprosy patients but high bacterial loads are more frequently found in skin lesions. Abraded skin and nasal mucosa are suggested as routes of leprosy transmission in humans. The bacillus may present genetic variation after several generations in the body. The identification of clonal variant distribution in different infected sites may imply that subtle genotypic differences could provide adaptive advantage or may be a reflection of neutral evolution. From an epidemiological point of view and to ensure precise tracking of recent transmission in molecular epidemiology programs, it is essential to differentiate cases coinfected with more than one strain or clonal variant or cases due to the genetic shift of molecular markers, as seen in other organisms.

Methods: MLVA and VNTR copy number variation were used to genotype *M. leprae* present in paired nasal swabs and biopsy from 38 leprosy cases. Using VNTR analyses of the 16 loci, 15 loci VNTRs were selected for the genotyping of *M. leprae* strains, which included eleven microsatellites [(AT)17, (GGT)5, (GTA)9, (AC)8b, (AC)8a, (AT)15, (AC)9, 21-TTC, (TTC/GAA)21, (TA)18 and (TA)10] and four minisatellites (6-7, 27-5, 23-3 and 12-5).

Results: This comparative analysis revealed no variation in five of the cases. Another 20 cases were seen with similar genotypes. However, seven leprosy cases were seen with differences in more than five loci. Greatest variability was seen at the TTC/GAA21 (20 out of 38), followed by the 17_AT repeat (17 out of 38). Most of the differences were due to a loss or gain of a single repeat unit, with some cases showing more than three unit differences at the 17_AT, TTC/GAA 21, 18_TA, 15_AT and 9_GTA loci. No significant difference was seen in time frame (ranging from one to 60 months, with an average of 24 months) between first lesion appearance and sampling diagnostics in the identical VNTR pattern group compared to those with more than five loci difference.

Conclusion: Since in the majority of the cases, the copy number difference is only in a single repeat unit, the variability is probably due to clonal instability within VNTR. In the other seven cases, infection with two different strains of *M. leprae* appears more probable because more than five VNTR differ simultaneously in three or more units.

0-015

Presentation Time: **Tuesday 17/09/2013 at 11:00 – 12:30**
Symposium Session: **Molecular Biology 1**
Presenter: Rahul Sharma

ARMADILLO: AN OLD MODEL NEWLY EMERGING

R. Sharma [1,*], M. Pena [1], G. Balamayooran [1], R. Lahiri [2], D. L. Williams [2], L. B. Adams [2], D. Scollard [3], J. Figarola [3], R. W. Truman [2]

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Introduction: Armadillos (*Dasypus novemcinctus*) are widely regarded as the hosts-of-choice for *in vivo* propagation of *M. leprae*. They are immunologically intact natural hosts of *M. leprae* and the only known non-human reservoir of *M. leprae*. In the southern United States wild armadillos harbor a sylvan infection with *M. leprae* and have been identified as probable source of zoonotic transmission. In the laboratory, many aspects of infection in the armadillo closely recapitulates leprosy as seen in man, and armadillos can be useful models for the disease.

Methods: Their unique susceptibility and varied immune response make armadillos useful for developing new serological and histological diagnostic assays. We are using armadillos in studies on monitoring disease progression, pathogenesis or piloting new immunotherapies or vaccines.

Results: Although the majority (55%) of armadillos develop a lepromatous-type of disease when infected with *M. leprae*, the animals can manifest the full histopathological spectrum of responses (LL, BL, BT and TT) to *M. leprae* and a portion (20%) of the animals reliably resist experimental intravenous infection even with massive numbers of bacilli ($>10^9$).
Armadillos also are the only animal model which develops extensive neurological involvement with *M. leprae*, and they are the most abundant source of leprotic neural fibers for investigative purposes. Approximately 70% of animals infected in our facility showed decreased compound motor action potential (CMAP < 0.9 mV) and abnormal nerve conduction velocity (NCV < 40m/sec) in posterior tibial (PT) nerves during the course of their infection, which seems to coincide with the evolution of detectable IgM antibodies against *M. leprae* specific antigen. Although, armadillos are exotic laboratory animals, recently completed whole genome sequence has enabled us to undertake more sophisticated molecular studies and develop armadillo-specific reagents. We have identified 1546 differentially expressed genes from late stage infected armadillo nerves using cross species microarray hybridization. Using the available 6X genome assembly we have designed armadillo specific quantitative gene expression assays, identify susceptibility markers and developing armadillo specific antibodies for ultra structural studies.

Conclusion: Armadillos can recapitulate leprosy as seen in human patients and advancement of this model will facilitate the use of armadillos in piloting new therapies, vaccines and diagnostic regimens, and will provide new insights into the oldest known infectious neurodegenerative disorder.

O-016

Presentation Time: **Tuesday 17/09/2013 at 11:00 – 12:30**
Symposium Session: **Molecular Biology 1**
Presenter: Cleverson Teixeira Soares

GENOME-WIDE SCREENING OF MIRNA AND MRNA EXPRESSION IN LEPROSY

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Introduction: The pathophysiological mechanisms of leprosy at the molecular level are virtually unknown. Clarification of these is crucial to understand the pathophysiology and to discover new ways of treating the disease. Recently, technological advances in the expression profiling at the microRNA (miRNA) and mRNA levels have made possible to evaluate the changes in the components of multiple pathways. miRNAs are small noncoding RNAs and are post-transcriptional regulators of expression and mRNA, involved in numerous cellular processes, such as development, differentiation, proliferation, apoptosis and metabolism. The aim of this study was to determine the microRNA-mRNA expression across the spectrum of leprosy and reactional states and their potential to identify miRNA gene targets calculating correlations between the signature microRNAs and their corresponding mRNA targets, predicted by bioinformatics, genome-wide in RNA microarray studies.

Methods: The study group was composed of samples from 67 leprosy patients and nine healthy control individuals who were clinically evaluated and two skin lesion biopsies were collected. One biopsy was fixed in 10% buffered formalin for histological sections stained with hematoxylin-eosin and Fite-Faraco. The other biopsy was stored in RNA-later solution for RNA extraction. Based on the clinical and the histopathological features, the patients were classified within the spectrum of leprosy according to Ridley-Jopling's criteria: 10 tuberculoid (TT), 10 borderline tuberculoid (BT), 10 borderline-borderline (BB), 09 borderline-lepromatous (BL) and 04 lepromatous (LL), 14 leprosy reactions were classified as type I (RR) and 10 as Type 2 / erythema nodosum leprosum (ENL). Total RNA extracted from biopsies of skin lesions of leprosy patients and healthy controls were hybridized. Images of each array were scanned and analyzed using the Agilent GeneSpring software version 11.0 (Agilent®).

Results: Of the 27,958 mRNAs and 2,006 miRNAs evaluated, 1,946 human mRNAs (fold>=2.0) and 77 human miRNAs (fold>=1.5), with p <0.05, were differentially regulated, when comparing healthy controls and individuals with the disease. The integrated analysis of miRNA-mRNA showed several pathways associated with cellular cycle / proliferation, apoptosis, T-cell signaling, angiogenesis, extracellular matrix and immune activation, among others.

Conclusion: This study provided a comprehensive dataset on the expression of miRNAs-mRNAs in leprosy and its reactional states. Our hypothesis is that the characterization of the gene expression profile obtained by microarray analysis can greatly contribute to the knowledge of leprosy in respect mainly to: (1) identifying which genes are involved in the whole spectrum of leprosy and its reactional episodes, (2) increasing the understanding of the pathophysiology of the disease and the bacillus-host interaction mechanisms, and (3) identify potential biomarkers that may indicate new targets to be used in the treatment of the disease.

Supported by grants from FAPESP (2010/19286-3).

O-017

Presentation Time: **Tuesday 17/09/2013 at 11:00 – 12:30**
Symposium Session: **Molecular Biology 1**
Presenter: Thiago Toledo

MYCOBACTERIUM LEPRAE INFECTION TRIGGERS A TYPE-I INTERFERON-DEPENDENT OLIGOADENYLATE SYNTHETHASE-LIKE (OASL) ANTI-MICROBICIDAL GENE

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Introduction: Although the invasion strategy of *Mycobacterium leprae* in the host cell is known, the specific mechanisms that underlie the intracellular survival of mycobacteria is poorly understood. Type I interferons and cytoplasmic DNA signaling (CDS) has been defined as negative regulators of protective immune responses triggered by virulent mycobacteria infection. In the current study, a global gene expression profile of primary human Schwann cells infected with live *M. leprae* unraveled type-I IFN differentially expressed genes by microarray analysis, pinpointing the highest up-regulated gene, 2'-5' oligoadenylate synthetase-like (OASL). Therefore, the aim of this study was to determine the role of OASL during infection by *M. leprae* and to evaluate the immunoregulation of the infection process.

Methods: A global gene expression of primary Schwann cells infected with viable *M. leprae* was performed by microarray. Differentially expressed genes were also validated by qRT-PCR, western blot and immunocytochemistry using THP-1 macrophage-like cells infected with viable *M. leprae*. OASL gene expression was knocked-down in THP-1 cells by transfection with siRNA using lipotransfection. *M. leprae* viability was determined by qRT-PCR. A genetic association study of single nucleotide polymorphism (SNP) in the OASL gene was performed testing 1019 individuals (521 leprosy cases and 498 controls) in a case-control study.

Results: Induction of OASL and the type I IFN pathway tag mRNAs were upregulated in THP1 cells. Lipofaction of naked *M.leprae* DNA, but not RNA, to the cytoplasm also induced OASL, linking this gene directly to the CDS pathway. It was also detected a phagosome breach in the infected cell with live *M.leprae* after anti-LAM staining and ESAT-6 mRNA expression was detected in a dose-dependent manner. Then, OASL gene silencing had a direct effect on intracellular *M. leprae* survival, inducing upregulation of proinflammatory cytokines and apoptotic genes, reverting *M. leprae* survival phenotype. Finally, a single nucleotide polymorphism (SNP) in the OASL gene was associated with leprosy in case-control study. This SNP was also associated with OASL lower levels in nerve biopsies of patients exhibiting neuropathy.

Conclusion: These results suggest that OASL plays a role in the response to mycobacteria and provide a potential new candidate gene for prevention or intervention.

O-018

Presentation Time: **Tuesday 17/09/2013 at 11:00 – 12:30**
Symposium Session: **Leprosy Control - Urban and Special Populations**
Presenter: Dr Ma Victoria Balagon

IDENTIFICATION AND SHARING OF EXPERTISE & GOOD PRACTICES IN URBAN LEPROSY

M. V. F. Balagon [1,*] and ILEP-Technical Committee; NLEP Stakeholders & Partners-India

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Introduction: Early findings suggest that the rate of treatment defaulters and grade- 2 deformities in leprosy is proportionately higher in urban compared to rural areas. Since then, the poor implementation of leprosy control programs in urban settings has become a global concern, thus the need to find strategic measures to address this issue.
This study was conducted to identify and address major issues and challenges in urban leprosy through sharing of experiences, good practices and recommendations to improve the delivery of leprosy services in urban settings.

Methods: Consultations regarding major challenges and recommendations to improve the quality of urban leprosy services were conducted through a consultative workshop and field survey. The consultative workshop was conducted in late 2012 among major stakeholders in urban leprosy control throughout India. An online survey has also been conducted targeting leprosy workers in the global community. Key issues include case detection, treatment, reactions, disability prevention, rehabilitation, education, human resources and program management.

Results: The workshop report has been drafted whereas the online survey is still in progress. Initial findings suggest that compared to rural areas, leprosy control programs in urban settings are less structured and poorly implemented. Major contributing factors in the poor delivery of services include high patient mobility particularly in slums and industrial areas where most of urban cases reside, lack of educational activities, lack of trained staff and poor coordination among public and private health workers resulting to a weak surveillance system. Though tertiary health care facilities are present in urban settings, the primary health care system is generally weak and poorly coordinated.
General recommendations to improve the quality of services in urban areas include the identification and training of dedicated leprosy staff to focus in highly endemic, underserved urban localities and the designation of existing, strategically located health centers as primary level referral centers in urban areas. It is also important to organize a nodal agency or an"urban leprosy committee" to specifically tackle outstanding issues in priority areas. These are the areas wherein basic services need to be addressed according to special features of the urban locality. These features include issues on migration, rapid industrialization, existing health authorities and population density which vary greatly between urban localities.
(Note: More information will be added once all data from the online survey are available)

Conclusion: Rapid urbanization brings challenges such as migration, overcrowding, marginalized and underserved populations and difficult access to basic health services including leprosy services. Measures to address these issues should focus on training and proper coordination among stakeholders to assure long term sustainability of quality services in urban leprosy. Interventions of varying intensity should be tailored to the major health issues of specific urban localities.

0-019

Presentation Time: **Tuesday 17/09/2013 at 11:00 – 12:30**
Symposium Session: **Leprosy Control - Urban and Special Populations**
Presenter: Venkata Ranganadha Rao Pemmaraju

FEED BACK FROM PERSONS AFFECTED ON LEPROSY SERVICES IN URBAN AREAS -A RAPID ASSESSMENT STUDY

V. R. R. Pemmaraju[1,*], K. S. Baghotia [2], P. R. Manglani [3], R. Babu G [1], S. Peri [1], M. Mamatha GB [1], R. K. Allam [1], A. Samy [4]

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Introduction: Multi Drug Therapy (MDT) was provided at Urban health centres for all registered patients requiring chemotherapy. Disability care services were made available for patients with deformities in secondary level referral centres established under the Disability Prevention and Medical Rehabilitation (DPMR) programme of National Leprosy Eradication Programme(NLEP) in India. A Rapid assessment was done to get a feed back on leprosy services and their involvement in NLEP.

Methods: A sample of 30 urban locations in India has been identified for assessment of leprosy situation and capacity of health staff. The main tool is interview of persons affected from 30 urban locations. Questionnaire was designed and field tested before collecting information using Microsoft Excel. Field investigation team after training collected information and computerised the data. The data was analysed to understand the perspective of 365 persons affected seeking leprosy services in 77 health facilities. The persons affected include 52 patients who are living in leprosy colonies. Information about age, gender distribution, occupations of persons affected and residential status was collected and analysed. Information about patterns of referral to NLEP and treatment seeking were analysed.

Results: The analysis of data indicated that 266 persons (73%) contacted officials or staff of health system and 13% contacted private sector. Remaining 14% reported for consultation themselves. 11.8% of irregularity of collection of MDT was observed while interviewing 68 patients who were living away from health facilities. The irregularity of collection of MDT was seen in 4.7% of patients, who were staying closer to health facilities. 167 (46%) patients were having visible deformities. 21 patients were not satisfied with the services provided at urban health centres. Involvement of persons affected in planning and implementing urban leprosy services, is as low as 50%.

Conclusion: Leprosy is still an important public health problem. Private practitioners seems to be playing an important role in both referring new patients and ensuring disability care. Besides training of health staff to improve regularity of collecting MDT, the health facilities should be established closer for easier access. Involvement of persons affected by leprosy needs encouragement for better urban health services.

0-020

Presentation Time: **Tuesday 17/09/2013 at 11:00 – 12:30**
Symposium Session: **Leprosy Control - Urban and Special Populations**
Presenter: Mauricio Nobre

GENDER DIFFERENCES IN INTOLERANCE TO MULTI-DRUG THERAPY (MDT) FOR LEPROSY

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Introduction: Multi-drug therapy (MDT) is used world-wide for treatment of leprosy. The rate of medication tolerance resulting in change in MDT regimen varies in the recent literature, from 5% (Singh 2011) to 24% (Deps 2007). Risk factors for developing this intolerance are not well-understood. The objective of this study was to characterize groups of patients at higher risk for intolerance to multi-drug leprosy therapy (MDT) and identify potential factors which prompted a medication change in a leprosy referral center in northeastern Braziil.

Methods: A ten-year retrospective chart review of leprosy patients treated at a state referral center for leprosy in Natal, Rio Grande do Norte, Brazil from 1999 to 2008 was completed. Chart review included information on WHO operational classification of leprosy, age, gender, timing and type of adverse effects, and laboratory values when available. Non-normally distributed data were analyzed using the Mann-Whitney test. Outcome rates were compared using Fisher's exact test. P-values of less than or equal to 0.05 were considered statistically significant. To control for confounding by gender, age, and MDT class, multivariate logistic regression analyses were completed with intolerance and intolerance due to anemia as outcomes.

Results: Six hundred forty two people initiated and completed MDT for leprosy during the ten years included in the study. Of these, 612 (95.3%) had medical records available for review at the time of data collection. There were 91 (14.8%) adverse effects with associated change in MDT regimen. Medication intolerance was more frequent in women, those patients receiving the PB regimen, and in ages younger than 42 years. 81.3% of intolerance occurred within the first three months of MDT. The most common causes of medication intolerance were anemia (8.7%), headache (4.2%), cyanosis (1.8%), and gastrointestinal symptoms (1.6%). Both female gender (OR=2.63, p<0.001) and age less than the median of 42 years old (OR=2.7, p<0.001) remained risk factors for MDT intolerance in a multivariate model with a trend towards association of the PB regimen with MDT intolerance (OR=1.57, p=0.081). With intolerance due to anemia as the outcome, only female gender (OR=2.36, p=0.007) and age less than 42 years (OR=1.86, p=0.041) were associated.

Conclusion: We report a rate of adverse events requiring change in MDT of 14.9%, which is lower than the 24% reported by Deps (2007), but higher than the 5.1% reported by Singh (2011). This study did not take into account minor side effects of MDT, such as skin pigmentation due to clofazimine or minor anemia, which did not lead to change in MDT regimen. In the current study, the occurrence of anemia requiring change in MDT was more than twice as high in women as in men. Women treated with the PB regimen had the greatest chance of change in MDT regimen overall (23.6%) and related to anemia (13.8%). Our findings that female gender and younger age were associated with greater risk of medication intolerance and that 81% of intolerance events occurred within the first three months of MDT have important operational implications for drug intolerance monitoring during MDT therapy for leprosy.

0-021

Presentation Time: **Tuesday 17/09/2013 at 11:00 – 12:30**
Symposium Session: **Leprosy Control - Urban and Special Populations**
Presenter: Dr T M E Dabrera

"LEPROSY EPIDEMIC" IN A RURAL SRI LANKAN COMMUNITY

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Introduction: In the countries which still have high new case finding rates geographical pockets exist and such sub district level pockets contributes largely to finding of new cases. Such pockets are characterized by the detection of leprosy cases over a long period of time and this presence of leprosy for longer periods had caused continuation of transmission possible. Given the long incubation period of the disease and the presence of subclinical and yet infectious states, curbing transmission in such contexts has become a challenge. In contrast, this paper describes a Muslim community of displaced people in 1992 because of the civil unrest and having to settle down in a safe area away from their villages as displaced people among whom an unusually a high number of leprosy cases have been detected in 2012.

Methods: In 2012 an increasing number of leprosy cases were reported at the dermatology clinic at the base hospital, Puttalam, The alerted public health staff then conducted field clinics in the area of displaced people called *Thambapanni* in Puttalam which enabled the detection of 30 cases. Having detected such a large number of patients in field clinics a decision was made to do a house to house survey among this Muslim community of 166 households. Interviewer administered questionnaire and a clinical examination instrument were designed after consulting the Indian instrument used in the recently concluded Indian survey. Newly graduated doctors were used as field assistants together with public health inspectors, public health midwives and volunteers who visited houses in small teams of five health workers. A small component of screening for non communicable diseases such as blood pressure measurements, random blood tests for glucose and measurements of heights and weights (BMI calculations) were also added to the survey instrument as to maximize the use of house to house medical check-ups. In total six visits by the teams to the community that comprised of 12 days of survey and six field clinics to confirm the diagnoses were conducted in *Thambapanni*. Patients with confirmed diagnoses were issued the first pack of MDT and referred to the dermatology clinic at Puttalam Hospital for follow up. Others in whom the diagnosis was not confirmed were referred to the Dermatology clinic for confirmation. Data collected were entered in computers at the Regional Director of Health Office, Puttalam

Results: Field Survey and the Clinic yielded 70 leprosy patients. Out which 30 were children below 15 years of age and 23 cases of women. There was a preponderance of female patients. However 165 people who were expected to be residents were not available for examination at the field survey and majority of them are males.
Out of the patients detected only one patient had a grade 2 disability. Similarly only one case of Multi Bacillary Leprosy was found
Out of the individuals examined 7.5% had leprosy (both at the clinics and surveys)
20% of the households examined had at least one leprosy patient while 5% of the households had more than one patient. Meanwhile 3.6% of the households had at least one adult and a child affected.

Conclusion: This paper depicts the classic circumstances under which even low infectious disease such as leprosy could reach "epidemic" proportions. It shows conclusively the vulnerability to disease among displaced people due to civil unrests. Further the paper points to the consequences of neglecting neglected diseases amidst other health, political and social priorities.

O-022

Presentation Time: **Tuesday 17/09/2013 at 11:00 – 12:30**
Symposium Session: **Leprosy Control - Urban and Special Populations**
Presenter: Mr S Madhan

LEPROSY IN UNDER-PRIVILEGED TRIBAL POCKET IN SOUTH INDIA

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Introduction: Intensive leprosy control measure by Government of India has brought about remarkable reduction of leprosy burden in the country. Present issue seems to be the leprosy endemic regions of varying population sizes. It was reported from Adhaura in Bihar state of India (Indian J Lepr. 1988 Oct. 60(4):577-80) and Orissa state of India (Lepr Rev. 2000 Sep;71(3):377-81) that large number of new cases of leprosy were detected from tribal population. A referral leprosy hospital in Chhattisgarh state of India (Indian J Lepr. 2011 Jan-Mar;83(1):23-9) reported that 9% among 151 annual new cases was from tribal population. Government of India has been implementing Special Action Plan in 2012 in the identified leprosy endemic regions (blocks with about 200,000 population each which are sub-units of districts) which may include some tribal regions.
Coimbatore district is an industrial region situated in Tamilnadu state bordering Kerala state. The border area is characterised by hilly region, forests and tribal population. The district reports 26,901 tribal population that is 0.7% of total population of the district (3,956,476). Leprosy situation in Thondamuthur block of Coimbatore district which has good number of tribal population is presented.

Methods: This is a retrospective analysis of newly registered leprosy cases in Thondamuthur Block, Coimbatore district, India. Leprosy treatment register in the three Primary Health Centres in this Block were the source of data from 2004 to 2012. New cases from tribal community was compared with block level data with regard to number, type of leprosy, child cases and visible deformity at detection. Statistical analysis was done using Epi-info6.

Results: Population of the block was 146,425 including 4378 (3%) tribal population. Thondamuthur block registered a total of 121 new leprosy cases during the study period which includes 16 from tribal community. About 1 to 4 new cases were registered from tribal community annually. MB proportion was less (p=0.003) among tribal (12%) than total for the block (45%). Child proportion (p=0.003) and visible deformity among new cases were higher among tribal community than for the whole block. One health sub-centre alone had reported 11 leprosy cases during this period. Many villages did not report leprosy case.
One group of villages had most of the new cases reported. Less MB proportion was contrary to the general observation that MB leprosy was more among tribal population than non-tribal. A study on healthcare-seeking behaviour (J HEALTH POPUL NUTR 2012 Sep;30(3):353-365) clearly show that the present service-delivery system needs to be reviewed carefully in order to establish a practical, community-friendly healthcare, culturally-adapted delivery system for the tribal population.

Conclusion: Magnitude of leprosy in Tribal community seems to be disproportionate to general trend. Tribal population might be vulnerable for leprosy probably due to their remoteness, poor literacy and socio-economic status and/or genetic factors. Operational issues like availability of services and reach of leprosy control services need to be compared to that of non-tribal region. It is possible that specific groups like tribal population may be outside the reach of leprosy control programme. This study recommends detailed analysis of leprosy situation and development of sustainable strategy specific to tribal region including good monitoring system to ensure positive impact.

O-023

Presentation Time: **Tuesday 17/09/2013 at 11:00 – 12:30**
Symposium Session: **Leprosy Control - Urban and Special Populations**
Presenter: Dr Atul Shah

SPECIAL AWARENESS DRIVE FOR NEW CASE DETECTION IN URBAN SLUMS OF MUMBAI

A. Shah [1,*], N. Shah [2]

[1]Director, [2]Novartis Comprehensive Leprosy Care Association, Mumbai, India

Introduction: In an effort to limit the number of people afflicted by leprosy in the mega-city of Mumbai, Novartis Comprehensive Leprosy Care Association initiated a partnership with the Mumbai District Leprosy Program Office at a workshop organized for paramedical workers. In fact, was a good example of what private public partnerships can do. Novartis has been donating the global supply of leprosy drugs to countries around the world, including India, through World Health Organization and is committed to achieving a world free of leprosy. India, with 53 per cent of the world's leprosy case load is the largest beneficiary. The program touched upon the challenge of detecting leprosy cases in a city with a large migrant population. A special awareness drive was recommended as a solution at the joint workshop. It was thought that such special drives will speed up early identification of cases so as to limit and eventually reduce the transmission of leprosy.

Methods: In consultation with the grass root workers, a work plan was drawn up to extend surveys to the uncovered population in the urban slums, besides incidental benefit of recognizing those in need for DPMR services.

At the review meetings held for formulating the leprosy education drive in the slum areas it was decided that NCLCA supported drive would use the trained government staff itself as opposed to other "Selective Special Drive" by others in which community volunteers are trained for 2 days to conduct search. NCLCA supported drive shall focus on house-to-house leprosy awareness creation in areas untouched in the previous year. The approach developed was simple and derived from the earlier leprosy elimination campaigns. Hoardings were put up announcing the drive with a message from a local political leader and seeking co-operation of the residents. Posters were prepared for the IEC campaign and put up in the community places. Leaflets were used to show the inhabitants the signs and symptoms of leprosy and leading questions were asked as to whether any member of the family has such signs and symptoms.

Results: In this drive a team of workers visited the local houses, where the inhabitants residing in the houses were enumerated and educated with the aid of special leaflets depicting signs and symptoms of leprosy. At the end of the sessions, inhabitants were asked to come forward asking for clarity on some of the symptoms, which they felt were relevant and could be associated with leprosy, making the m a suspect case. Since all the workers, supervisors and medical officers taking part in the drive were available in the field, on the spot confirmation was quick. Nearly 47000 houses were visited, 200,000 population was enumerated, 150,000 were examined and 30 new cases were detected. The prevalence rate of these areas varied from 0.43 to 2.41 in the enumerated population and 0.61 to 3.84 in the examined (covered) population.

Conclusion: In conclusion, quick confirmation of cases with trained workers, selecting the uncovered population for case detection, intense awareness campaign and person to person dialogue with houses visited may be considered as suitable technique for urban slum areas. Temporary increase in PR will need to be considered and NCDR will need to be checked in the coming year.

O-024

Presentation Time: **Tuesday 17/09/2013 at 11:00 – 12:30**
Symposium Session: **Nerve Function and Impairments**
Presenter: Dr Irina Raicher

PREVALENCE AND CHARACTERISTICS OF LEPROSY-RELATED NEUROPATHIC PAIN: VALIDATION OF TWO TOOLS

I. Raicher [1,*], P. R. Stump [1], R. Baccarelli [2], L. H. Marciano [2], S. Ura [2], M. C. Virmond [2], M. J. Teixeira [1], D. C. de Andrade [1]

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Introduction: Pain is a prevalent complaint in Leprosy (Le) patients. Among the pain syndromes in Le, neuropathic pain (NeP) has been described in greater proportion, however studies on Le patients with pain in large samples are scarce. For the general practitioner diagnosis of NeP can be challenging, screening tools have been evaluated to detect NeP in Le, but have not been validated in large samples of Le patients with pain. The profile of NeP symptoms in Le has never been compared to other aetiologies. The present study was aimed at assessing the sensitivity and specificity of the DN-4 to detect NeP in Leprosy (Le) patients with pain and to compare Le-related NeP symptoms profiles to NeP of other causes.

Methods: Le patients with primary complaint of pain were evaluated by trained health personnel who filled out the Brazilian Version of the DN-4 questionnaire and the Brazilian Version of the Neuropathic Pain Symptom Inventory (NPSI). Then patients were seen by a blinded pain specialist who classified them according to the presence or not of defined neuropathic pain (d-NeP) according to the new IASP definition. Leprosy clinical characteristics, pain profile and the sensitivity and specificity of the Brazilian Version of the DN-4 questionnaire for defined neuropathic pain were evaluated. NPSI were compared between Le patients (n=87) and neuropathic pain patients of other aetiologies (n=94).

Results: The specialist detected neuropathic pain in 72 (80%) patients. The DN-4 questionnaire detected neuropathic pain in 77 (95.6%). Agreement occurred in 79 cases (87.8%). Sensitivity was 96% and Specificity, 58%, with a power of 98% and false negative response in 3 individuals. NPSI scores showed not to be statistically different between Le and neuropathic pain of other aetiologies, except for number of paroxysms during the last 24h and stabbing pain. Pain triggered by stabbing score was 5.95+/-4.1 in Le and 4.01+/- 4,07 in NeP of other causes (p=0.001). Higher scores in the NPSI correlated with more severe interference of pain in activities of daily living (rho=0.53, p< 0.0001).

Conclusion: The DN-4 showed a high sensitivity as a screening tool for neuropathic pain in Le cases. Also these results suggests that Le related NeP showed similar symptoms profiles as NeP of other aetiologies, with a similar negative impact in daily activities. This information could be useful in the design of treatments trials for NeP in this population.

0-025

Presentation Time: **Tuesday 17/09/2013 at 11:00 – 12:30**
Symposium Session: **Nerve Function and Impairments**
Presenter: Jose Garbino

SOFTWARE FOR ASSESSING NERVES IN LEPROSY

J. A. Garbino [1,*], L. F. M. Bento [2], T. Marques [1], C. M. D. P. Quaggio [1], S. M. T. Nardi [3], A. R. J. Nicholl [2], C. Bentim [4], M. C. L. Virmond [5]

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Introduction: The diagnosis of neurological lesions inleprosy is usually performed by a clinical examination which consists of nerve palpation, sensory mapping, and muscle strength testing associated with other methods such as visual analogical scale of pain assessment. These tests can be together numerically graded to constitute parameters for monitoring nerve function, starting with the diagnosis and continuing throughout the specific treatment with multidrug therapy and immunosuppressive therapy during reaction episodes. These clearly characterized parameters facilitate clinical trials. Currently, manually prepared records are attached to the patient's chart, hindering the organization and the immediate or long-term visualization of nerve function, aiming at reliable longitudinal studies and statistical analyses.

Hence, the authors developed a software programme for data logging neurological leprosy patients, which may permit the automatic construction of a Clinical Score (**CS**), time series graphs, reports, and real time reliable statistical analyses.

Methods: The authors analysed the protocols of investigation of neural function that are routinely used in attendance at the Instituto Lauro de Souza Lima and coded the epidemiological and general clinical data to the patient's identification icon.The results of the examinations of sensory mapping (Semmes-Weinstein), voluntary motor testing, nerve palpation, and visual pain scale are presented separately in icons and an internal logic was created to convert them into **CS**, reflecting the degree of their impairment. The chosen **CS** was previously used in a randomized clinical trial which proved it to be appropriate for statistical analysis (Garbino et al, 2008). The **CS** data and the therapy, i.e., medication dosage · immunosuppressive or anti-algic drugs · are transformed into linear graphs of each nerve throughout the follow-up period in the clinic. In order to test the efficacy of the software, simulations were performed with the inclusion of retrospective data from medical records of 30 patients and the prospective evaluation of 30 patients followed up for 3 months to 3 years. Correlations were also observed with the result of the **CS** of each nerve during medical treatment and after nerve surgery.

Results: The Software shows patient´s identification, epidemiological and clinical examination data, as well as overall ratings, in separate windows. There are special windows for each individual clinical test used, i.e.: nerve palpation, sensory test, motor voluntary test, visual analog scale for pain and therapeutic dosage. The software offers simplified visualization of the evolution of neuropathy by the **CS**, linear graphs for each nerve and dosage of immunosuppressive or anti-algic drugs. In all, it became a powerful tool to help making decisions regarding the patient´s treatment. It also offers the possibility of statistical studies, transverse and longitudinal analyzes of all information obtained in the evolution of drug treatment against **CS** relating to the doses used for each patient, and also permits comparison of the responses to surgical procedures in research protocols.

Conclusion: For this presentation the authors showed the windows for each evaluation, the graphical results for each patient with all nerves, drug graphs and the possibilities for data comparison among them.

0-026

Presentation Time: **Tuesday 17/09/2013 at 11:00 – 12:30**
Symposium Session: **Nerve Function and Impairments**
Presenter: Mr Sathish Paul

TECHNICAL SPECIFICATIONS FOR REHABILITATION DEVICES PROVIDED FOR LEPROSY AFFECTED PATIENTS BY THE LEPROSY MISSION TRUST INDIA – A REVIEW

S. K. Paul [1,*], P. Gupta [2], M. Karmakar [3]

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Introduction: The nerve damage in a leprosy affected person causes significant impairments if not detected and treated early. The impairments further leads to disability in carrying out their normal activities of daily living. Various splints are prescribed and provided to the patients while they are undergoing treatment for neuritis, reactions and in pre and post operative tendon transfer surgeries. Modifications and adaptations are designed and fabricated to patients who find it difficult to do their activities of daily living with their deformities. Different processes and materials are followed and used by the therapists and technicians to fabricate these splints and materials for the leprosy affected patients within all the Leprosy Mission Trust India (TLMTI) centers. A review was initiated and conducted within all the Leprosy Mission Trust India (TLMTI) centers to know the technical specifications and standards that are maintained in fabricating these devices. The details will help the patients in being provided with a simple, cost effective and a safe device with maximum efficiency.

Methods: A comprehensive questionnaire was used to collect details on the specifications and fabrications techniques of devices that were fabricated by centers. The devices were intially categorized according its functions and the effectiveness on a patient. The designing process, time spent, the materials used and the cost involved in the fabrication of the similar kinds of splints and devices at different centers were compared and critically analyzed. A brief description of the device and the application of the device with its specific indications and the contraindication were documented. The devices and splints were finally categorized according to the utility to a patient and the innovation involved in developing it.

Results: The collation and the critical analysis on the data showed that the rehabilitative device were of maximal utility to a patient affected by leprosy having either impairment or gross deformity and limitation in carrying out the normal activities of daily living. The results also suggest and provide information on how to fabricate low cost devices in field conditions. Simple techniques and procedures with minimal use of locally available materials are adequate to fabricate devices and appliances with high efficiency.

Conclusion: The elaborate fabrication techniques of certain devices were simplified after comparing with that of the different centers. Developing and maintaining uniform standards in fabricating rehabilitative devices will help the patient based in the institution and in the community to get devices with maximal efficiency at a very minimal and affordable cost.

0-027

Presentation Time: **Tuesday 17/09/2013 at 11:00 – 12:30**
Symposium Session: **Nerve Function and Impairments**
Presenter: Mr Sathish Paul

EFFECT OF TACTILE SENSORS IN DETECTING PRESSURE THRESHOLD OF ANESTHETIC HANDS

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Introduction: The nerve damage in a leprosy affected person causes significant impairments if not detected and treated early. Impairments further leads to inability in carrying out their normal activities of daily living. The nerve damage in the extremities leads to loss of sensation and sweat along with motor paralysis. Identifying the pressure threshold in the patients affected by leprosy at an early stage will help in detecting high pressure areas thus preventing secondary impairments. The research aims in developing tactile sensors embedded in fabrics and used with gloves which when provided to the leprosy affected persons will help in predicting the pressure threshold level while carrying out their functional activities.

Methods: Customized software was developed and the variations in the superficial pressures of the hand were recorded using tactile sensors while the patients were being involved in their routine daily living activities. The distribution patterns of the pressure in pre defined areas of hand were traced while the patients hand function activities involved the grasp and pinch powers. The study were conducted on (n = 100) patients from different job profile, gender and from different geographical location.

Results: The glove embedded with the tactile sensors helped identify pressure variations in the pre defined areas while the patients were involved in specific hand function activities. The pattern of the result suggests that the pressure is maximal while in the middle of an activity and is minimal at the onset and the end of the activity. The buzzer set along the glove gave an instant auditory feedback to the patient on the activity which causes prolonged high pressures to the hand.

Conclusion: The robust sensors can be used on any patients irrespective of their profession and will help predict the pressure threshold while doing their normal activities. The cost effective device also will help predict the ulcer prone areas in the anesthetic hands and feet in the leprosy affected patients. The portable device can be used anywhere in the community and will help in prescribing appropriate orthosis and adaptive tools and appliances for the patients and help prevent ulcers while doing their activities.

O-028

Presentation Time: **Tuesday 17/09/2013 at 11:00 – 12:30**
Symposium Session: **Nerve Function and Impairments**
Presenter: Thanyakittikul Pojana

THE EFFECTIVENESS OF MODIFIED FELTED FOAM DRESSING IN CHRONIC PLANTAR ULCER TREATMENT IN PERSONS AFFECTED BY LEPROSY AT RAJ PRACHA SAMASAI INSTITUTE, SAMUTPRAKAN PROVINCE

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Introduction: According to information related to persons affected by leprosy who attended anesthesia skin Out Patient Department (OPD) of Raj Pracha Samasai Institute (RPSI), it was found that the most common ulcer among them was chronic plantar ulcer. The average time that persons affected by leprosy had suffered this type of ulcer was 5 year per person. As it took a long period of time to treat plantar ulcer, it was unavoidable affected the quality of life of persons affected by leprosy. This research was done to study the effectiveness of felted foam dressing in curing chronic plantar ulcer.

Methods: This quasi experimental research was conducted by using one group pretest-posttest design to compare the effectiveness of ulcer care in leprosy patients who lived in the leprosarium of RPSI and who attended ulcer care service at chronic ulcer clinic, anesthesia skin OPD of RPSI. Study volunteers were 30 persons affected by leprosy who had chronic plantar ulcers. Inclusion criteria were persons who had simple ulcers for at least 5 years and were able to communicate. Data analysis was done using software computer programs. Frequency was used to display personal information. Paired – Sample T · Test was used to identify the correlation of pre and post size of ulcers. One Way Anova and Independent Sample t – test were used to analyze correlation between contributing factors and duration taken for ulcer curing. *Pearson Correlation* Coefficient was used to analyze the correlation between age and duration taken for ulcer curing. A p-value of <0.05 was considered indicative of a statistically significant difference or association.

Results: After intervention, the size of ulcers of the study subjects were significant smaller than before. Most of study subjects' ulcers were cured (96.9%) within eighth week. There was only one subject who had 20mm ulcer that was not completely cured. 87.5% of study subjects were satisfied with the treatment. There was significant positive association between marital status and the size of plantar ulcer before intervention, and duration taken for ulcer curing. There was also significant positive association between age and duration taken for ulcer care.

Conclusion: It was suggested that to provide quality service to persons affected by leprosy who have chronic plantar ulcers, regularly wound assessment should be done. To establish sustainable services with continual wound assessment, feet health records should be produced for patients who have plantar ulcers. Experimental study should be further carried out to compare the effectiveness of applying felted foam dressings betweencontrol and experimental groups or compare the effectiveness of different wound care dressing. Self care behavior of the study subjects should also be included as expected contributing factor in the further study.

O-029

Presentation Time: **Tuesday 17/09/2013 at 11:00 – 12:30**
Symposium Session: **Nerve Function and Impairments**
Presenter: Clarice Tanaka

ASSOCIATION DEGREE OF PHYSICAL DISABILITY AND POSTURAL CONTROL IN SUBJECTS WITH LEPROSY

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Introduction: Leprosy (LP) is an infectious disease caused by *Mycobaterium leprae* which can cause visual, systemic and nervous disturbances. LP, if not diagnosed and treated properly, can lead LP subjects to physical disabilities and deformities. The degree of physical disability is measured by neurological assessment of eye, upper and lower limbs that ranges from 0 (zero) to II. Physical impairment associated to nerve changes can compromise the maintenance of balance. The maintenance of balance requires proper integration of visual, somatosensory and vestibular systems to organize adequate motor strategy to perform daily tasks. The objective of this study was to correlate the degree of physical disability and postural control in subjects with leprosy (LP).

Methods: The study comprised 24 subjects with LP (age=43.88±11.96 years; BMI=28.61±3.85 kg/cm^2), 19 men (79.2%) and 5 women (20.8%). We excluded subjects who had amputation of upper or lower limbs; neurological diseases; and/or wounds on the plantar region. Subjects were selected from Unidade de Atendimento Ambulatorial de Fisioterapia do Hospital das Clínicas da Faculdade de Medicina da Universidade de São Paulo, Brazil. All participants signed a consent form. We evaluated the degree of physical disability (PD) of right (R) and left (L) eye (PDRE; PDLE) and leg (PDRL; PDLL) which ranges from 0 to II according to the Ministry of Health (Brazil). Subjects stood barefoot on a force plate (Pro Balance Master 8.1.0, Neurocom®, Inc, Oregon, EUA) to evaluate the postural control. Three 20-second trials were collected under four different sensory conditions: (1) eyes-open on a stable plate (2) eyes-closed on a stable plate (3) eyes-open on a mobile plate and (4) eyes-closed on a mobile plate. Four variables were acquired from center of pressure displacement (COPd) for each condition: mean velocity of COPd in anterior-posterior (a-p) (MVy) and medio-lateral (m-l) (MVx) directions, and root mean square of COPd in a-p (RMSy) and m-l (RMSx). Quotients were calculated to quantify the sensory (visual, proprioceptive and vestibular) contributions to postural control: visual quotient (VQ), the ratio between variables of condition (2) and (1); proprioceptive quotient (PQ), ratio between variables of condition (3) and (1); vestibular quotient (VestQ): ratio between variables of condition (4) and (1). Spearman's rank correlation coefficient was used to associate the degree of disability to each quotient value in LI. Significant level was adopted as p<0.05.

Results: The mean time since diagnosis of Leprosy was 5.33±4.11 years [8 (33.3%) had Indeterminate LP; 1 (4.2%) Tuberculoid LP; 2 (8.3%) Borderline LP; 6 (25%) Lepromatous LP; and 7 (29.2%) Not specified LP]. We found significant positive and moderate association between PDRL and PQ MVx (p=0.014; r=0,493), PDRL and VQ RMSx (p=0.03; r=0.443), PDRL and VQ RMSy (p=0.021; r=0.470), and PDRL and VestQ RMSx (p=0.006; r=0.544).

Conclusion: Subjects with LP showed association between the degree of physical disability and postural control.

O-030

Presentation Time: **Tuesday 17/09/2013 at 11:00 – 12:30**
Symposium Session: **Training in Leprosy**
Presenter: Chris Schmotzer

BUILDING CAPACITY AND COMPETENCE FOR LEPROSY WITHIN INTEGRATED PROGRAMMES

C. Schmotzer [1,*]

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Introduction: The objective of this paper is to contribute to building capacity and competence for leprosy within integrated programmes.
With decreasing prevalence and incidence worldwide, capacity and competence building in leprosy is a challenge. Leprosy control can only be sustained in integrated programmes with reliable partners, relevant stakeholders, fitting into the national/sub-national health care structures. All stakeholders are in need of building capacity and competence. The roles of different levels of health care workers in leprosy control must be clearly defined and addressed accordingly.

Methods:
1. Development of national conceptual framework for leprosy control
2. Community mobilization in hyper-endemic areas
3. Awareness programmes for primary health care
4. Linking leprosy control with basic dermatology
5. Needs-based, task-oriented training
6. Ensure reliable expertise at national/regional resource centres
7. Lobby for continued political commitment

Results: It was been found that the following practical steps will significantly contribute to cost-effective, efficient capacity and copetene building:
1. Conduct situation analysis and training needs assessment
2. Review national guidelines for leprosy control
3. Net-work with capacity building in basic dermatology
4. Strengthen National Resource Centres for Leprosy

Conclusion: Adequate capacity and competence building in leprosy now is essential for the future of leprosy control to prevent leprosy from becoming a forgotten disease with the risk of resurgence

O-031

Presentation Time: **Tuesday 17/09/2013 at 11:00 – 12:30**
Symposium Session: **Training in Leprosy**
Presenter: Stephen Levi

SUSTAINABILITY OF LEPROSY SERVICES AND FINANCIAL SELF-RELIANCE OF AN ERSTWHILE LEPROSY HOSPITAL: SHARING EXPERIENCES FROM TLM COMMUNITY HOSPITAL AT DELHI METROPOLIS INDIA.

S. R. J. Levi [1,*], S. Mir [1], S. Mir [2], R. Thandawan [1], S. Mehta [2], S. Abraham [3]

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Introduction: India is branded as 2nd biggest or fastest growing economy in the World; but on the contrary it continues to be developing stage with many challenges faced such as poverty, food scarcity, deprived of basic amenities, weak infrastructure, social problems etc. The gap between the rich and poor is widening markedly. An estimated 33% of the total Indian people fall below the

international poverty line of US$ 1.25 per day. A Spurt in India's economic growth, recent global recession, and drop in Leprosy prevalence post integration has changed the mindset of the donor. National Capital Region of Delhi is the fastest growing metropolis in the world with population of 17 million (2011 census). TLM community hospital established in the year 1984; started as a small urban drug delivery point; later grown into exclusive leprosy referral hospital, now transforming into a community hospital attracting general cases. It is the only urban centre of it's kinds focusing on general dermatological conditions attracting huge number of leprosy cases from faraway places.

Methods: This is a retrospective, descriptive study of analysing the patient data and financial report during 5 yr period (2008-12) were analysed. Internal resources (manpower, material, etc) and external environment (market anaylsis, competitors) scanned. The title of the institution rechristened from 'Leprosy mission hospital' to TLM community hospital. The outpatient complex was reorganised thereby improving patient flow; special attention on renovate patient amenities made in a phased manner. The Staff was motivated by organising 3 rounds of '*Personality development and leadership skill training*' through 'Saarthi program' sponsored by Dr Reddy Laboratories. The curriculum included soft & etiquette skills, leadership skills, were delivered through didactic lectures, experiences shared through real life skits. Multi skilling and tasking encouraged among the surplus staff category. The Image and branding of the institution re-established. The data stored was retrieved and studied from Hospital Information System of TLM Community hospital.

Results: In 2012, there is 18% rise in new leprosy cases detected in hospital on comparing that of previous year 2011. A total number of new, CAC, revisits leprosy cases seen over 5 year periods were 1595, 2369 and 37144 respectively; there is 8% increase in new leprosy cases, 6% decrease in new 'care after cure' leprosy, 2 % increase in revisits on comparing the 5 year average. A total number of inpatients admitted over the 5 year periods were 4241; there is 10% increase in-patient admission comparing the 5 yr average [with 18% increase in eye, 48% increase in general cases, 6% drop in leprosy admissions]. A Total number of non-leprosy cases seen over the 5 yr period were 2,32,513; of which 39% new and remaining 61% were review consultations. The institute has achieved a financial sustainability of 36% in 2008, 39% in 2009, 63% in 2010, 67% in 2011 and 83% in 2012 respectively. Patient has rated 5 star status on the internet.

Conclusion: In the post integration era, transformation of exclusive Leprosy referral hospital into community hospital, by escalating non leprosy services has attracted more new leprosy cases. Multi skilling /tasking helped us to avoid redundancy of staff. The new leprosy case detected annually shows a steady rise comparing the previous years. There is also significant reduction in stigma as general patients report in large numbers to an erstwhile leprosy hospital. The hospital is able to overcome all challenges and achieve self reliance.

O-032

Presentation Time: **Tuesday 17/09/2013 at 11:00 – 12:30**
Symposium Session: **Training in Leprosy**
Presenter: Mrinmoy Karmakar

EFFECTIVENESS OF TRAINING OCCUPATIONAL THERAPY AND PHYSIOTHERAPY INTERNS IN LEPROSY

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Introduction: Training is often regarded as the solution to the lack of expertise in leprosy in the general health care system. One of the remaining challenges for leprosy control activities at country level is to build and maintain leprosy expertise among general health care workers, particularly in countries where endemicity of leprosy is low.
This study was designed to assess the effectiveness of training imparted to interns in Occupational Therapy and Physiotherapy at an urban leprosy referral hospital in a metropolis in India during the period June 2012 to February 2013.

Methods: A total number of 40 interns, 17 Occupational Therapy (OT) & 23 Physiotherapy Interns (PT) underwent training on "Clinical and surgical leprosy". Pre-test and post-test was designed that checked their performance on the following sections: Clinical Leprosy, the Eye in Leprosy, Prevention of Impairment and disability (POID) Reconstructive surgery (RCS), Occupational therapy & Hand therapy and Podiatry. The trainee's feedback was also taken into consideration to evaluate the training program.

Results: Paired t-test was used to analyze the results of the pre-test and post-test scores of each section. There is a significant difference between the pre-test and post-test scores in all the sections (p-value=.000). Feedback from the trainee showed that most of them agreed that they have learnt new skill and have gained new knowledge and also they will be using the newly learnt skill in their practice.

Conclusion: Though training has improved the knowledge of leprosy among interns in OT and PT but with the decreasing number of leprosy patients, the question arises about how much the interns will be retaining in their clinical practice, because they will be coming across patients only at fairly long intervals. A long term follow up needs to be done to find out how much the trainees have retained.

O-033

Presentation Time: **Tuesday 17/09/2013 at 11:00 – 12:30**
Symposium Session: **Training in Leprosy**
Presenter: Artur Gosling

THE EXPERIENCE OF LEPROSY DERMATOSIS TRAINING FOR FAMILY HEALTH PROFESSIONALS IN PIRAÍ, RIO DE JANEIRO

B. Carvalho [1], I. Lavinas [1], A. P. Gosling [1], K. Brum [1], E. Campos [1], F. Lutz [1], M. K. Gomes [1,*] and Interdisciplinary Program of Leprosy - HUCFF/UFRJ

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Introduction: Since 2010 the city of Pirai in Rio de Janeiro state has a decentralization program for leprosy control associated to "Des(mancha)" Brazil Project. Family health professionals are one the most important part of approach for leprosy care in communities associated with primary units care. The purpose of this study was to present the results of family health strategy training in leprosy dermatosis.

Methods: Professors of dermatology performed the training of family health professionals during clinical sessions for the assessment of cases with possible diagnosis of leprosy and other dermatosis in Piraí County in Rio de Janeiro. The clinical sessions occurred during the year of 2012, each one with different case studies, clinical dermatosis characteristics and instruments of assessment and diagnosis.

Results: 183 people with injuries in skin were assessed during 9 clinical sessions and 11 new cases receive diagnosis of leprosy, 7 multibacillary and 4 paucibacillary. One of the cases with leprosy has less than 15 years old and two cases change the classification for multibacillary. It was realized the control of 94% of the contacts of these cases. The professionals found others dermatosis such as sporotrichosis, superficial mycoses and melanosis. A flowchart for assessment and diagnosis of leprosy was organized to help family health professionals.

Conclusion: The training helps family health professionals to improve assessment and diagnosis of new cases of leprosy. There was an increase of the interaction between all care units in Piraí helping the knowledge of leprosy.

O-034

Presentation Time: **Tuesday 17/09/2013 at 11:00 – 12:30**
Symposium Session: **Training in Leprosy**
Presenter: Mr Henk Eggens

THE DEVELOPMENT OF A TRAINING NEEDS ANALYSIS IN LEPROSY CONTROL FOR NATIONAL PROGRAMMES

H. Eggens [1], C. Phaff [2,*]

[1]Eggens Consult, Couto do Mosteiro, Portugal, [2]NLR, Maastricht, Netherlands

Introduction: The expected further reduction of new leprosy patients requires the formulation of a plan how leprosy expertise is developed and maintained as an integral part of strategies for sustaining leprosy control and referral systems. This paper relates the development process of a Training Needs Analysis (TNA) as part of an all-inclusive capacity development strategy for leprosy. A TNA provides the needs of a leprosy control program on whom to train (type of staff), what to train (training domains), how to train (methods and tools) and where to train (at national and international level). It also includes an estimated budget and the required contextual conditions.
A draft proposal for a Capacity Development Strategy in leprosy was developed with support from Netherlands Leprosy Relief in 2009. The authors presented the untested strategy paper in three WHO regional meetings for national leprosy control managers: Brazzaville, Congo (AFRO, May 2010), Colombo, Sri Lanka (SEARO, July 2010), and Beirut, Lebanon (EMRO, December 2010).

Methods: The first step in developing a sustainable and systematic plan for human resource development in leprosy control programs is a Training Needs Analysis (TNA), implemented by the national leprosy control manager. A TNA distinguishes six phases: 1.Context Analysis, 2.Capacity Needs Inventory, 3.Performance Analysis, 4.Training Solutions, 5.Training Program and 6.Management's arrangements. In 18 well-defined steps, the size and content of existing staff performance gaps in Leprosy Control are revealed. What differences do exist between "What should be done" and "What's done in reality"? What can be done to decrease or eliminate these gaps?
After a TNA, the national leprosy control manager, together with his/her staff, is expected to be able to write up a systematic, result-based, multi-annual training program for national leprosy control staff that deals effectively with identified staff performance gaps and resulting in improved service delivery in future.

Results: After the presentation of the untested draft proposal to the national leprosy managers of three WHO regional meetings in 2010, the applicability of the adapted and improved draft TNA was tested by the authors in a 3-4 day workshop with national and/or regional leprosy staff in the following countries: Mozambique (April 2011), Indonesia (June 2011) and Nepal (August 2011).

In none of these countries the TNA resulted within a reasonable time span in a realistically budgeted, systematic, result-based, multi-annual training program.

Conclusion: The Training Needs Analysis developed by the authors as part of a comprehensive Capacity Development Strategy for leprosy control was considered a useful tool by the developers and supported by NLR and WHO Global Leprosy Program. However, after testing the tool in three different settings it appears that it is not yet ready for broad implementation. Further analysis is needed to enhance this tool for national leprosy control programs.
Charles Phaff & Henk Eggens, 27 January 2013

O-035

Presentation Time: **Tuesday 17/09/2013 at 14:00 – 15:30**
Symposium Session: **Chemotherapy 1**
Presenter: Maria Lucia Penna

PRIMARY RESULTS OF CLINICAL TRIAL OF UNIFORM MULTIDRUG THERAPY FOR LEPROSY PATIENTS IN BRAZIL (U-MDT/CT-BR): REACTIONS FREQUENCY IN MULTIBACILLARY PATIENTS.

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Introduction: Many believe that the regular treatment for multibacillary (MB) leprosy cases could be shortened. A shorter treatment allowing a uniformity treatment for all cases turns case classification superfluous simplifying leprosy control.

Objective: This is a preliminary report of the frequency of reactions among MB patients.

Methods: Open-label, randomised clinical trial design was used for comparing two treatment regimens (R-MDT treatment versus U-MDT treatment) with monthly follow-up during treatment and the first six months after treatment for MB patients in the UMDT study group, followed by yearly post-treatment visits for six years. The study population included newly diagnosed, previously untreated PB and MB leprosy patients, as well as returning defaulters and relapse cases - provided the last dose of treatment was more than 5 years before – all between the ages of 6 and 65 years. Patients who were on tuberculosis treatment, steroid treatment or with overt signs of AIDS were not included, nor were patients not residing permanently in the area or unable to attend the clinic every month during the treatment and follow-up periods.
The experimental group received 6-month U-MDT regimen - 6 months of dapsone and clofazimine daily and once a month rifampicin – and the control group received the treatment recommended by WHO (6 months treatment with 2 drugs for PB and 12 months treatment with 3 drugs for MB patients).
We analyse the frequency of first reaction in MB patients with Kaplan-Meier method and of recurrent reaction with Poisson regression, having treatment group and baciloscopic index level as independent variables.

Results: The total person-time observed was 498613 person-days, i.e. 1366.063 person-years, with a maximum of 5.20 years of follow up. One relapse was observed in 2011 in a patient of UMDT group with initial BI equal to 4 after 4.5 years of the beginning of treatment.
Kaplan-Meyer curves showing the free of reaction proportion in each group as a function of time separated at 6 months when the MDT for the experimental group is finished with the biggest distance around one year but the curves converges around 2 years. The frequency of at least one reaction was higher in those with high BI. The incidence of recurrent reaction presented positive association with high BI level and UMDT treatment. The estimate shows that the association between multiple reactions is stronger with BI level than with the study branch.

Conclusion: The frequency of reactions was associated to treatment group, but further analyses are needed to quantify the difference in disease load between those groups.

O-036

Presentation Time: **Tuesday 17/09/2013 at 14:00 – 15:30**
Symposium Session: **Chemotherapy 1**
Presenter: Krishnamurthy Venkatesan

PHARMACOKINETICS OF CLOFAZIMINE WITH MULTIPLE DOSE ADMINISTRATION IN LEPROSY PATIENTS

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Introduction: The Clinical and other experimental studies conducted at NJIL&OMD, Agra (India) have shown that there is a not so-linear relationship between clofazimine dose and plasma drug levels and so the therapeutic monitoring of clofazimine on the basis of plasma level is not possible.

Methods: Blood samples were collected from leprosy patients attending the Institute OPD and were on 30/60 daily doses of 50 mg clofazimine 50mg. Also blood samples were collected from patients admitted in the ward and on 50 mg clofazimine daily for 7 / 14 days at 3,5,7 and 12 hrs after the last dose. Clofazimine levels were determined in plasma by spectrophotometric method. AUC 0-12 h was calculated

Results: The basal plasma drug levels in patients after 30 and 60 daily doses of 50mg of clofazimine were 0.7 and 0.8 mg/L respectively. With seven daily doses of 50 mg clofazimine the oral availability of the drug, as defined by Area under Concentration-Time Curve, AUC 0-12 h, was 4.40 mg/L.h while it was 6.8 mg/L.h after 14 daily doses. The basal plasma levels were 0.28 and 0.42 mg/L respectively after 7 and 14 daily doses.

Conclusion: These findings suggest that a steady state might be reached with 30-60 daily doses of the drug. The observation that AUC values/basal plasma levels are not so much proportionate to the length of the drug administration is indicative of extensive deposition and retention of the drug in the tissues and slow release from there. These findings will have relevance in the light of administration of clofazimine for long period.

O-037

Presentation Time: **Tuesday 17/09/2013 at 14:00 – 15:30**
Symposium Session: **Chemotherapy 1**
Presenter: Bhushan Kumar

CLINICAL CHARACTERISTICS AND OUTCOME IN MULTIBACILLARY(MB) LEPROSY PATIENTS TREATED WITH 12 MONTHS WHO MULTIDRUG THERAPY MB REGIMEN (MDT MBR): A RETROSPECTIVE ANALYSIS OF 730 PATIENTS FROM INDIA.

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Introduction: A major breakthrough in the treatment of leprosy came when World Health Organization (WHO) introduced multidrug therapy (MDT) in 1982 to overcome the drawbacks of dapsone monotherapy.[1] In order to improve the compliance without compromising the efficacy, WHO 7th Expert Committee on leprosy (1997) recommended to decrease the duration of multibacillary regimen (MBR) of MDT from 24 months to 12 months,[2] however there is yet paucity of crucial data on its long term efficacy outcome. The aim of this study was to assess the efficacy of 12 months MDT MBR in multibacillary (MB) leprosy cases.

Methods: This was a retrospective study analyzing the records of 1210 patients registered at the leprosy clinic of our institute from 1999 to 2010. Clinic records were analyzed for age, sex, family history, duration of disease, clinical form of leprosy, bacteriological index (BI), morphological index (MI), response to treatment and reactional episodes in a predesigned proforma.

Results: Out of total 1210 leprosy cases, 730 (545 males, 185 females) were MB patients treated with 12 months MDT MBR over this period. High bacillary index (BI)≥3+ was observed in 313 patients at the time of registration. Four hundred and one (54.9%) patients experienced lepra reactions. Recurrent ENL was observed in only 14 patients which, manifested even after 5 years of stopping treatment. Clinico-histological correlation was noted in 361 (49.5%) patients. During follow up period ranging from 9 months to 10 years, nearly all patients had clearance of skin lesions including histopathological/bacteriological improvement. Only 13 (1.7%) patients relapsed.

Conclusion: All MB leprosy patients responded well with 12 months MDT MBR without significant side effects. The overall relapse rate was only 1.7%. Thus, the recommendation for 12 months MDT MBR for all MB leprosy patients is robust and operationally practical, a decision which seems logical.

O-038

Presentation Time: **Tuesday 17/09/2013 at 14:00 – 15:30**
Symposium Session: **Chemotherapy 1**
Presenter: Sanjay Mehendale

EFFICACY OF UNIFORM MULTI-DRUG THERAPY (U-MDT) FOR LEPROSY: PRELIMINARY EVIDENCE FROM WHO / TDR INTERNATIONAL OPEN TRIAL

S. M. Mehendale [1,*], M. D. Gupte [2], P. Manickam [1], R. Prabu [1], P. Jayasree [1], K. Kanagasabai [1], K. Katoch [3], K. Ramalingam [4], S. Jianping [5], M. Shivakumar [6], V. Jadhav [7] and U-MDT study team

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Introduction: Globally, leprosy treatment is currently offered through general health services. There is a need for a simplified treatment regimen that does not require skills to classify disease and shorten the duration of treatment. This will facilitate sustaining leprosy control activities

through primary health care facilities. WHO-TDR supported multi-centric trial aimed at assessing efficacy of six-month multi-drug therapy (MDT) regimen currently recommended for multi-bacillary (MB) patients as uniform MDT (U-MDT) for all types of leprosy patients (Clinical Trials Registry of India: 2012/05/002696). The primary objective is to assess whether U-MDT results in maintaining a maximum acceptable cumulative level of 5% relapse rate at the end of 5 years. We present results of interim analysis at completion of five years of the study.

Methods: The open design trial requiring 2500 newly detected, previously untreated patients each in multi-bacillary (MB) and pauci-bacillary (PB) groups is being conducted in six sites in India (Tiruvannamalai, Villupuram, Pune, Agra, Gaya and Rohtas) and two sites in China (Guizhou and Yunnan). In the annual follow-up of enrolled patients, clinical improvement (inactive, improved or static) is recorded based on standardized clinical criteria. An individual, who after completion of treatment develops one or more new skin patches consistent with leprosy, without evidence of reactions, is considered to have relapsed. The rationale, design and preliminary results had already been published (Axel et al, 2008). We calculated relapse rate per 100 person-years (PY). We compared the proportion with inactive lesions in PB and MB groups by Chi-square test. The person year relapse rates were compared by using mid-p exact test. The study is scheduled to be completed by 2014.

Results: The study enrolled 3396 patients during 2003-2008. Of these, 38% were MB and 4% had grade 2disability. Of the 3096 who completed treatment, skin lesions were inactive in 42% of PB (n=791) and in 10% of MB (n=122) patients (c^2=352; p<0.001). At the end of five years of follow-up, lesions were inactive in 89% in PB patients and 77% in the MB group (c^2=61;p<0.001). Totally 1031 adverse events were reported and 50% were reported from MB group. They included 16% migrations and 7% deaths were reported in the MB group. In the PB group, migrations were 26% and deaths 4.4 In the MB group, 13% and 15% developed new lesions and neuritis respectively and 18% had type I and 5% had type II reactions. In the PB group, the adverse events reported were 3.5% new lesions, 6.6% neuritis, 8% type I reaction, and 1.5% type II reaction. Six patients (MB=4, PB=2) had clinically confirmed relapse that occurred between the first and third year of follow-up. The relapse rate among MB patients was 0.076 per 100 PY and among PB patients was 0.023 per 100 PY (p=0.19).

Conclusion: The observed low relapse in the interim analysis indicates that U-MDT treatment is efficacious in improving the clinical status of skin lesions of both types of leprosy. We observed significant difference in the proportion of inactive lesions between the PB and MB group. However, high proportion of inactive lesions in MB documented the effectiveness of shortened duration of U-MDT regimen. Although final study results would emerge in 2014, the global and national programmes can start considering programmatic implications of the reported findings.

O-039

Presentation Time: **Tuesday 17/09/2013 at 14:00 – 15:30**
Symposium Session: **Chemotherapy 1**
Presenter: Ponnaiah Manickam

EFFECTIVENESS OF SINGLE DOSE CHEMOTHERAPY IN PAUCIBACILLARY LEPROSY PATIENTS: SUMMARY OF EVIDENCE FROM CLINICAL TRIALS IN INDIA

P. Manickam [1,*], B. Nagaraju [2], V. Selvaraj [1], S. Balasubramanyam [2], V. Mahalingam [1], S. Mehendale [1], V. K. Pannikar [3], M. Gupte [4] and Team of Study Investigators

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Introduction: Globally, leprosy services are offered through general health services. Pauci-bacillary (PB) leprosy forms a substantial proportion of newly diagnosed patients in South East Asia. Compliance to WHO's multi-drug therapy (MDT) for six months is a known hurdle in leprosy control programmes.We conducted three randomized double-blind placebo-controlled trials for PB patients with single or 2-3 or 2-5 lesions during 1994-95, 1995-96 and 1998-2003 respectively. In these trials, we determined efficacy of single-dose regimen containing rifampicin, ofloxacin and minocycline (ROM) against six-month MDT (WHO-MDT) in terms of complete clearance of lesions and compared treatment failure or relapse rates. We provide a comparative analysis of findings from these trials.

Methods: Patients were randomized to ROM or WHO-MDT arms for six months. The trial involved 1483 single-lesion PB patients (ROM=744; WHO-MDT=739) from nine centres with a post-treatment follow-up for 18 months. The trial of 2-3 lesions PB enrolled 236 patients (ROM=118; WHO-MDT=118) from five centres who were followed-up for 18 months post-treatment. In the third trial of PB patients with 2-5 lesions, 1526 individuals (ROM=762; WHO-MDT=764) were enrolled from five centres. In the third trial, post-treatment follow-up was 36 months at all the study centres but two centres completed follow-up of 1082 patients for 48 months. A clinical score was assigned to each patient based on disappearance of lesions, reduction in hypopigmentation / erythema or degree of infiltration or lesion size and improvements in sensation in the lesion (score range: 0-15). Complete clearance was defined as complete disappearance of the lesion or scar-formation. Deterioration or treatment failure was defined as appearance of new active skin lesion, definite signs/ symptoms of new peripheral nerve trunk damage, confirmed positive slit skin smear at any site observed during the follow-upor no improvement in clinical status at the end of the follow-up. Relapse was defined as occurrence of new active skin lesions with or without positive skin smear at any site. We calculated percent clearance and relapse rates [(per 100 person-years (PY)] and compared them using Fisher or mid-p exact tests.

Results: In single-lesion PB patients, complete clearance of skin lesions in ROM (47%) and WHO-MDT regimen (55%) was statistically significant (p=0.004). There were six treatment failure (0.9%) in both the arms. Complete clearance in 2-3 lesions PB patients was 38% in ROM compared to 46% in WHO-MDT (p=0.3) and treatment failure was 3.8% (n=4) in each arm. In the PB patients with 2-5 lesions, complete clearance was similar (72% vs. 72.1%; p=0.95) in both the arms. In 36 months post-treatment follow-up, relapse rates were higher among ROM (n=29) than WHO-MDT (n=9) group (1.13 vs. 0.35 per 100 PY; Fisher's exact=0.001). Further, complete clearance was similar (75% vs. 79%; p=0.25) and no further relapses (0.64 vs. 0.3 per 100 PY; p=0.07); occurred in two centres that performed extended follow-up to 48 months.

Conclusion: Single-dose ROM is equally efficacious to six month WHO-MDT regimen for all types of PB leprosy. ROM could be considered as an alternative treatment regimen for PB leprosy. Trials with additional dosing ROM may be done in treating relapses.

O-040

Presentation Time: **Tuesday 17/09/2013 at 14:00 – 15:30**
Symposium Session: **Chemotherapy 1**
Presenter: Vanaja Shetty

'PATIENTS WITH PROBLEMS' IN A COHORT OF 482 LEPROSY CASES RELEASED FROM WHO - MDT BETWEEN APRIL 2005 AND MARCH 2010 IN 2 AREAS IN MAHARASHTRA STATE, INDIA.

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Introduction: A multi-centric three-year prospective study is currently being conducted in 4 states in India, sponsored by the Indian Council of Medical Research, focusing on the patients treated with WHO-MDT and 'released from treatment ('RFT') between April 2005 and March 2010 by the respective state public health authorities ('eligible RFT'). The objective is to estimate the occurrence of drug resistance among those who had relapsed, the poor responders, those with neuritis, and those with progressive nerve function impairment. ('**patients with problems**'). In the Mumbai study area, the eligible RFT population comprised **1170** cases, of whom **482 (41%); MB=286; PB=196;M=276; F=206;)** were located, questioned and examined.
Presented here are clinical features in the 'patients with problems' encountered in Year 1 of the study, which throws some light on leprosy burden after official cure.

Methods: Study sites and design: Included 6 Primary Health Centres in Panvel in Raigad district and 3 Municipal Health Posts in Mumbai city.
Method: Data on the eligible RFT cases was collected form the official registers maintained at the centres. This was followed by active search and clinical examination by the study team to determine the current status of the cases, and detailed questioning of those with problems such as recurrence of Skin/Nerve lesions, new lesions, persistence of lesions, lepra reaction/neuritis etc. Slit skin smears, and wherever necessary, a skin biopsy was obtained.

Results: Findings:
'Patients with Problems' = 59/482=12%,
(MB = 47; PB =12; Male = 35; Female =24; children below 14 years = 4).
Clinical Problems detected in Year 1 of Follow-up:
Recurrence of lesions/new lesions in 39 (8%);
Persistence of skin/nerve lesions in 24 (5 %);
Lepra Reaction Type 1 or 2 in 29 (5%);
Neuritis (nerve pain or tenderness) in 41 (9%);
New nerve impairment (NFI) in 25 (5%).
Additionally, old or new deformity Grades 1 or 2 in 28% (Grade 2 > Grade 1).

Conclusion: The number with persistent / new problems is sizeable, emphasizing the need for continued surveillance post-RFT of those with vulnerabilities viz MB cases, smear positivity, history of reaction, those with initial deformity etc.

O-041

Presentation Time: **Tuesday 17/09/2013 at 14:00 – 15:30**
Symposium Session: **Information, Education and Communication**
Presenter: Vivek Lal

WHAT THE PARENTS SHOULD KNOW WHILE THEIR CHILD IS ON MDT? : INSIGHTS FROM A QUALITATIVE STUDY IN EASTERN INDIA

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Introduction: The number of child leprosy cases is an indicator of active and recent transmission of the disease. But, beyond this epidemiological significance, childhood leprosy has remained neglected. India reported a total of 127,000 new leprosy cases in the year 2011·12. Around 10% (12305) of these were children; the proportion being much higher in the endemic states. In order to provide high-quality leprosy services to children affected by leprosy, as envisaged in the 'Enhanced Global Strategy for Further Reducing the Disease Burden due to Leprosy by 2015', it is necessary to actively engage the parents in the management of their children. The aim of this qualitative study was to explore the experiences of parents with regard to the diagnosis of leprosy and the treatment of their child.

Methods: The study was conducted in Bankura district of West Bengal, India. The district is high endemic and reported an ANCDR of 39.28 per 100,000 population and a PR of 2.82 per 10,000 population in 2011·12.
A convenience sample of 15 parents whose child was on MDT, participated in the study. The sample size was determined by the non-emergence of new themes and data saturation. After obtaining an informed consent, the parents were interviewed in their homes about experience with the diagnosis and treatment of their child. The interview guide was semi-structured and covered five themes, viz. symptoms and care-seeking behaviour, experience with MDT and health system and stigma and discrimination in the community. The framework approach was used for analysis of the transcribed interviews.

Results: Majority of the children was students and belonged to the age group 9·14 years. White patch was the most common initial symptom which prompted the parents to seek care from the health worker. Ten out of the 15 children had been diagnosed as MB. The drugs were usually self-administered by the child. Majority of the children were reported to be adherent to MDT, however, a few cases were observed to be taking them incorrectly. Black skin discolouration was the most common side effect and the children were often made fun of at school due to the discoloration. This had led to non-adherence among a few children and also school absenteeism.
All the parents were ignorant about the symptoms of reactions and the importance of reporting them early. Two children were found to be suffering from reaction and were not identified. Their parents expressed anguish and concern that despite being on MDT, the symptoms had flared up.

Conclusion: One of the major success of the National Leprosy Eradication Programme in India has been the integration of leprosy services with the general healthcare system. This has enabled early case detection. The current challenges lie in ensuring treatment completion and early care-seeking and management of complications in the form of reactions to prevent disabilities. Clofazimine-induced skin discolouration although reported less frequently as a side effect, resulted in interruption of treatment among children and led to discrimination. The brownish-black discolouration caused by the drug disappears within a few months after stopping treatment. Training programmes should make health workers aware of the side effects and complications. Increased emphasis should be laid on interpersonal communication to empower the parents whose child is on MDT, to appreciate the side effects and recognize the complications early. Innovative school-based activities should focus on mitigating stigma and discrimination.

O-042

Presentation Time: **Tuesday 17/09/2013 at 14:00 – 15:30**
Symposium Session: **Information, Education and Communication**
Presenter: Shibu George

LEPROSY CASE DETECTION THROUGH SCHOOL SURVEY IN POST-INTEGRATION PHASE IN INDIA

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Introduction: Children under 15 years constitute 30 % of the population. In India school enrolment is high and annual school survey enable easy accessibility and high coverage of this vulnerable population. A high child rate may indicate recent *Mycobacterium leprae* (ML) transmission and early diagnosis will lead to prevention of disability. Until 2005, annual school surveys were one of the case detection activities of National Leprosy program in India. After integration of leprosy into general health system, the school survey is not focused much. In absence of demarked geographical areas, Many NGOs continued health education activities in schools and this contributed significantly to early child case detection. The total number of child cases in India in year 2011 is 12305 and Child rate is reported is 1.01/100000. To promote early case detection, German Leprosy and TB Relief Association India (GLRA India) encouraged its projects to continue health education and screening the school children for leprosy.

Methods: This method of case detection in schools emphasize on educating school children about leprosy, its early signs and symptoms and training teachers to identify suspect of leprosy and ways of self examination. Prior to the screening an awareness talk is done during the school assembly to disseminate the myths of leprosy. The children were advised to self examine their body in same evening after reaching home. Physical screening by paramedical staff (trained in leprosy) was usually done the next day after the awareness session. All the self reported / suspected children were screened by the leprosy trained supervisory staff and diagnosed by Medical Officer. This long standing effective method was initiated with the support and involvement of respective head of the school & teachers.

Results: The result given proved to be productive. Data were analyzed from 14 projects supported by GLRA India located in 6 states (9 projects located in high endemic districts/ urban locations). A total of 584,120 school children in 481 schools were physically screened over a period of 3 years from 2010 to 2012. About 1831 suspects were identified and further screened by Para Medical Supervisor followed final validation by Medical Officer. A total of 104 new cases of leprosy were diagnosed includes 15 early MB cases. Child NCDR per 100000 populations was 17.80, 14.15 and 12.38 respectively over the years. None of the new cases developed visible deformity but 7 children showed muscle weakness. All those 104 affected children were put on MDT and 89 completed their treatment at end of December 2012.

Conclusion: In post integration scenario, annual school survey yielded considerable leprosy suspects and assisted in early case detection. Further it promoted raising awareness among younger generation. Involvement of teachers and students together in case detection process helps to reduce stigma associated with leprosy. This specific strategy of screening school children for leprosy could be done more systematically in school along with routing school health check up at least in the endemic districts.

O-043

Presentation Time: **Tuesday 17/09/2013 at 14:00 – 15:30**
Symposium Session: **Information, Education and Communication**
Presenter: Joseph Chukwu

MODERNISING THE FIGHT AGAINST LEPROSY – PILOT ON SCHOOLS DEBATES

C. Nwafor [1,*], J. Chukwu [1], J. Adegbesan [2], N. Ndubuizu [1], D. Oshi [1], A. Meka [1], N. Ekeke [1], N. Madichie [1]

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Introduction: Despite achieving the WHO elimination target at national level since 1998, the Nigerian national TB and leprosy control programme continues to notify over 3,000 new leprosy cases every year. This amounts to a case detection rate of 1.8 per 100,000 population. About 20% of these cases have visible deformities at diagnosis with a child proportion of 8%. This means that over two hundred children (0·14 years) are affected by leprosy in this cohort.
Information obtained from many patients suggests that public awareness on essentials of leprosy is still inadequate. GLRA decided that bold new initiatives were required to break new grounds in improving public awareness on leprosy. Engaging young people through schools debates was one of these novel approaches.

Methods: Sensitization visits were made to schools during which baseline data on students' knowledge of leprosy were collected using questionnaires. Debates were conducted in 12 randomly selected secondary schools with students and teachers as the audience. The best 3 schools in the debates participated in a quiz competition and the winner emerged. Leprosy experts used the opportunity to dispel misconceptions and provide accurate information on the disease and its control. Post-intervention assessment of students' knowledge of leprosy was conducted using questionnaires.

Results: The proportion of students that believed that leprosy patients under treatment would not readily infect others increased from 51% to 76% by the end of the competition. Only 7% of the students knew that leprosy is curable compared to 78% post-intervention.This suggests a positive change in students' knowledge and it is believed that as the message is spread, it will help in fighting stigma as well as lead to increased case finding.

Conclusion: Engaging the youth through schools debate/quiz appears to be a promising approach to improving school-children awareness on leprosy and may lead to greater public awareness.

O-044

Presentation Time: **Tuesday 17/09/2013 at 14:00 – 15:30**
Symposium Session: **Information, Education and Communication**
Presenter: Francisco Carlos Lana

HOUSEHOLD SURVEY ABOUT THE PERCEPTIONS OF POPULATION ABOUT HANSEN'S DISEASE IN A HIPERENDEMIC AREA FROM BRAZIL

F. C. F. Lana [1,*], A. P. M. Carvalho [1], V. G. Cardoso [2], A. D. C. C. O. Fabri [1], M. A. A. F. Lautner [1], E. P. Amaral [1]

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Introduction: Hansen's disease involves biological, cultural and social aspects in its dynamics and should be understood as a complex disease. Despite the advance of scientific knowledge, it remains as a public health problem in Brazil, with high detection and prevalence rates in some regions of the country. This situation suggests the existence of a gap between the scientific and technical knowledge of the disease and the appropriation by the population of such knowledge. The lack of knowledge of the population and the misinformation leads to the continuity of the cycle of disease's transmission and the emergence of more severe clinical forms, which contributes to both the maintenance of the disease and the stigma that surrounds it. The present

study aims at analyzing how the urban population from Almenara perceives the Hansen's disease and its relations with the detection rates, the socioeconomic conditions and the access to health services.

Methods: It is an epidemiological cross-sectional study, configured as a *survey*. The place of study was the city of Almenara, located in the Jequitinhonha River Valley, State of Minas Gerais, Brazil. It was used a structured instrument divided into five sections: identification and family composition, housing and environmental conditions, epidemiological and social aspects, service organization aspects and individual participation in disease control. 737 household interviews were conducted in 23 census tracts stratified according to the detection rates. The epidemiological data were processed and analyzed statistically using the softwares Epi Info (version 3.5.1), MS Excel (version 2003) and SPSS (version 18). The study was approved by the Ethics Committee of Universidade Federal de Minas Gerais (158/2009) and received support from the State Department of Health of Minas Gerais and the Municipal Health Almenara. This research was financed by the Fundação de Amparo à Pesquisa do Estado de Minas Gerais.

Results: The sample was composed with a predominance of female gender and of individuals with low education and low family income. By comparing the perceptions of individuals from areas with different detection rates of Hansen's disease, it was found that this was not the only factor that influences the level of knowledge about the disease. The level of education, the occurrence of a case in the family, the family income and the access to health services also had influence about that knowledge. The majority of the population from Almenara identifies the Hansen's disease as a public health problem in the city, although they do not recognize initiatives to control the endemic and neither look for information about the disease. People associate the Hansen's disease with other pathologies, confusing scientific knowledge with beliefs of popular origin or with preconception relate with the history of the disease.

Conclusion: Therefore it is necessary to invest in programs and innovative strategies of health education, so that individuals be able to recognize of signs and symptoms, promoting the looking for the health services timely and thus contribute to breaking the chain of transmission, prevention of physical deformities and consequently to reducing the stigma.

O-045

Presentation Time: **Tuesday 17/09/2013 at 14:00 – 15:30**
Symposium Session: **Information, Education and Communication**
Presenter: Dr Mannam Ebenezer

CHANGES IN THE LEVEL OF KNOWLEDGE, ATTITUDE AND PRACTICE OF COMMUNITY MEMBERS REGARDING LEPROSY AND DIABETES MELLITUS THROUGH INTENSIVE COMMUNITY SENSITIZATION PROGRAM.

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Introduction: Much of the stigma associated with leprosy stems from inadequate or incorrect knowledge about the disease and its current treatment. Inadequate or incorrect information and knowledge about the disease and its treatment are the root causes of many stigmas and inhibitions prevalent in the various sections of the community. Leprosy has been widely prevalent in the control area of Scheffelin Institute of Health Research Leprosy Center (SIHRLC) Karigiri for several decades. The institution has been implementing several innovative methods in health education to reduce the burden of disease, to minimize stigma and discrimination and increase knowledge on facts about leprosy and life style diseases. A large survey was carried out in two areas of Vellore district to assess and compare the level of knowledge, attitude and practice (KAP) towards Leprosy and Diabetes Mellitus among general population that differed widely in the amount of health education received about these diseases. This paper aimed to assess the level of Knowledge Attitude Practice (KAP) among community members on leprosy compare to diabetes mellitus.

Methods: A semi-structured questionnaire was developed and used to assess KAP on leprosy and diabetes for the study. The questionnaire consists with a minimum of 8 subjects and maximum of 10 subjects with objective type used for assessing KAP on the diseases. The KAP was conducted by trained community health workers to collect data among both gender adult community members residing in the 30 village panchayats of Gudiyatham and Katpadi block of Vellore District, India. A sample of 1601 selected from 78428-population in the service area of Gudiyatham block, 1601 samples from 33028 population of Katpadi block randomly selected among the total household to collect data for the study.

Results: The level of KAP among the total respondents (n=3170), 47 in <50 and 53 in >50 53 and minimum score of (o), maximum of (100) and mean (50). The level of KAP on Diabetes Mellitus, 62 in <50, 38 in >50 and minimum of score (o), maximum of score (100) and mean (48). The result indicates that the levels of knowledge, attitude and practice of the leprosy were high when comparing with Diabetes Mellitus. It shows that the impact of sustainable health education model can change the level of knowledge on leprosy, reduces social barriers and makes positive attitude towards health seeking behavior for diagnosis and treatment of leprosy disease.

Conclusion: It is well known that knowledge alone will not change attitudes or influence behavior, the role of literacy and enhancing the health seeking habits needs further action. Long-term health education approach to community members is always an appropriate strategy not only to increase knowledge about the facts of leprosy but also it improves voluntary reporting, health seeking behavior and disseminating information about the services and facilities available for leprosy to all community members. The study reveals that the level of KAP on Diabetes mellitus is poor than leprosy among the community members. Since the diabetes mellitus is a associated disease with leprosy, it recommends that increase knowledge on this disease to community and leprosy patients to prevent further impairment and disability and to control diabetes mellitus by using various health education materials and methods. Key words: knowledge, stigmas, inhibitions, literacy, health seeking, health education

O-046

Presentation Time: **Tuesday 17/09/2013 at 14:00 – 15:30**
Symposium Session: **Immunology 1**
Presenter: Indira Nath

INCREASED EXPRESSION OF REGULATORY T CELLS LEPROMATOUS LEPROSY

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Introduction: The mechanisms underlying the unresponsiveness in lepromatous leprosy has been a matter of debate. In recent years the subclass of T cells that are Foxp3^{+} cells[2] have been implicated in immune suppression of diseases and designated as Regulatory T cells(Treg). The present study was undertaken with a view to exploring the role of these cells in the T cell unresponsiveness associated with leprosy.

Methods: PBMC and skin biopsies from the 30 leprosy patients and 4 healthy subjects were investigated for gene expression of Treg signatures [2, 3, 4] viz. Foxp3, TGFβ, IL10. Gene expression was undertaken using real time PCR (qPCR). Data were normalized with HPRT housekeeping gene, Histochemical staining of cell surface markers and nuclear marker Foxp3 was done on skin biopsies. ELISA was undertaken for cytokines TGFβ and IL10 (e-Bioscience USA). Flowcytometry was used for confirming the phenotype of Foxp3+ cells for T cell surface markers, CD3, CD4, CD8, CD25 and intracellular TGFβ and nuclear Foxp3. PBMC from 30 leprosy patients classified on the basis of Ridley Jopling classification were stimulated *in vitro* with heat killed armadillo derived *M.leprae* antigens for 48 hrs after establishing the optimum time kinetics whereas Skin lesions were investigated with histochemistry and qPCR. Data were analyzed using a two tailed Mann-Whitney test. P values of less than 0.05 were considered significant.

Results: Tregs[1] were quantified by flow cytometry (CD4^{+} CD25^{high} Foxp3^{+}) in peripheral blood mononuclear cells stimulated *in vitro* with and without *M. leprae* antigen and phytohemagglutinin (PHA). *M. leprae* antigens induced significantly higher Treg numbers in lepromatous than tuberculoid patients and contacts. However, it was only the CD4+ and not CD8+ T cells that showed intracellular TGF β. Using qPCR we confirmed the increased expression of Foxp3 expression in PBMC cultures ($p<0.0002$) and skin lesions ($p<0.04$). Interleukin-10 (IL-10), interferon-γ (IFN-γ) and transforming growth factor-β (TGF-β) in supernatants as well as cells of *in vitro* stimulated peripheral blood mononuclear cells were investigated for expression by qPCR and protein by ELISA. TGFβ expression was increased significantly ($p<0.002$) in lepromatous as compared to tuberculoid patients and healthy contacts in both PBMC cultures and in skin ($p<0.01$). As expected significantly lower IFNγ ($p<0.001$) was found in the same group of patients. IL10 showed a dual pattern. Whereas it was higher in T patients in PBMC cultures ($p<0.01$) it showed increase in skin lesions.

Conclusion: Lepromatous leprosy is associated with increased Foxp3 expression in both PBMC and Skin. However, histochemistry was less sensitive in detecting differences in the leprosy spectrum as compared to qPCR. Moreover, lepromatous patients showed TGFβ increase both in PBMC and skin as compared to T patients indicating its role in mediating immunesuppression associated with this disease.

O-048

Presentation Time: **Tuesday 17/09/2013 at 14:00 – 15:30**
Symposium Session: **Immunology 1**
Presenter: Kidist Bobosha Aboma

ROLE OF TH17 CELLS IN THE LEPROSY SPECTRUM

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Introduction: The leprosy spectrum has been an enigma for immunologists where no consensus is available on the Th 1 and 2 paradigm or macrophage defects. Tuberculoid (T) and lepromatous (L) patients at the two ends of the leprosy spectrum were investigated with a view to understanding the role of regulatory cells, Th 17 cells which are implicated in immune mediated diseases1,2.

Methods: PBMC and skin biopsies from the leprosy patients (30) and healthy subjects (05) were investigated for gene expression RT-PCR (qPCR, SA Biosciences, MD,USA), histochemistry of cell markers, ELISA undertaken for cytokines IL 17 and other associated cytokines which play a part in differentiation and maintenance eg. IL17A/F, IL22, IL21, IL23, IL6 (e-Bioscience USA). Flowcytometry was T cell surface markers, CD3, CD4, CD8, CCR6 and intracellular IL17 and IL21.

PBMC from patients classified on the basis of Ridley Jopling classification were stimulated *in vitro* with heat killed armadillo derived *M.leprae* antigens for 48 hrs after establishing the optimum time kinetics whereas Skin lesions were investigated with histochemistry for cell type and qPCR. Healthy skin was obtained from subjects undergoing cosmetic surgery.

Results: Expression of Th17 cell associated cytokines were significantly up regulated in T as compared to L patients (IL17A; p<0.0002, IL17F; p<0.0001 and IL22; p<0.002). Transcription factors and signaling molecules of Th17 cells such as Rorc with Stat3 expression were also higher in T patients. We next examined gene expression of IL23[3], IL1β and IL21 cytokines which were reported to be involved in Th17 cell differentiation in humans, by real time PCR as well as by ELISA from PBMC culture supernatants. The expression of IL·23 (p<0.0003) and IL·21 (p<0.001) was significantly increased in T as compared to L patients. Though IL·6 and IL1β showed up regulation in T patients this was not statistically significant. In conformity with above, at the protein level also IL·23 (p<0.01), IL·6 (p<0.0008) and IL·21 (p<0.01) were higher in T patients. Moreover, transcription factor Rorc associated with Th 17 also showed up regulation and correlation with IL·23R (r^2=0.639; p<0.003) but not with IL·6R (r^2=-0.24; ns).Flow cytometry identified association of intracellular IL 17 with CD3+ and CD4+ as well as CD3+ CD8+ cells. Of interest was the association of IL17 only with the subset of CCR6+ T cells.

Conclusion: Th 17 cells as identified by known signatures of cell markers, cytokines and transcription factors were seen to be associated best with tuberculoid leprosy and healthy contacts, the two clinical groups known to have been exposed to infection and yet been able to limit pathology by chronic inflammation or have protection to the disease respectively. Our studies indicate that Th 17 cells are important for the control of leprosy.

O-049

Presentation Time: **Tuesday 17/09/2013 at 14:00 – 15:30**
Symposium Session: **Immunology 1**
Presenter: Kidist Bobosha Aboma

REGULATORY T CELLS IN LEPROMATOUS LEPROSY

K. Bobosha [1, 2,*], L. Wilson [1], K. E. van Meijgaarden [1], Y. Bekele [2], M. Zewdie [2], J. J. Ploeg-van Schip [1], M. Abebe [2], J. Hussien [2], A. Aseffa [2], T. H. Ottenhoff [1], A. Geluk [1]

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Introduction: Regulatory T-cells (T-regs) are known in maintaining self tolerance and balancing immune reactions in autoimmune diseases and chronic infections. One of the regulatory mechanisms of T-regs, suppression of effector T-cells, may lead to a prolonged survival of pathogens in the host in chronic infections like TB and leprosy. In this study, the role of T-regs in lepromatous leprosy (LL) anergy was assessed.

Methods: PBMCs from newly diagnosed, clinically and histopathologically confirmed LL patients were sorted as CD25 positive and negative population using Magnetic Cell Sorter (MACS). The IFN-γ responses of whole PBMC, CD25 negative population alone and CD25 negative population enriched with different proportion of CD25 positive cells against *M. leprae* whole cell sonicate (WSC), PHA and medium alone was measured by ELISA. Gene expression level of T-reg associated markers in LL and Tuberculoid and borderline tuberculoid (TT/BT) patients in peripheral blood is also under analysis. The presence of pro and anti- inflammatory macrophages and T-regs in skin lesions were also assessed by immunoflourescent staining of skin biopsies from LL and TT/BT patients.

Results: Two groups of LL patients in response to WCS after depletion of CD25 positive cells were identified; responders and non-responders. The response to PHA was not affected by the depletion of or enrichment with CD25 positive population as the non-responsiveness in LL patients is specific to *M. leprae*. More T-cell and macrophage infiltration in LL patients' lesions were observed compared to TT/BT. Differences within LL patients were also observed in number of CD68CD163 double positives and FOXP3 positive cells. The gene profiling will also give more information with regard to involvement of T-regs in LL anergy.

Conclusion: The results indicated that T-regs have a role in LL anergy but are not the only factors. Further analysis of T-regs using better specific markers in periphery and lesions and investigation of other factors are also recommended.

O-050

Presentation Time: **Tuesday 17/09/2013 at 14:00 – 15:30**
Symposium Session: **Chemoprophylaxis and Contacts**
Presenter: Mr. Khorshed Alam

THE COMBINED EFFECT OF CHEMOPROPHYLAXIS WITH RIFAMPICIN AND IMMUNOPROPHYLAXIS WITH BCG, IN THE PREVENTION OF LEPROSY IN CONTACTS: A RANDOMIZED CONTROLLED TRIAL

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Introduction: Despite almost 30 years of effective chemotherapy with MDT, the global new case detection rate of leprosy has remained constant over the past years. New tools and methodologies are necessary to interrupt the transmission of *M. leprae*. Single-dose rifampicin (SDR) has been shown to prevent 56% of incident cases of leprosy in the first two years, when given to contacts of newly diagnosed cases. Immunization of contacts with BCG has been less well documented, but appears to have a preventive effect lasting up to 9 years. However, one major disadvantage is the precipitation of excess cases within the first year after immunization. The objective of this study is to examine the combined clinical and immunological effect of chemoprophylaxis with SDR and immunoprophylaxis with BCG, in contacts of new cases of leprosy. We hypothesize that the effects of both interventions may be complementary, causing the combined preventive effect to be significant and long-lasting.

Methods: Through a cluster randomized controlled trial we compare BCG alone with BCG plus SDR in contacts of new leprosy cases. Contact groups of around 15 persons will be formed for each of the 1300 patients included in the trial, resulting in a total of around 20,000 contacts. The intervention group will be given BCG followed by SDR, 2 months later. The control group will receive BCG only. In total 10,000 contacts will be included in each intervention arm over a 2-year period. Follow-up will take place one year after intake. The primary outcome is the occurrence of clinical leprosy within one year. Simultaneously with vaccination and SDR, blood samples for laboratory tests will be taken from 300 contacts participating in the trial to determine the effect of chemo- and immunoprophylactic interventions on immunological- and genetic markers of infection.

Results: The intake of the trial started in June, 2012. Up to the end of 2012, a total of 75 new patients have been recruited and 980 of their contacts have received BCG vaccination. We will present details of the procedures of the trial and provide an update of the intake, together with safety aspects of BCG vaccination to contacts of leprosy patients.

Conclusion: Combined chemoprophylaxis and immunoprophylaxis is potentially a very powerful and innovative tool aimed at contacts of leprosy patients that could reduce the transmission of *M. leprae* substantially. The trial intends to substantiate this potential preventive effect. Evaluation of immunological- and genetic biomarker profiles will allow identification of pathogenic *vs.* (BCG-induced) protective biomarkers and could lead to effective prophylactic interventions for leprosy by optimizing tools for identification of individuals who should best be targeted for prophylactic treatment.

O-051

Presentation Time: **Tuesday 17/09/2013 at 14:00 – 15:30**
Symposium Session: **Chemoprophylaxis and Contacts**
Presenter: Dr Christina Widaningrum

CHEMOPROPHYLAXIS WITH SINGLE-DOSE RIFAMPICIN FOR CONTACTS OF PATIENTS WITH LEPROSY: AN OPERATIONAL STUDY IN SAMPANG, INDONESIA

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Introduction: More than 10 years after reaching the target of elimination of leprosy at national level, the number of new leprosy cases detected annually has not decreased in Indonesia and there are indications of continued transmission of the disease. Previous studies on chemoprophylaxis with rifampicin showed robust results: the risk of developing leprosy reduces by 60% among contacts in study setting. To investigate the feasibility in an ordinary setting, implementation of chemoprophylaxis has been undertakenin one high-endemic district to assess operational conditions required, acceptance and perception of community, persons affected by leprosy and health workers regarding single-dose rifampicin chemoprophylaxis.

Methods: This intervention was conducted in Sampang district, which has 837,275 population. Single-dose rifampicin was administered to the contacts of leprosy patients along with rapid village survey activities. Subsequently chemoprophylaxis administration was embedded in routine contact examination activities. Twenty contacts of each index case were targeted for chemoprophylaxis. Each contact takes rifampicin at the first and the third year of the study. Chemoprophylaxis coverage was quantified and barriers that occurred during the implementation were assessed through in-depth interviews and focus group discussions among person affected by leprosy, contacts, community leaders and health workers.

Results: A total of 1,038 leprosy index cases were enrolledin this health centre-based study and only 743 index cases have been screened so far. Altogether 16,762 household, neighbour and social contacts were screened. A total of 914 contacts were excluded from the study due to not being available, refusal to participate, being a TB suspect, and under rifampicin therapy.

Of the total screened, 15,848 individuals were given a single dose of rifampicin (76%). Some of the remaining 5,900 contacts will be screened on the first and second quarter of this year. In operational implementation, chemoprophylaxis made contact examination more attractive, because health workers had a preventive drug to offer during the contact examination. Some community members no longer perceived leprosy as hereditary since a preventive drug is available. Even non-contacts were asking for chemoprophylaxis. However, some issues were encountered, such as decreased motivation after the initial campaign phase, health workers being overburdened, problems with informed consent, problems with disclosure, discrimination following disclosure, not using the term 'leprosy' during health education or counselling with patients or contacts and issues related to funding.

Conclusion: Overall chemoprophylaxis intervention was well accepted by index cases, contacts, community members, health workers and local leaders and received very positive feedback. Implementing chemoprophylaxis in a routine district health programme is possible, embedded in contact examination.The implementation policy should give specific attention to informed consent, confidentiality and disclosure.

O-052

Presentation Time: **Tuesday 17/09/2013 at 14:00 – 15:30**
Symposium Session: **Chemoprophylaxis and Contacts**
Presenter: Sabiena Feenstra

PATIENT-RELATED FACTORS PREDICTING THE EFFECTIVENESS OF RIFAMPICIN CHEMOPROPHYLAXIS IN CONTACTS: 6 YEAR FOLLOW UP OF THE COLEP COHORT IN BANGLADESH

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Introduction: The COLEP trial in Bangladesh showed a 57% reduction in leprosy incidence among contacts of newly diagnosed patients in the first two years after chemoprophylaxis with single dose rifampicin (SDR). We assessed the impact of this intervention after 6 years and identified characteristics of the leprosy index patients predicting the effectiveness of this intervention.

Methods: The cohort of 1,037 patients and their 28,092 contacts that participated in the randomized placebo controlled field trial with single dose rifampicin was followed for 6 years. The leprosy status of contacts was established at 2, 4 and 6 years after the intervention. We assessed the association between characteristics of the index leprosy patients and the development of clinical leprosy among their contacts using logistic regression.

Results: The protective effect of SDR was seen only in the first 2 years, with no additional effect after 4 and 6 years. However, the total impact of the intervention was still statistically significant (p=0.025) after 6 years and no excess cases were observed in the SDR arm at a later stage. The intervention prevented leprosy in contacts that actually received SDR, but did not offer protection to members of the same contact group who did not take chemoprophylaxis. The intervention was most effective in contact groups of female index patients, an enhanced effect was also observed in contact groups of patients belonging to a cluster of two or more leprosy patients at intake as well.

Conclusion: These easy to recognise patient characteristics indicate a possible enhanced risk of transmission of *Mycobacterium leprae* to contacts in the vicinity of patients and are useful for deciding about preventive measures, such as early detection or chemoprophylaxis.

O-053

Presentation Time: **Tuesday 17/09/2013 at 14:00 – 15:30**
Symposium Session: **Chemoprophylaxis and Contacts**
Presenter: Sabiena Feenstra

ACCEPTABILITY OF CHEMOPROPHYLAXIS FOR HOUSEHOLD CONTACTS OF LEPROSY PATIENTS IN BANGLADESH: A QUALITATIVE STUDY

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Introduction: Chemoprophylaxis with single dose rifampicin is a promising intervention to prevent leprosy in close contacts of patients. However, application in control programmes often requires disclosure of the leprosy diagnosis, which is still a stigmatised disease in many countries. Promoting control and treatment of stigmatised diseases without contributing towards stigma of the individuals involved can be very difficult. The objective of this study was to assess the social acceptabilityof disclosure of the diagnosis and the attitude towards taking prophylactic medicines in a leprosy endemic area in Bangladesh.

Methods: Qualitative study through focus group discussions with 136 healthy men and women from different age groups and religions, coming from two rural villages and an urban area in northwest Bangladesh, and 14 health workers with extensive experience with leprosy patients.

Results: The participants would not object to disclosure of the diagnosis to household members and nearby family if they were diagnosed with leprosy. However, many participants were not willing to share this information with their neighbours and other social contacts due to stigma of the disease. All healthy participants were willing to take chemoprophylaxis if any of their close contacts were diagnosed with leprosy, even after explaining that full protection against leprosy was not guaranteed.

Conclusion: It can be concluded that chemoprophylaxis for household contacts of leprosy patients is an effective and socially acceptable addition to the current leprosy control programme. Chemoprophylaxis for other categories of contacts likely to benefit would only be feasible, without disclosure of patient information, if given in the form of mass campaigns for the whole population in the area.

O-054

Presentation Time: **Tuesday 17/09/2013 at 14:00 – 15:30**
Symposium Session: **Chemoprophylaxis and Contacts**
Presenter: Krisada Mahotarn

EFFECTIVENESS OF SINGLE DOSE RIFAMPICIN IN PREVENTION OF LEPROSY AMONG HIGH RISK COMMUNITY CONTACTS

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Introduction: After implementation of multidrug therapy in Thailand in 1984 had resulted in gradual reduction of prevalence of leprosy and subsequently achieved WHO target of elimination of leprosy as a public health problem in 1994. However, the programme had not be able to reduce trend of detection · rate of new cases of leprosy as expected during post · eliminating phase from 1997 · 2002. Special research project on clinical trial of single dose of 600 mg of rifampicin as chemoprophylaxis of high risk community contacts of leprosy, therefore, had been launched from 2004·2010. The objective of study was to compare effectiveness between rifampicin and placebo as chemoprophylaxis for leprosy.

Methods: The design of our study was randomized double blind controlled trail. Effectiveness of such chemoprophylactic drug was evaluated by performing physical examination of contacts participated in the study at the fifth year of the trial in order to detect clinical signs of leprosy.

Results: Of all 201 index cases from high risk area, there were 2,749 contacts enrolled in our study. One thousand three hundred and thirty · nine contacts received rifampicin, while 1,400 received placebo. At 5 years, there were 7 leprosy cases detected from rifampicin group, whereas 14 leprosy cases from placebo group. The risk difference between the group was 0.0054 (95% CI = · 0.00117 · 0.01193) which was not different by statistical analysis.

Conclusion: Our results revealed that there was no statistically significant difference of effectiveness among control and trial groups indicated that rifampicin was not effective to prevent occurrence of leprosy among high risk community contacts of leprosy.

O-055

Presentation Time: **Tuesday 17/09/2013 at 14:00 – 15:30**
Symposium Session: **Chemoprophylaxis and Contacts**
Presenter: Nádia Duppre

LATE LEPROSY CONTACT EXAMINATION MAY HAVE LOW IMPACT IN THE TRANSMISSION RATE.

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Introduction: Leprosy control in Brazil has improved significantly at the last years despite the number of new cases detected annually presents a very slow decline since 2007 ·2010. Contacts investigations need to be a priority in order to interrupt transmission and eliminate leprosy as public health problem. In Brazil at 2011 the percentage of contacts examination was 59.8% considered regular. In 2010 the detection coefficient in children under 15 years was 5.2 per 100 thousand inhabitants that were considered very high. This data demonstrated that leprosy programm in Brazil should actively improve case holding. The objective of this study is to evaluate the characteristic of the new cases of leprosy detected in the contact tracing based on the interval between diagnosis of the index case and the appearance of contacts be examined.

Methods: A retrospective study included 6,163 contacts of leprosy patients treated in Leprosy Outpatient Clinic (Leprosy Laboratory) between 1987 to 2009. The epidemiological and clinical characteristic of new leprosy cases among contacts were distributed to the interval between the moment of leprosy diagnosis to the index case and the appearance of contacts to be examined. It was considered late examination when contact appeared after treatment of the index case and

early examination when contact appeared any moment of the index case treatment. A logistic regression was applied to assess risk factors for those contacts examined later.

Results: During the study period, families of 1,206 index cases were examined (783 [65%] with MB clinical forms). Among the total of examined families 346 (28.7%) appeared after index cases treatment with 1.032 contacts examined. New leprosy cases were diagnosed in 295 of the total examined families (24.5%). Overall 325 new cases were diagnosed at the initial examination, 120 (36.9%) were from families who came late to be examined. From these 14 (11.4%) presented grade 2 disabilities and 50 (41.7%) presented MB forms. In this the interval between the diagnosis of the index case and the contacts examination was 4.6 years (sd= 3.3). The overall risk of leprosy among those later examined contacts was OR = 2.91 (95%IC 2.3 · 3.7) when compared to with early examination. For those under 15 years old this risk was OR = 1.38 (95% IC 1.1 · 1.9).

Conclusion: Our study demonstrates that the late contact examination does not allow to interrupting the chain of transmission and thus more contacts are diagnosed with disability and children are diagnosed with leprosy. Generally is accepted that contact examination is one of the most important methods in case finding of new leprosy cases in any leprosy control program. In Brazil, efforts should also focus in the monitoring and construction of indicators that allow assessing the effectiveness of the exam as such: Number of new cases of leprosy among contacts examined. Number of new cases with grade 2 disabilities and the number of multibacillary forms detected among contacts.

O-056

Presentation Time: **Tuesday 17/09/2013 at 14:00 – 15:30**
Symposium Session: **Footwear**
Presenter: Mr Sathish Paul

PROTECTIVE FOOTWEAR SUPPLY TO FOUR NORTHERN STATES UNDER THE DISABILITY PREVENTION & MEDICAL REHABILITATION (DPMR) ACTIVITIES OF THE NATIONAL LEPROSY ERADICATION PROGRAM (NLEP) IN INDIA

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Introduction: Timely provision of suitable protective footwear to patients protects the feet from developing new deformities. Footwear provision to all the leprosy affected people and thereby prevention of further deformities is one of the major activities of the DPMR initiative (under ILEP) in India. The Leprosy Mission Community hospital in Delhi is one of the centers which have been recognized by the Indian Government in the provision of the protective footwear for the Leprosy affected persons. The Leprosy Mission Trust India (TLMTI) MCR unit in Vizinagaram, the recognized centre by the Central Leprosy Division in India for the quality testing of MCR sandals have been manufacturing the MCR sandals for the TLMTI hospitals.

Methods: Natural Rubber along with several other chemicals are used in optimum quantities in the manufacture of MCR rubber, thus giving the ability to the MCR to spring back to original shape when pressure is released while walking. The Micro cellular Rubber with a hardness of 15' Shore 'A' used along with upper straps made of Ethyl Vinyl acetate rubber without any buckles are used in fabricating a appropriate footwear. The footwear was supplied directly to the District Leprosy Officers in the states of Delhi, Punjab, Uttar Pradesh and Uttaranchal. A support team from the Leprosy Mission consisting of a Doctor, Podiatrist, Shoe technician travelled to the colonies for examining and providing a custom made footwear to patient when the request was given by the District Leprosy Officers.

Results: The MCR footwear produced was more aesthetic and appealing for the patients to wear and thus reduce the stigma of ulcers and shortened feet. As per the request from the respective District Leprosy Officers MCR footwear were supplied to colonies and District civil hospitals. In 2010, a total of 1132 pairs MCR footwear was supplied to Punjab, 100 pairs to Delhi. In 2011, 400 pairs MCR footwear were supplied to Punjab and 50 pairs were supplied to Uttar Pradesh, 50 pairs to Delhi. In 2012, 1000 pairs were supplied to Punjab, 81 pairs to Uttar Pradesh and 250 pairs to Uttaranchal, 40 pairs to Delhi were supplied. In 2013 till February 600 pairs were supplied to Punjab, 250 pairs to Uttaranchal and 350 pairs to Uttar Pradesh were supplied respectively. The cooperation and support showed by the District program managers for Leprosy in Punjab has helped the leprosy affected patients get their protective footwear. The leprosy affected patients residing in certain states don't get MCR sandals as they are migrated for work not from the same domicile, though they are eligible for 2 pairs of MCR sandals every year as per the DPMR guidelines. Maintaining the cost at Rs.250 ·300 (Indian currency) as fixed by the NLEP without compromising on the quality is becoming very difficult for the hospital as the cost of raw materials and the logistics of providing footwear is increasing in an alarming rate.

Conclusion: The demand for the MCR sandals among patients affected by Leprosy have increased after the footwear was made more appealing and fashionable. The timely provision of footwear and effective coordination by the TLM hospital with the Government of the four states has helped TLM hospital being appreciated and recognized. The policy level changes in altering the cost of footwear in accordance to the varying market price of the raw materials and letting patients from different domicile get MCR sandals in any Indian states will help the patients from preventing and developing new secondary impairments.

O-057

Presentation Time: **Tuesday 17/09/2013 at 14:00 – 15:30**
Symposium Session: **Footwear**
Presenter: Dr Mannam Ebenezer

PRELIMINARY STUDY ON PLANTAR SKIN RESILIENCE AND PLANTAR PADDING IN THE ANAESTHETIC FOOT IN LEPROSY

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Introduction: The objective of this study is to establish that plantar skin resilience and plantar soft tissue padding in the anaesthetic foot is significantly altered and these changes may have a role in the genesis of plantar ulcers
Skin resilience in the anaesthetic foot is reduced because of loss of sweating and the resultant dryness leading to cracks and callosities. Paralysis of the intrinsic muscles of the foot also leads to thinning of the plantar pad. Both these will predispose to genesis of plantar ulcers

Methods: In this study the plantar skin resilience is tested by a durometer a device used to measure hardness. A durometer which is used for soft materials such as animal tissues is chosen. The plantar soft tissue padding is measured by a standard lateral radiograph of foot and ankle on which the soft tissue shadow is measured at standard points. The distance between the bony outline and skin outline is measured at heel, mid foot and 5th metatarsal head.
Thirty normal feet were assessed for both plantar skin resilience and plantar soft tissue thickness. Twenty two feet, which had complete loss of sensation as assessed by Semmes Weinstein monofilaments, were assessed for plantar skin resilience and soft tissue padding

Results: The results show that there is no difference as far as the plantar soft tissue padding is concerned between normal foot and anaesthetic foot either at the heel (1.9/2.0 cms) or mid foot (2.5/2.44 cms) or forefoot (1.4/1.7 cms). The plantar skin resilience was significantly increased in anaesthetic feet over the lateral border (15/11.5), under 1st metatarsal head (14/8.5), under 3rd metatarsal head (11.5/7) and under the 5th metatarsal head (14/7). However the skin resilience at the heel (15.5/15.5) did not show any difference between the normal and the anaesthetic foot All the twenty two anaesthetic feet either had plantar ulcers or had scarring from previous ulceration indicating that plantar skin resilience probably has an impact on genesis of plantar ulceration.

Conclusion: Specific sites in the anaesthetic feet could be at higher risk of ulceration and may be identified using plantar skin resilience test. This conclusion needs to be further validated by a larger study. This may be less costly than the expensive test of plantar pressure measurement.

O-058

Presentation Time: **Tuesday 17/09/2013 at 14:00 – 15:30**
Symposium Session: **Footwear**
Presenter: Rajni Singh

"STUDY OF SATISFACTION LEVEL OF PATIENTS WITH MICRO CELLULAR RUBBER FOOTWEAR IN BIHAR & JHARKHAND, INDIA"

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Introduction: a complication of disease. People with leprosy, lymphatic Fialariasis (LF), diabetes mellitus or any other abnormal foot function (circulatory diseases) are 20 times more likely to have foot problems than the general public. India and US both have a large no. of foot problem cases due to abnormal foot function (Diabetic, Lymphatic problem, Leprosy and other circulatory disease.
"Protective footwear should be worn by all patients with sole sensory loss, whether or not they have sole wounds, throughout their lifetime.MCR Cushioned insole will distribute walking pressure more widely over the sole and thus minimize the risk of wounds at pressure sites and podiatry appliances correct the abnormal foot function.
LEPRA India has experience in footwear manufacturing in India since 20 year. LEPRA established good manufacturing unit who produces quality Protective Footwear for their own patients. Each patient's tested for Bio·Mechanical assessment. Than footwear were made with 10 mm Micro Cellular rubber with podiatry appliances as per requirement.

Methods: A simple questioner (Close and open ended question) will be prepared for interview in local language. Firstly the field testing was done with Questioner with 10 people. After the finding of the field team, the questioners have been reviewed. 400 people will be interviewed by the team with the revised questioners. This study includes those 400 people (168 female and 232 are male) who have received the footwear before 3 to 6 months from the date of study. All ate Grade II foot disability.

The Questioner contents about fitting with feet, quality, color, design, availability, pressure points, durability, etc. Every week data will be sent to principal investigator for entry the data. 10% data will be cross checked for accuracy.

Results: The study shows 72% people are happy with design, color, pattern, finishing, and quality, etc. 21% patients wants the different color and which cover the whole foot (Should not show the claw toes). 3% people have got skin texture due to footwear. 86% people wearing footwear most of the time every day, 3% people is wearing every day for some time, 2% people wearing a few days every week and 9% people wearing rarely or never.
76% female has requested for other color (73% Brown, 13· Red, 14% mixed color). 56 % people requested for shoes which can to washable (Not leather).

Conclusion: Even this study shows high level of satisfaction with MCR footwear, there are still need to modify the footwear as per Patients requirement and satisfaction. If we not fulfill the satisfaction, than this will lead to non-compliance with wearing the MCR Footwear.

O-059

Presentation Time: **Tuesday 17/09/2013 at 14:00 – 15:30**
Symposium Session: **Footwear**
Presenter: Mr Sathish Paul

MOULDED INSOLE FABRICATION FOR FOOT DEFORMITIES IN LEPROSY AFFECTED PATIENTS USING COMPUTER TOMOGRAPHIC IMAGES

S. K. Paul [1,*], S. Sivarasu [2]

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Introduction: The early prediction and management of plantar ulceration in patients with anesthetic foot such as in leprosy and diabetes have been major challenges in the field of health care all over the world. Sensory loss along with the underlying pathomechanics is one of the main causes for plantar ulcers in these patients. With increasing number of diabetic and existing foot cases, the problem requires more surgical interventions.

Clinicians can provide a means to better distribute the pressure around the foot, and can also correct the biomechanics of the foot by using a customized shoe insole. If detected early enough, orthopedic insoles can correct or prevent further complications and deformities in a deformed anesthetic foot. In this study the 3 Dimensional (D) model of the foot was used to fabricate a customized orthosis.

Methods: The Computed Tomography (CT) images of leprosy affected patient's foot with deformities were acquired. The gray intensities corresponding to the bones of the foot from the CT images were 3 dimensionally reconstructed. The 3D model of the foot was then imported into the Computer Aided Designing (CAD) Software. Boolean operations were carried out in between the 3D foot model and a solid rectangular surface to create a customized foot orthosis.

Results: The results demonstrate that the computerized orthotic fabrication method followed in this study was more reliable in acquiring the anatomical contours of the plantar foot surface for orthotic fabrication. The cost involved in the material used for the moulding processes like the Plaster of Paris Powder (POP), POP rolls and the wastage present in the manual method when we use materials like Ethyl Vinyl Acetate (EVA) and the thermoplastics are reduced by this method.

Conclusion: Orthopedic foot wear plays an important role in the treatment and the prevention of ulcer in the diabetic as well as the leprosy patients. The current work is a novel technique in the fabrication of orthosis. This method reduces the use of more cumbersome techniques of taking cast measurements and making moulds. The simple method used in this study to fabricate a customized orthosis will help in reducing the plantar ulcer and its consequences considerably in a cost efficient way.

O-060

Presentation Time: **Tuesday 17/09/2013 at 14:00 – 15:30**
Symposium Session: **Footwear**
Presenter: Mr Sathish Paul

ACCEPTABILITY AND CURRENT PRACTICE REGARDING FOOTWEAR FOR PEOPLE WITH INSENSITIVE FEET DUE TO LEPROSY

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Introduction: The role of footwear in lifelong protection of insensitive feet due to nerve damage in leprosy is well recognised but it remains an inadequately addressed area of Prevention of Impairment and Disability (POID). As a consequence, people with insensitive feet continue to neglect protective footwear resulting in ulcers and deformities, loss of productivity, stigma and enormous physical and mental suffering for them and their families.

The Leprosy Mission Trust India (TLMTI) has its presence in 8 states in India through 14 Tertiary Leprosy Referral Hospitals, and 6 Vocational Training Centres (VTCs). To understand the effectiveness of its POID interventions in the management of insensitive feet of which appropriate footwear was an aspect, TLMTI conducted a POID Audit in 2012 in 6 hospitals and 3 VTCs.

Methods: The Audit was designed by a team of POID resource persons with leprosy expertise, both internal and external to TLMTI, and field tested in March 2012. The Audit was conducted in 6 hospitals and 3 VTCs in 7 states of India from April - June 2012. Audit teams consisted of physiotherapists, occupational therapists and doctors. Data for footwear was collected through observations, hospital records, Semi structured interviews and Focus Group Discussions with POID staff and people affected by leprosy in the hospitals, VTCs and community.

Results: Though biomechanical foot assessments were to be done for all insensitive feet before prescribing appropriate footwear or orthoses, for many it was missed and may indicate lack of expertise in podiatry and orthoses fabrication, or lack of time (high patient load). Mostly accommodative and functional foot orthoses were provided to patients who developed ulcers, and not to all with insensitive feet to prevent ulcers. There is stigma attached to microcellular rubber (MCR) footwear both in the wearer's mind and in the community; more so towards the hospital made black MCR footwear. Provision of newer designs in straps has led to more acceptance of MCR footwear. There are many expectations by people regarding protective footwear. Regional customs and culture were also found to be barriers to using protective footwear.

Conclusion: Lifelong protection of insensitive feet through appropriate protective footwear that a person will accept and use is a challenge in POID. Footwear is being distributed without actually measuring its acceptability or understanding the social and physical barriers to wearing such footwear. Such research would be valuable both in designing acceptable/suitable models of protective footwear and in addressing the barriers to wearing the footwear through patient education, behavior change and advocacy. Emphasis needs to shift to participatory methods, for people to choose their own appropriate footwear and maintain it. If successful, this would mean that for many, it will no longer be necessary to provide free footwear. Such an approach needs an adjustment of the current practice and the corresponding information system. The need for specialised footwear for some will, of course, continue and innovations in developing custom made footwear within a short period for grossly deformed feet should be tried and capacity built for the same.

O-061

Presentation Time: **Tuesday 17/09/2013 at 14:00 – 15:30**
Symposium Session: **Footwear**
Presenter: Mr Sathish Paul

"LOOKING BEYOND THE HORIZON" – THE LEPROSY MISSION TRUST INDIA MICRO CELLULAR RUBBER UNIT

S. K. Paul [1,*], T. Edward [2], T. Mendis [3]

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Introduction: The Micro Cellular Rubber (MCR) unit was established in Vizinagaram, Andhra Pradesh in India by The Leprosy Mission Trust India (TLMTI) to cater to the needs of Leprosy affected patients with neuropathic feet within India and to countries nearby India. The MCR Unit till date has provided over a million pairs of MCR insoles to all with anaesthetic feet and still continues to do so.
The MCR unit produces quality MCR sheets with a hardness of 15' Shore 'A', which is optimum for distributing pressure and thereby prevent pressure points and thus avoid ulcers. Natural Rubber along with several other chemicals are used in optimum quantities in the manufacture of MCR. The unique manufacturing process gives MCR the ability to spring back to original shape when pressure is released while walking.

Methods: The larger size (24" X 20") coloured MCR sheets with 10mm thickness has become an ideal rubber to prevent stigma for deformed anesthetic feet. Association and constant interaction with various shoe and footwear companies have led to experimentation and development of newer designs in MCR sandals. High quality and standards of the MCR insoles are maintained through periodic standardised quality tests carried out both within and outside the organisation.

Results: Although the initialpurpose of the MCR unit was to cater to the needs of Leprosy affected people, in course of time, various Orthotic & Prosthetic centres realized the value and have started using MCR in their products, especially for Diabetic foot care. Since patients use and prefer protective MCR footwear to prevent ulcers, protect and cover their anesthetic and deformed feet, it is essential for MCR production units to constantly upgrade and develop newer designs and give the patients and opportunity to choose. At present TLM uses 50% of its annual MCR production and the rest is used by other NGOs and Orthotic centers.

Conclusion: With time there has been a rapid change and development in the design and manufacture of footwear, however there has been no alternative to MCR footwear. The constant strive of introducing and making use of MCR footwear in other general disabilities have reduced the stigma of MCR's in leprosy to a great extent.

O-062

Presentation Time: **Tuesday 17/09/2013 at 14:00 – 15:30**
Symposium Session: **Leprosy and NTDs**
Presenter: Ms Shehu S/Fada

ENSURING THAT INDIVIDUALS AFFECTED BY NEGLECTED TROPICAL DISEASES ARE CONSIDERED EQUAL PARTNERS IN TRANSLATING THE LONDON DECLARATION INTO ACTION: A PILOT PROJECT

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Introduction: Since leprosy has been classified as a Neglected Tropical Disease (NTD), discussions are occurring regarding the similarities and differences between leprosy and other NTDs. At the meeting held in Washington, D.C. from November 16-18, 2012, it was stated that individuals personally affected by these NTDs must be partners in the global effort to translate the London Declaration into action, with the goal of eliminating or controlling ten of the NTDs by the end of the decade. Experience with leprosy has shown that it is essential to consider the social aspects of the disease if elimination is to be achieved.

Methods: Immediately after the meeting in Washington, D.C., a pilot project was developed to interview individuals affected by NTDs in different countries where IDEA has a strong presence. Interviews are being conducted by individuals who have personally overcome the challenges of leprosy and have a great deal of experience with human rights, advocacy, and stigma assessment and reduction.

Results: In Nigeria, a pilot project to conduct in-depth interviews with 20-30 people with trachoma, guinea worm and soil-transmitted diseases was developed. Individuals with these diseases are being identified and asked about their overall situation but, in particular, whether they have faced stigma and discrimination and, if so, how they have responded. They are also being asked about the presence of advocacy and support groups established by the people themselves. At the same time, when appropriate, they are being given information on how people who have had leprosy are dealing with discrimination and also creating support systems, locally, nationally, and internationally. Results of these interviews and conclusions and recommendations will be summarized for presentation at the Congress.

Conclusion: Despite the fact that the results of these initial interviews won't be available for a few months since the project was only developed after the NTD Conference in Washington, D.C., it is not only the actual answers to the questions that constitute the "results". It is the fact that individuals affected by one NTD (leprosy) are using their experience to assist in the process of helping to identify and address the social issues affecting individuals with other NTDs. It is estimated that 1.4 billion people worldwide are affected by NTDs, most of whom are among the world's "poorest" citizens. The experience of leprosy has shown that the potential contribution of these individuals is often dismissed and it is essential that we are not left out of the process but included as active participants. "Nothing about us without us." The pilot project in Nigeria is laying the foundation for future involvement. In addition, it is beginning the process of creating a network of support among individuals who are personally affected by NTDs to ensure that having an NTD does not result in neglect, stigma, discrimination or the denial of anyone's basic rights.

O-063

Presentation Time: **Tuesday 17/09/2013 at 14:00 – 15:30**
Symposium Session: **Leprosy and NTDs**
Presenter: Lucrecia Acosta

LEISHMANIA SPP/MYCOBACTERIUM LEPRAE COINFECTION IN CHOLUTECA (HONDURAS) AND CHINANDENGA (NICARAGUA).

L. Acosta [1,*], N. Caballero [2], J. Stanford [3], L. Fuentes [4], F. J. Bornay-Llinares [5], H. Donghue [3], J. R. Gómez [6], P. Torres [1]

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Introduction: The aim of the study is to identify the etiological agent present in skin lesions suspicious of leprosy or *Leishmania* in some individuals of the populations of Choluteca (Honduras) and Chinandenga (Nicaragua) and potential implications for their household members.

Methods: 35 biopsies /31 individuals from skin lesions (erythematous macules), 18 post biopsy swabs from the biopsy excision/16 individuals and 99 nasal swabs/98 individuals were obtained from cases suggestive of leprosy or *Leishmania*. All samples were analyzed by the Polymerase Chain Reaction (PCR) for the detection of specific genus/specie DNA of *Leishmania* spp. (ITS-1 gene target) and *Mycobacterium leprae* (groEL and RLEP gen target).

Results: A total of 118 individuals were included in the study. Their ages varied between 6 and 83 years, mean age: 30 years; 83 females and 28 males. Forty seven were from Honduras and sixty four from Nicaragua. They all presented skin lesions compatible with leprosy or *Leishmania* or were contacts of these cases, 5/35 of the skin biopsies were positive using primers that amplify a specific fragment of the groEl gen and 8 for the RLEP repetitive sequence. *Leishmania* spp. DNA was detected in 24/35 biopsies. All *Leishmania* PCR + samples were digested with restriction enzyme *Hae III* and *Leishmania infantum* was identified in all the samples. DNA of both species was detected in 3 samples. Two of the 18 post biopsy swabs were positive for the *M. leprae* RLEP target and all negative for the groEL gen. The post biopsy swabs and corresponding biopsies results presented 100% correlation. *Leishmania* spp. DNA was amplified in 13 swabs/11 patients and the species detected was *L. infantum* and correlation with the biopsies was 62.5%. The post biopsy swab was DNA *Leishmania* positive in 3 biopsy negative samples and 3 DNA biopsy positive were post biopsy swab negative. DNA of both species was detected in 1 biopsy and was 100% concordant with the biopsy result. Ninety one nasal swabs obtained from 98 individuals were negative for PCR amplification of the gene groEL but 4 were positive for the RLEP *M. leprae* target, two without any other positive sample and two already with previous positive samples (skin biopsy and post biopsy swab). *Leishmania* spp. DNA was detected in 1 nasal swab which correlated with one of the 3 positive post-biopsy swabs and skin biopsy negative. *M. leprae* DNA was detected in 9/111 individuals and *Leishmania infantum* DNA in 25/111.

Conclusion: The presence of unspecific skin lesions in areas where leprosy and *Leishmania* are endemic emphasizes the need of a correct diagnosis. Prospective studies that correlate the presence of the etiological agent with the clinical evolution of the lesion are necessary for the implementation of the proper treatment and clinical evolution.

O-064

Presentation Time: **Tuesday 17/09/2013 at 14:00 – 15:30**
Symposium Session: **Leprosy and NTDs**
Presenter: Rajni Singh

"IMPACT OF MORBIDLY CARE MANAGEMENT IN ELEPHANTIASIS (LYMPHATIC FIALARISASIS) IN FIVE DISTRICTS OF BIHAR"

R. K. Singh [1,*], A. Singh [1], G. C. Srivastav [1], S. K. Mishra [1]

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Introduction: Lymphatic Filariasis, known as Elephantiasis, puts at risk more than a billion people in more than 80 countries. Over 120 million have already been affected by it, over 40 million of them are seriously incapacitated and disfigured by the disease. In its most obvious manifestations, lymphatic filariasis causes enlargement of the entire leg or arm, the genitals, vulva and breasts. In endemic communities, 10-50% of men and up to 10% of women can be affected. The psychological and social stigma associated with these aspects of the disease is immense. In addition, even more common than the overt abnormalities is hidden, internal damage to the kidneys and lymphatic system caused by the filariae.
Lymphoedema is the main problem in filariasis. It mostly worsens due to negligence in the initial treatment. Once lymphoedema develops, it cannot revert to normal condition after certain stage. But encouragingly, it also does not deteriorate if regular self-care is adopted. A deranged lymphatic system lowers the resistance to infection. If it is infected repeatedly the condition worsens and it becomes a source of constant suffering. Hygiene of the part prevents infection by fungus and bacteria. If regular care is taken at home acute attacks are prevented to a great extent. Care of an affected part needs to be taken almost throughout life often assisted by family and community.
This study was designed to measure the outcome and impact of morbidity care in rural setup of Bihar.

Methods: A programme for community home based care were designed for entrusting a person's either from family, friends or community, apart from the LF sufferer, to assist and monitor the home based care. 150 (95 female and 55 Male)elephantiasis patients from 30 villages were selected of four districts of Bihar has been selected in 2009. 109 case were between the age group of 30 to 45 year.The key components of this programme was the self-care with Daily Inspection, Washing with soap, drying with cotton cloth, exercise (Active and passive), massage, Elevation, Protective footwear. Initial assessments of each patient were done with General information, Treatment history, Disability details (Entry point, acute attack, disability grading etc.) in structured format. Periodically (Every three months) assessments were carried out. Self-care training has been given to patients and their family member.

Results: After three year data were analyzed and finding are very encouraging. Out of 150 patients 148 are doing regular self-care practices, which they have, learn in training. This was notice that entry point healed up to 76.7 %, acute attack has been reduced by 91.2%. Reduction of swelling took place 56% on average (All the site).98% patients wearing protective footwear made by 6mm Micro Cellular Rubber or EVA. No cut, pressure point has been observed due to footwear.

Conclusion: As mentioned above, morbidity control is one of two pillars of eliminating LF globally. WHO (2000b) categorized suffering and disability of LF into four different aspects: physical, social, psychological, and economic. Physical components of disability include asymptomatic or symptomatic body conditions such as acute inflammatory attacks, disfigurement of the body, decreased mobility and function of limbs, obesity, and hidden disease. These findings should help design a culturally competent morbidity control strategy at the local level. Likewise, age is an important aspect of public health interventions among lymphedema patients, especially in the treatment of legs.

O-065

Presentation Time: **Tuesday 17/09/2013 at 14:00 – 15:30**
Symposium Session: **Leprosy and NTDs**
Presenter: Winnie Ooi

INFECTIOUS CO-MORBIDITIES IN HANSEN'S DISEASE(HD) PATIENTS IN THE US: IMPLICATIONS FOR TREATMENT.

W. Ooi [1,*], M. Bilodeau [1], S. Burns [2], D. Gannon [3], J. Gawoski [4], S. Moschella [2]

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Introduction: In the US, HD occurs predominantly in immigrants in whom asymptomatic infections acquired in their countries of origin may co-exist. Commonly used immunosuppressive therapies in the treatment of HD, such as steroids may reactivate or exacerbate these infections. We reviewed the patients treated in our clinic over a six year period between 2007 and 2012, who were screened for latent strongyloidiasis, Chagas disease, HIV, hepatitis B, and tuberculosis. The incidence of complications correlated with immunosuppression by steroids and other drugs.

Methods: 120 patients from 20 countries were reviewed, 60 were from Brazil. Their median age was 50 years; 78% were male. Most latent infections were diagnosed by serology; latent tuberculosis by tuberculin testing. Medication history and incidence of complications were obtained prospectively and by chart review.

Results: 31 of 67 patients tested were positive for strongyloidiasis, 0/18 for Chagas disease, 0/52 for HIV, 9/80 for hepatitis B, and 6/39 had positive PPD tests. Two patients infected with HIV, one coinfected with *Mycobacterium tuberculosis*, were referred for consultation, but are not included in the study population. 80 patients were prescribed steroids and two were given TNF inhibitors. Of those given steroids, 92.8% received them for ≥ 6 months, and 50% for > 2 years. One patient, later found to have hepatitis B, was treated with prednisone for erythema nodosum leprosum and developed fatal hepatic necrosis. Subsequent patients with significant hepatitis B viral load (4/8) received antiviral medications to avoid complications of reactivation. Patients with positive strongyloides antibody were treated with ivermectin; of these, 54.8% (17/31) received steroid therapy. 53 patients had never been tested for strongyloidiasis, of whom 43.4% (23/53) also received steroid therapy. None developed disseminated strongyloidiasis. All patients received rifampin, an effective antituberculosis drug, as part of their HD therapy. None reactivated their tuberculosis.

Conclusion: HIV infection, Chagas disease, hepatitis B infection, strongyloidiasis and latent tuberculosis are co-infections that need to be considered when treating immigrants with HD in the US. The frequent use of immunosuppressants such as corticosteroids may cause reactivation or exacerbation of potentially fatal dormant diseases. Significant percentages of our patients were co-infected with Strongyloides stercoralis and hepatitis B, requiring pre-emptive therapy or prophylaxis during immunosuppression. Similar considerations will apply to patients seen in HD clinics elsewhere, with possible modification depending on country of origin.

O-066

Presentation Time: **Tuesday 17/09/2013 at 14:00 – 15:30**
Symposium Session: **Leprosy and NTDs**
Presenter: Digafe Tsegaye

LEPROSY HIV CO-INFECTION OBSERVATIONAL STUDY IN ETHIOPIA

D. Lockwood [1], S. M. Lambert [1, 2], P. Nicholls [3], S. D. Nigusse [4], D. Tsegay [4,*], J. Hussein [5], M. H. Idriss [5], L. K. Yamuah [6], K. Bobosha [7], A. Geluk [8], Y. Bekele [7], A. Assefa [7]

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Introduction: There is little prospective data on the clinical and immunological features of patients with leprosy-HIV co- infection. We report the first study from Africa.

Methods: Patients were recruited from April 2010 onwards and HIV testing was offered to all patients with new leprosy. Patients with positive HIV test were matched with controls for age, sex, type of leprosy and reactional state. They were followed for three years with monthly clinical reviews and 6 monthly CD4 and viral loads measurements where appropriate. We recorded the evolution of their skin lesions and progression of nerve damage and the response of the reactional skin lesions and peripheral nerve inflammation to steroid treatment.

Immunological studies were also conducted. Peripheral Blood Mononuclear Cells (PBMC) from Blood samples of confirmed HIV co-infected and non-HIV leprosy patients were isolated and stimulated with *M. leprae* Whole Cell Sonicate (WCS) and PHA in six days culture. IFN-g responses were measured by ELISA. RNA from blood samples collected in paxgene tubes were isolated and subjected to multiple ligation probe amplification (MLPA) and data analysis of this genetic profiling is in progress.

Results: 23 HIV positive patients and 20 matched controls (HIV negative) have been recruited. One patient presented with leprosy IRIS after starting ART.
23 HIV positive patients and 20 matched controls (HIV negative) have been recruited. One patient presented with leprosy IRIS after starting ART.
The Ridley–Jopling classification in the co-infected group shows: 15 BT, 1 BB, 1 BL, 4 LL and two neural leprosy cases. On presentation 20 patients were in reaction (3 had ENL, 16 had RR and one had silent neuritis). The one co-infected patient that presented with no reaction developed ENL 5 months into her MDT treatment.
Analysis of co-morbidities will be presented as well analysis on frequency, severity and response to treatment of reactions.
Most of the HIV co-infected leprosy patients were on ART during sampling. The responses to PHA in both HIV co-infected and non-HIV leprosy patients (all types of leprosy) were found comparable however relatively low responses to *M. leprae* WCS was observed in TT/BT co-infected patients. The BL/LL patients in both groups responded poorly to *M. leprae* WCS as *M leprae* specific cell mediated immunity in lepromatous leprosy patients in general is low.

Conclusion: All types of leprosy were seen in the co-infected group, with high numbers of BT cases despite HIV infection. There were high rates of reactions, with more steroid resistant reaction in the co-infected group.
Further analysis of immune responses is needed in more HIV- leprosy co infected patients representing all types of leprosy.

Clinical Study Funded by: GLRA

O-067

Presentation Time: **Tuesday 17/09/2013 at 16:00 – 17:30**
Symposium Session: **ENL Reaction 1**
Presenter: Stephen Walker

THERE IS SIGNIFICANT MORTALITY ASSOCIATED WITH ERYTHEMA NODOSUM LEPROSUM (ENL) AT ALERT HOSPITAL, ETHIOPIA – A FIVE YEAR RETROSPECTIVE STUDY

S. L. Walker [1, 1,*], E. Lebas [2], S. N. Doni [3], S. M. Lambert [1, 3]

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Introduction: ENL is a debilitating multisystem disorder characterised by fever, malaise and painful erythematous cutaneous nodules. ENL is often recurrent or chronic in nature and frequently severe. Treatment options in many settings are limited and consequently many patients are on prolonged treatment with high doses of corticosteroids. Thalidomide is not available in Ethiopia. The adverse effects of corticosteroids are well documented however the mortality associated with treated ENL is unclear.

Methods: ALERT Hospital in Addis Ababa, Ethiopia is a referral centre for the management of patients with leprosy and other skin diseases. Patients with severe ENL are admitted for control of symptoms. Individuals with milder disease may also be admitted if there are complicating factors. The database of patients admitted to the two dermatology, leprosy and HIV wards was reviewed for a 5 year period. The notes of patients who were admitted, discharged, transferred to another facility or died with a diagnosis of leprosy or leprosy-related complication were reviewed using a standard data collection tool.

Results: 414 individuals were identified from the ward database. 309 (74.6%) patient records were located and reviewed. 99 individuals had ENL and 145 Type 1 reaction (T1R). 8 patients with ENL died compared with two diagnosed with T1R. This difference is statistically significant (p=0.0168, Fisher's Exact Test). All the deaths in the ENL group were attributable at least in part to corticosteroids and all the deaths occurred in individuals who had been taking corticosteroids for a continuous period of at least 18 months. Two deaths were possibly due to ENL itself.
The median age of individuals with ENL was 25 years. ENL was chronic in 70% of cases. The skin and another organ system was involved in 30%. The duration of ENL was more than 12 months in over 80% of individuals. There was considerable morbidity associated with corticosteroid therapy in the ENL group including osteoporosis, hypertension, diabetes mellitus, strongyloidiasis and tuberculosis.

Conclusion: The conclusions drawn are limited by the retrospective nature of the study however it is clear that individuals in Ethiopia diagnosed with ENL are at greater risk of premature death than those with T1R. The significant mortality and morbidity associated with ENL appears to be largely associated with chronic corticosteroid usage in this setting where thalidomide is not available and access to other immunosuppressants is limited. Patients and health workers need to be aware of the increased risk of severe illness in ENL patients the majority of whom experience prolonged immunosuppression.
ENL is a chronic disease in the majority of affected individuals. The economic burden for the individual, families and health care systems needs to be assessed.
Detailed prospective data about ENL and better evidence concerning treatments is required in order to develop effective guidelines for the management of ENL and minimise deaths associated with it.

O-068

Presentation Time: **Tuesday 17/09/2013 at 16:00 – 17:30**
Symposium Session: **ENL Reaction 1**
Presenter: Kameswara Rao Adiraju

EPIDEMIOLOGICAL ASPECTS OF TYPE - 2 REACTIONS IN LEPROSY - A STUDY AT A REFERRAL HOSPITAL IN ANDHRA PRADESH, SOUTH INDIA

K. R. Adiraju [1,*], S. Jonnalagadda [2], R. R. V. Pemmaraju [3]

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Introduction: LEPRA India started supporting National Leprosy Eradication Programme (NLEP) from 1989, with services ranging from MDT to rehabilitation. With Hyderabad as headquarters it has projects in 4 states and a research arm called Blue Peter Public Health & Research Centre (BPHRC) since the year 2000. The center has a Clinical & Epidemiology division for leprosy, TB, HIV with research laboratories support in microbiology, immunology and genetics. Being a specialized referral center for treatment of leprosy and its complications, it received ENL cases, considerable of them being un-controlled/steroid dependent/chronic posing challenge for management. ENL, also known as Type – 2 reaction is a common complication involving the lepromatous spectrum of leprosy. It is one of the serious medical complications due to its nature of producing systemic complaints in multiple organs. Patients with severe grade of reaction are generally off from the work. It is controlled with steroid treatment but often recurs. This paper aims to analyze the Type – 2 reactions among the persons treated with Multi Drug Therapy (MDT) at this center.

Methods: The retrospective data of 629 persons who were diagnosed as having leprosy and put on MDT have been analyzed to know the epidemiology of type-2 reactions (ENL) in terms of incidence and recurrence. Correlation with episodes and Bacteriological Index (BI) is drawn.

Results: A total of 2676 persons got registered in the last 12 years from 2000 to 2011 which included 629 for MDT. Of the 629 diagnosed with leprosy at this center, MB were 398 (63.3%) with male preponderance of 71.9% (286). Of these 398, 44 (11.3%) cases presented with ENL with male preponderance of 61.4%. Amongst the 44, 24 (54.5%) had the type – 2 reaction at the time of registration with 85 episodes ranging from 1 – 10 with an average of 3.5 episodes. Of the 20 who had reaction during and after MDT, the periodical analysis was done. The observation was that, 8 (40%) of them during the first 3 months, 4 (20%) during the next 3 months, 2 (10%) after 3 more months and 1 (5%) between 12 – 18 months and one (5%) after 2 years of MDT. Altogether these 20 cases had 84 episodes of reactions ranging from 1- 15 with an average of 4.2 episodes. Regarding the Bacteriological Index 18 (41%) persons had BI less than 4 and the rest had BI more than 4 at the time of initiating treatment. In terms of disability, 22 (50%) persons have no disability, 11 (25%) have Gr. I and the rest have Gr. II.

Conclusion: This study reveals that about 11% of MB cases present with ENL reactions. Average number of episodes was 4 per case with higher (4.2) in treated and lower (3.4) episodes before treatment. ENL was cause for health check-up in 50% of cases; 59% of ENL found in high BI 4+ and above. Incidence of ENL is higher (40%) in 1st 3 months after MDT and rare after two years. There is direct association with BI.

O-069

Presentation Time: **Tuesday 17/09/2013 at 16:00 – 17:30**
Symposium Session: **ENL Reaction 1**
Presenter: Dr Deanna Hagge

TYPE 2 REACTIONS OR ERYTHEMA NODOSUM LEPROSUM (ENL) IN LEPROSY: A HOSPITAL-BASED STUDY OF CLINICAL DEMOGRAPHICS AND TREATMENT PATTERNS

C. B. Kunwar [1], M. Shah [2,*], K. Neupane [1], I. B. Napit [2], W. R. Berrington [3], T. R. Hawn [3], D. A. Hagge [1]

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Introduction: Erythema Nodosum Leprosum (ENL or Type II reaction) is a well recognized but poorly understood immune-mediated complication which often has a protracted course beyond current World Health Organization (WHO) guidelines of 12 weeks tapered prednisolone treatment. Clinical treatment patterns across global leprosy care providers, however, are not well described and neither are the risk factors that may be associated with them. In order to characterize clinical demographics, risk factors and treatment courses, we performed a retrospective chart review of ENL patients attending Anandaban Hospital in Nepal.

Methods: A retrospective chart review was performed on 1033 leprosy patients at Anandaban Hospital which serves as a tertiary referral centre for leprosy complications in Nepal. Of these patients, 174 presented at Anandaban with one or more episodes of ENL between1996-2011.

Results: Roughly half of the ENL patients first presented with ENL symptoms at the time of leprosy diagnosis, while another third developed their first ENL episode during the first year of multi-drug therapy (MDT). First ENL episode presentation also occurred within the 2nd (12.2%), 3rd (3.8%) and 4th years (3.2%) after initiation of MDT. Youth (<30 years old) and bacterial index (BI) were significant risk factors for ENL with 75% of cases harboring >3+ BI at the time of diagnosis; however, BI was not associated with duration of treatment. New patients diagnosed with leprosy at Anandaban reporting BI>3+ received 2 years MDT. All ENL patients were classified with either borderline lepromatous (BT) or lepromatous (LL) leprosy, with LL patients at nearly twice the risk of BL (OR 1.92, P < 0.02). WHO grade 2 disability was evident in 18% of cases. Prednisolone was the primary treatment administered with thalidomide secondarily prescribed for cases with more severe symptoms or for steroid sparing effects. Clofazamine was often supplementarily prescribed. The vast majority of ENL episodes became chronic (requiring > 6 months treatment), some for up to 7 years. Only 50% of ENL patients placed on prednisolone alone resolved their first episode within 18 months of treatment, a median reached only after 2 years by more severe cases receiving thalidomide. It was only within 5 years treatment that 90% of first ENL episodes had resolved. Roughly 21% and 6% of ENL patients experienced a second and third distinct ENL episode (respectively).

Conclusion: Current treatment options for ENL remain inadequate as the majority of ENL patients required a year or more of treatment, often as an inpatient, to resolve one episode. Although high BI (>3+) was a risk factor for ENL occurrence, BI was not associated with treatment duration required for resolution. Analyses continue and we are currently examining whether host genetic factors are associated with treatment response to ENL.

O-070

Presentation Time: **Tuesday 17/09/2013 at 16:00 – 17:30**
Symposium Session: **ENL Reaction 1**
Presenter: Dr Hemanta Kumar Kar

COMPARATIVE EFFICACY OF FOUR TREATMENT REGIMENS IN TYPE 2 LEPROSY REACTIONS (PREDNISOLONE ALONE, THALIDOMIDE ALONE, PREDNISOLONE PLUS THALIDOMIDE AND PREDNISOLONE PLUS CLOFAZAMINE)

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Introduction: Early detection and prompt optimal treatment in T2R can significantly reduce complications. This study was conducted to assess the comparative efficacy of Prednisolone (P) alone or thalidomide (T) alone for the first attack of T2R. Combination of P+T or P + Clofazamine (Clz.) for chronic /recurrent T2R.

Methods: This was an open prospective single centre study involving LL/BL patients with T2R. Enrolled patients were randomized into four treatment groups. Two single drug regimens (either P in group 1 or T in group 2) was used for first episodes of T2R. Combination regimens (P + T in group 3) and (P + Clz. in group 4) were administered for chronic / recurrent T2R. Prednisolone was administered at 1 mg/kg/day for 2 weeks and tapered over 20 weeks. Thalidomide was started at dose of 400 mg/day and tapered over 20 weeks. Clz. was started at 300 mg/day for 12 weeks and then tapered over 20 weeks. Additional doses of P were added for all groups in case of relapse/reactivation or increase in severity of T2R.
Clinical outcome, number of recurrences, additional steroid requirement, side effects of treatment were evaluated after 20 weeks. Extra Prednisolone dose to control reaction was used as parameter to judge efficacy of the regimens. Patient's own assessment was done using Visual Analoug Score (VAS) and doctor's assessment using Reaction Severity Score (RSS) at 0 and 20 weeks.

Results: Sixty six patients who completed the study were analysed. There were 17 patients each in Group 1 and 3, 16 each in Group 2 and 4. Fifty nine (89.39%) patients developed T2R during MDT whereas 7 (10.61%) had T2R after RFT.
Total Prednisolone dose as per protocol was 4.12 g. However, most patients did not require steroid increments but only a longer duration of Prednisolone at a dose of 30-40 mg/day raising the total Prednisolone requirement from 4.12 g to 4.98 g in Group 1 (additional dose =0.86 g), 4.36 g in Group 3 (additional dose = 0.25 g), 4.75 g in Group 4 (additional dose = 0.63 g). In Group 2 average T dose was 22.05 g, additional dose in Group 2= 5.49 g (in one patient).
More than 3 episodes of recurrence were present in 3/17 (17.64%) in Group 1, 1/17 (5.88%) in Group 3 and 3/16(18.75%) in Group 4. No patient in Group 2 developed more than 3 episodes of recurrence. RSS Score were compared using paired t test, at 0 and 20 weeks improved from 13.82+2.04 to 6.29+1.49 (p=0.016), from 14.69+2.6 to 5.75+1.12 (p=0.006) in Group 2, from 29.47+6.61 to 9.35+2.78 (p=0.000) in Group 3 and from 26.13+5.47 to 16.81+4.27 (p=0.000) in Group 4. It was significant in Group 1 and highly significant in Group 2, 3 and 4. Percentage improvement in RSS Score was 54.48% in Group 1, 60.85% in Group 2, 68.27% in Group 3 and 35.66% in Group 4. Improvement in VAS Score was 61.56% in Group 1, 65.4% in Group 2, 74% in Group 3 and 62% in Group 4 respectively. Comparison in mean RSS Score at 20 weeks in different groups was done using ANOVA test. In Group 1 – Group 2 it was 0.544 + 0.941 (p= 0.565, not significant) and in Group 3 – Group 4 was 7.460+0.941 (p= 0.000, significant). Side effects like onset of Cushing's disease, diabetes and cataract were observed in few patients in Group 1, 3 and 4.

Conclusion: Thalidomide and Prednisolone are both efficacious for first episode of T2R but Thalidomide is better. However, Prednisolone alone has high recurrence rate, require additional dose to control recurrences and has more adverse effects. Combination of P + T / Clz. are both efficacious for recurrent/ chronic T2R but, P+T is better when RSS score is compared at 20 weeks. Also recurrence is more with P + Clz.

O-071

Presentation Time: **Tuesday 17/09/2013 at 16:00 – 17:30**
Symposium Session: **ENL Reaction 1**
Presenter: Stephen Walker

THE FEATURES OF ERYTHEMA NODOSUM LEPROSUM (ENL) IN THE INFIR COHORT

S. L. Walker [1,*], P. G. Nicholls [2], D. N. Lockwood [1] and the INFIR Cohort Study

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Introduction: ENL is a debilitating multisystem disorder characterised by fever, malaise and painful erythematous cutaneous nodules. ENL may occur before, during or after completion of multi-drug therapy (MDT) and is often recurrent or chronic in nature. There are few prospective data concerning the features of ENL and treatment using prednisolone.

Methods: A multicentre cohort study of newly diagnosed multibacillary leprosy patients was conducted in northern India. Individuals with a bacterial index (BI) of 3 or more received 24 months of MDT. Follow-up was monthly for 12 months and then every two months in the second year. Study subjects were assessed clinically and with detailed nerve function assessment.

Results: 303 people were enrolled. 105 had borderline lepromatous (BL) leprosy or lepromatous leprosy (LL). 19 (6.3%) individuals were diagnosed with ENL. 6 (32%) people had ENL at enrolment and 13 (68%) developed it subsequently. The median age of individuals was 30 years and 72% were male. 18 of the 19 individuals had BL leprosy or LL. The proportion of individuals who had LL was significantly greater in the group who had ENL compared with those who did not develop ENL. The mean BI of the group with ENL was 3.1.
Oedema was present in 47% of individuals with ENL while a documented fever >37.5°C was present in 11%. Of individuals who presented with ENL at enrolment 83% had more sensory impairment and 33% motor impairment that had been present for more than six months. 21% of individuals with ENL experienced nerve pain. 5% and 21% of patients with ENL had warm or cold sensation loss respectively. 53% had vibration perception impairment, 21% motor conduction impairment and 11% sensory nerve conduction impairment.
All 19 patients with ENL were treated with prednisolone. 16 individuals took prednisolone for at least 12 weeks during the study period. The median number of times that prednisolone was initiated or the dose increased in these individuals was 3. Six of these 16 individuals had a single episode of ENL. All of them received prednisolone for between 16 and 28 weeks. Individuals with multiple episodes of ENL received corticosteroids for between 44 and 104 weeks.

Conclusion: An aim of the INFIR study was to find predictors of neuropathy and reactions. We have used these prospective data in the small number of individuals diagnosed with ENL in the cohort to describe the features of ENL and the utilisation of prednisolone. The data may underestimate the incidence of ENL because many of those at risk of developing ENL may have benefited from the protective effect of clofazimine in MDT which was given for an extra 12 months compared with current practice.
Fever is often cited as a hallmark of ENL but was present in only a minority of individuals. This may have implications for case definitions in future studies. The high rates of old nerve function impairment and nerve pain in individuals who present with ENL at the time of diagnosis of leprosy suggests that such a presentation may indicate delay in diagnosis. This might be a useful marker of the success of leprosy detection within a national programme akin to disability rates.
All those who received a course of prednisolone which was completed before the end of the study were given prednisolone for at least 16 weeks and many much longer. This may reflect clinical practice at the study centres. However for a significant proportion of patients ENL is a chronic, often steroid dependent condition for which better treatments need to be made available.

O-072

Presentation Time: **Tuesday 17/09/2013 at 16:00 – 17:30**
Symposium Session: **History of Leprosy 1**
Presenter: Jo Robertson

THE BEGINNING OF INTERNATIONAL EFFORTS TO CONTROL LEPROSY

J. Robertson [1,*]

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Introduction: This paper recounts the efforts, precipitated by a delegation from the newly formed nation of India, to bring leprosy to the attention of the Second World Health Assembly held in 1949.

Methods: This paper draws mainly on archival documentary research, on WHO archives in Geneva and also on the research gathered during my work on the International Leprosy Association's Global Project on the History of Leprosy.

Results: The alliance of interests that brought leprosy to the notice of the World Health Assembly for consideration relied upon a two-pronged approach. Firstly, the International Leprosy Association (ILA), formed in 1932, at the time of the League of Nations investigation, ensured that it was one of the earliest non-governmental organisations to enter into an affiliation with the WHO. It hoped to share in the research that the WHO conducted and although these hopes for a closer association had to be qualified in light of the novel structure and functions of new organisation, it continued to develop strategies that would eventually succeed in the WHO appointing an expert panel and expert committee for leprosy and then establishing a Leprosy Unit. The second part of this strategy, the Indian delegation to the Second World Health Assembly, was both emotive and also symbolic. Not only were the arguments of the Indian delegation to the Second World Health Assembly empowered by the efficacies of the new chemotherapeutic products; they were also founded in a fundamental conviction about the social and humanitarian value of work against leprosy. At least one of the participants and many of the supporters of the delegation had suffered imprisonment by the British in the cause of an independent India, and their conviction was forged in the independence movement in India. They directly supported both national and international attention to leprosy and had no hesitation in bringing it to the attention of the World Health Assembly and WHO. At this point the tearing down and rebuilding of the body politic in India brought its focus to bear upon an international effort to rebuild the physical bodies of leprosy-affected people throughout the world. While this was a time of dramatic discursive shifts in the history of this disease, most of the fundamental questions about the disease were still to be answered and the treatments based on the sulphones ushered in a raft of difficult to address questions accompanied by their own specific controversies and passionately-argued debates.

Conclusion: While the Indian delegation had won a significant alteration to the agenda of the WHO by obtaining a resolution for specific activities, something that it would hold the Assembly and the Organisation to, it would quickly become increasingly and frustratingly apparent that even if the will to carry out work against leprosy was expressed by the WHO, there was no immediate way for this to happen. WHO, dependent as it was for funds from member states, was labouring under stringent financial constraints, so a budget for work against leprosy could not be taken for granted. The delegation had succeeded in obtaining a resolution that would squeeze leprosy into the work of WHO, but the actual promises entailed in this resolution would have to won by degrees over the next decade.

O-073

Presentation Time: **Tuesday 17/09/2013 at 16:00 – 17:30**
Symposium Session: **History of Leprosy 1**
Presenter: Magnus Vollset

FOUR PILLARS OF COLLABORATION: ORGANIZING INTERNATIONAL LEPROSY RESEARCH, 1897-1933

M. Vollset [1,*]

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Introduction: Paris, December 31, 1926: The French medical professor Eduardo Jeanselme and the Brazilian leprologist Heráclides César de Souza-Araújo raised their glasses to celebrate the founding of the "International Society of Leprology". With prominent collaborators from around the world, the organization was set to coordinate international leprosy research, establish international research centers, prepare global science-based advice on leprosy prevention, and resume publication of the medical journal Lepra Bibliotheca Internationalis (1900-1914). However, the Society never had a single meeting, and of their journal only a draft front page saw the light of day. Nevertheless, the effort was not in vain.
When the International Leprosy Association (ILA) was founded at a two-week meeting in Manila in 1931, both the organizatory structure and most of the initial leaders were adapted from the failed Society. Likewise, the International Journal of Leprosy (1933-2005) took its cue from Lepra Bibliotheca Internationalis.
The ILA and the medical journal make up two of what I characterize as the four pillars for international collaboration regarding leprosy research for the next seven decades. The third and fourth pillar were the League of Nations' Leprosy Commission (whose work was continued by the

World Health Organization), and the International Leprosy conferences, both of which continue to this day. In addition to the League of Nations, two other institutions were instrumental in organizing and deciding who was to be invited to the meeting in Manila: the Leonard Wood Memorial and the Rockefeller Foundation.
This paper will examine the genesis of these four pillars, and explain how leprosy research was organized on an international scale between the first international leprosy conference in Berlin in 1897 and the first issue of the International Journal of Leprosy in 1933. Who were the main architects behind these international arenas? What were their activities and division of labour? How did leprologists around the world unite and organize on a global scale?
This paper continues the story historian Shubhada Pandya started uncovering in her study of the First International Leprosy Conference in Berlin in 1897, which was presented at the international leprosy conference in Salvador, Brazil, in 2002 (*www.scielo.br/pdf/hcsm/v10s1/a08v10s1.pdf*).

Methods: This study is based on archival material from the League of Nation Leprosy Commission, correspondence, published conference proceedings, and an analysis of Lepra Bibliotheca Internationalis (1900-1914).

Results: In addition to identifying what I call the four pillars in the framework of international collaboration regarding leprosy research, the main finding is that despite interruptions and changes to the actors involved, there was a clear continuity from the first leprosy conference to the framework of international collaboration that would last for more than seven decades.

Conclusion: (Intentionally left blank.)

O-074

Presentation Time: **Tuesday 17/09/2013 at 16:00 – 17:30**
Symposium Session: **History of Leprosy 1**
Presenter: Dr Jane Kim

LEPROSY, DEMOCRACY AND CITIZENSHIP IN KOREA UNDER AMERICAN OCCUPATION (1945 - 1948)

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Introduction: This paper explores the leprosy control program carried out in Korea during the American military government period (1945 – 1948). Following the end of Japanese colonization of Korea (1910 – 1945), the United States occupied Korea from the south of the 38th parallel line and the northern part of Korea above the 38th parallel line was taken up by the Soviet Union. And during the three years that the American military government governed South Korea, 'decolonization' and nation – building programs were carried out throughout the newly liberated nation – state. Public health and sanitations were areas that were especially targeted by the newly incoming American military government. Leprosy, in particular, was one such public health project that the American Occupation paid particular attention. As disease that possessed politically symbolic values, 'controlling' leprosy was means for the Occupation Government to showcase the successful decolonization and establishment of modern nation – state in Korea.
The argument of this paper is that self – government (chach'ihoe/ chach'ije) carried out at the Sorok National Leprosarium during the American Occupation served as symbol of 'democracy' underway in the newly liberated South Korea. Through 'democratizing' leprosy, the incoming Occupation government sought to epitomize the transplantation American democracy onto a nation that had previously only known colonialism. However, as this paper shows, this ' self – government' that the American Occupation lauded as an example of democracy and arrival of modern nationhood was neither 'new' nor 'decolonizational' in its practices. Through writings on American leprosy control in the Philippines, this paper will demonstrate that 'self – government' and 'democracy' have been one of the hallmark features of Culion Leprosarium, the world's largest leprosarium built by the American colonial government in Philippine in 1906. By replicating these American 'colonial' practices in the Philippines onto Sorok and by implication, the newly liberated South Korea, this essay concludes with questions on what decolonization and citizenship meant when the Korean leprosy body came to possess the symbolic values of democracy and modern nationhood.

Methods: The main method employed in this paper is archival research. In conjunction with field research and oral interviews of former patients and health workers conducted in Korea, I have complimented it with extensive archival research carried out in Korea, Japan, U.S., Canada and London.

Results: My study is the very first study to show the immediate and close relations between the American military government and their politicization of leprosy control as decolonization and nation – building program for the newly liberated Republic of Korea.

Conclusion: By exploring the relations between the political discourses of decolonization, democracy and human rights to the public health efforts of leprosy control when it first began during the American military occupation of Korea (1945 – 1948), this paper will conclude with a more critical view of the post – colonial history of disease control and of leprosy in Korea. The conclusion to be offered in my presentation is that too often the post – colonial history of leprosy in Korea has been offered as triumph of democracy and human rights. By showing how the political regimes have coopted the very discourse of decolonization, democracy and human rights when speaking of leprosy, my paper will show how the concept of human rights and democracy needs to be historicallyl contextualized.

O-075

Presentation Time: **Tuesday 17/09/2013 at 16:00 – 17:30**
Symposium Session: **History of Leprosy 1**
Presenter: Waka Hirokawa

A HISTORY TORN BETWEEN "PROVIDING RELIEF" AND "INFLICTING HARM": MISSIONARY WORK FOR HANSEN'S DISEASE SUFFERERS AND LOCAL COMMUNITIES IN MODERN JAPAN FROM THE 1880S TO THE 1940S

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Introduction: This paper explores the historical characteristics of missionary work for Hansen's disease sufferers carried out by Western Christian missionaries in modern Japan. Mission work studies in Japan have tended to focus on Hannah Riddel and the Kaishun Hospital in Kumamoto, founded in 1895. My work argues the diversity of missionary work in Japan through an examination of the features of several different missions and the relations between missions and regional communities.
Before the Japanese government's policy was officially implemented in 1907, the vast majority of modern Hansen's sufferers in Japan received treatment at home while some sufferers spent their lives traveling or begging. The miserable situations that such sufferers faced increasingly attracted the attention of Westerners when the government started permitting foreigners to live among the general population in 1899. Western missionaries started providing relief and medical care for Japan's Hansen's sufferers at the turn of the century, prior to the promulgation of policies by the Japanese government. By focusing on Ihaien, established in Tokyo in 1894, and St. Barnabas' Mission, founded in Gunma in 1916, this paper reconsiders the importance of missionary work for Hansen's sufferers in Japan.

Methods: These missionary hospitals designated as "private leprosaria" at that time were highly evaluated for their pioneer relief work. However, after the 1990s, the growing criticism against Japan's segregation policies also led the missionary hospitals to be labeled as wrongdoers who took part in the government's mistaken policy. Thus, studies of missionary activities in Japan have tended to either minimize or vilify their impact, while global missionary studies have tended to focus on colonial regions.
The lack of acknowledgement of mission work has meant that, the social history of Hansen's disease in Japan is not properly understood. This paper seeks to fill these gaps through a careful examination of the specific situations of the hospitals in Japan as a bridge between Japanese and international scholarship. I draw upon historical materials archived by various groups that participated in "leprosy relief" work to demonstrate each mission's financial basis, the segregation policy they enacted, their stance toward the government's policies, and the missions' relationship with regional communities.

Results: By comparing Kaishun Hospital, which has been taken as representative of mission work in Japan, with two other missions, Ihaien and St. Barnabas, I reveal both their common features and the different aspects. The ways in which each mission involved itself within the regional community, and their relationship between the government and the national sanitarium in their region, varied greatly. That difference, therefore, had a great influence upon sufferers in various sanitaria in Japan even long after the missions were dissolved at the outbreak of the Second World War.

Conclusion: Mission work for Hansen's sufferers was a global, simultaneous phenomenon, but its impact in Japan has been ignored. Missionary work in Japan was developed using different strategies in each region yet it was also guided by common medical knowledge and objectives. This research takes a comparative historical approach to the missions, which provides new perspectives of social history of Japan's Hansen's disease sufferers rather than the political history of the disease. It also enables a comparative view that situates Japan within a broad, global history of mission work for Hansen's disease.

O-076

Presentation Time: **Tuesday 17/09/2013 at 16:00 – 17:30**
Symposium Session: **History of Leprosy 1**
Presenter: Leo van Bergen

TWO DUTCH PROTESTANT LEPROSARIA IN DUTCH EAST INDIA 1900-1940

L. Van Bergen [1,*]

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Introduction: After around 1900 the Indonesian island of Sumatra was brought under Dutch control, almost immediately the question occurred what to do about the leprosy-problem. A part of the answer was the building of two major leprosaria, Lao si Momo and Hoeta Salem, both under control of protestant mission, the *Nederlandsch Zendeling Genootschap* and the *Rijnsche Zending*. Driving force was the first assistant-resident of the district, Westenberg. The direct reason for setting up these leprosaria was, at least: so was said, not an attempt to fight the disease, but to give the diseased a safe haven, for they were often killed by the indigenous population. But once set up, fighting the disease became at least as important. Isolation was seen as a means to

accomplish this. Nevertheless the regimes were different. The indigenous population was different, and the ideology of the two missions was different. As a result the Lao si Momo regime was much more loose than the one in Hoeta Salem. In my lecture I will go into the origin, further history and ideology of both leprosaria; the ideas on leprosy of the ones ruling the leprosaria and the ideas on leprosy of the ones inhabiting the leprosaria. Furthermore, what was the outcome of a leprosarium ruled by Christians missionaries and doctors but inhabited by Muslim-patients.
The inquiry into these leprosaria is part of a more extensive inquiry into leprosy in Dutch East India 1814-1941, which in its turn is part of a major research-project called 'leprosy and Empire, which obtained three year funding of NWO (Dutch Scientific Research).

Methods: Literature research, archival research, research into original publications

Results: Public health, even in a colonial setting. is a result of a translation of policy and ideology fitting local circumstances and local ideas on health. If not, effectiveness will probably be non-existent.

Conclusion: The different regimes in the two Dutch leprosaria were the result of a translation of public health policy by different ideologies, although both protestant, people in, however close to each other, different surroundings.

O-077

Presentation Time: **Tuesday 17/09/2013 at 16:00 – 17:30**
Symposium Session: **Microbiology**
Presenter: Nawal Bahia El Idrissi

COMPLEMENT INHIBITION IS NEUROPROTECTIVE IN A MOUSE MODEL OF LEPROSY

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Introduction: Leprosy is a chronic infectious disease caused by *Mycobacterium (M.)* leprae. In most patients, *M. leprae* affects nerves, causing deformities. The membrane attack complex (MAC), which is part of the innate immune system, is deposited in nerve and skin lesion of these patients. We previously showed that MAC exacerbates degeneration and impaires recovery of mechanically injured peripheral nerves whereas inhibition is protective. Here we tested whether MAC inhibition is protective in a mouse model of leprosy.

Methods: Nerve damage by *M. leprae* was mimicked in mice by intraneural injections of either *M. leprae* homogenate, cell wall or PBS as control. To determine the role of MAC in the nerve damage caused by *M. leprae* homogenate or fractions, mice were pre-treated with a C6 antisense oligonucleotide, which blocks C6 protein synthesis and thereby blocks MAC formation, for 4 days prior to intraneural injection. To test which fraction of *M. leprae* activates complement, we performed ELISA for MAC using *M. leprae* homogenate or cell membrane or the inner cell wall component lipoarabinomannan (LAM) or the outer cell wall component phenolic glycolipid 1 (PGL-1) as coating.

Results: Intraneural injections of either *M. leprae* homogenate or cell wall, but PBS induced MAC deposition and pathological changes at 3 days post-injection. Pre-treatment of mice with C6 antisense oligonucleotide inhibited MAC deposition in the nerve and prevented nerve damage as shown by intact myelin and axonal morphology, low number of macrophages, intact S100 expression - a marker of mature myelinating Schwann cells. All *M. leprae* components, but PGL-1, induced MAC deposition *in vitro*.

Conclusion: We show that *M. leprae* homogenate and its fractions activate C and cause nerve damage in a mouse model of leprosy whereas MAC inhibition is neuroprotective. The present study shows that studying the interaction between the *M. leprae* components and nerve in a mouse model may lead to the identification of targets for the development

O-078

Presentation Time: **Tuesday 17/09/2013 at 16:00 – 17:30**
Symposium Session: **Microbiology**
Presenter: Martha Guerrero

NOVEL METHODOLOGY FOR ASSESSING THE VIABILITY OF MYCOBACTERIUM LEPRAE IN SAMPLES FROM MULTIBACILLARY PATIENTS TREATED WITH MDT-WHO IN THE FEDERICO LLERAS ACOSTA DERMATOLOGY CENTER IN BOGOTA COLOMBIA

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Introduction: *Mycobacterium leprae* is characterized for his inability to be cultured *in vitro*, which is the biggest obstacle to research in leprosy, especially for measuring the effectiveness of chemotherapeutic schemes. The development of fluorochromes that allow targeting differentially viable and nonviable bacteria, coupled with the availability of automated tools as highly sensitive and specific flow cytometry, have brought to determinate the bactericidal action of anti-leprosy schemes, wich to date, had not been possible to carry them out directly in samples of treated patients. Therefore, we wanted to quantify for the first time, the viability of *Mycobacterium leprae* present in samples of lymph from multibacillary patients treated with 12 and 24 doses of MDT, in the Federico Lleras Acosta Dermatology Center, between 2008 and 2009, using the commercial kit LIVE/DEAD® BactLigth™ combined with flow cytometry.

Methods: We carried out an analytical-observational cross-sectional study to quantify the viability of *M. leprae* in samples from treated patients with multibacillary TMD-WHO. We included 21 patients who received 12 doses of TMD and 30 patients who received 24 doses of TMD regularly. As viability control we included 17 patients. From interstitial fluid samples, the IB was quantified according to the scale Ridley. The viability of *M. leprae* was determined using the commercial kit LIVE / DEAD® BactLigth™ combined with flow cytometry, after standardization of all necessary parameters (number of events, counting time, concentration of fluorophores, sample dilution) for adjustment and instrument compensation and to obtain the cut-point to distinguish nonviable versus viable populations.

Results: In the group of 12 doses, all patients remained IB positive. By this determination of viability was found that 85.7% of patients continued with viable bacilli and 14.3% of them had no viable bacilli, although their smear was continued positive. In the group of 24 doses, 80% of the patients continued with positive IB after being treated for 24 months. By this determination of viability was found that 56.7% of patients treated for 24 months had viable bacilli and 43.3% had nonviable bacilli, although they continue their smear positive.
The viability after 12 and 24 WHO-TMD doses by the mean difference analysis showed that the two groups of patients end up with a different bacterial population viability, favoring treatment of 24 doses. The t-test for means difference with $p < 0.05$, established a significant difference.

Conclusion: The findings of this study indicate that quantify the viability of the bacilli directly in patient samples is a more objective measure that the IB to assess the effectiveness of the TMD. It was evident that with the methodology described herein, using the *M. leprae* viability detection, we can track patients with TMD to take objective decisions about the management, treatment completion and schema changes. This tool can be implemented in research or reference centers with technological facilities.

O-079

Presentation Time: **Tuesday 17/09/2013 at 16:00 – 17:30**
Symposium Session: **Microbiology**
Presenter: Davendra Chauhan

EXPRESSION ANALYSIS OF GENES RELATED TO METABOLISM AND VIRULENCE OF MYCOBACTERIUM LEPRAE DURING INFECTION IN HUMAN HOST BY MICROARRAY.

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Introduction: The global prevalence of leprosy has been declined in recent years due to the implementation of an effective multidrug regimen; however, large numbers of new cases are still being reported in various countries of the world including India. This can partially be attributed to the lack of diagnostic markers for different clinical states of the disease and the consequent implementation of differential, optimal drug therapeutic strategies. Knowledge about the expression profile of *Mycobacterium leprae* genes actively transcribing during the course of infection in human is requisite to better understand and manage *M. leprae*'s abilities to survive and produce disease in humans.

Methods: To study the expression of *M. leprae* genes transcribed during the active infection in humans, a partial genomic DNA Chip for selected genes (n=60; genes encoding metabolic checkpoints of TCA cycle, lipid biosynthesis, nucleotide biosynthesis and genes hypothetically related to virulence) of *M. leprae* has been indigenously developed (Indian Patent application No- *2012/DEL/2006* and *884/DEL/2007*). Results of microarray were further confirmed and compared across the disease spectrum by quantitative Real time RT-PCR and and *in-situ* RT-PCR with gene specific primers.

Results: Out of 60 selected genes, eleven genes were found to be over-expressed (signal to noise ratio >2.49) compared to other genes in *M. leprae* inside of host during active infection. Of these 11 identified genes, 6 belong to metabolism (ML1363, ML1095c, ML0726c, ML0160, ML2230, ML1900,) and 5 (ML0979, ML2038c, ML 1358, ML0774, ML2496c) were related to bacterial virulence. No such signals were detectable in RNA derived from healthy human skin specimens. These results were subsequently confirmed by Real-Time PCR and *in-situ* RT-PCR. Relative quantification results show consistent over-expression of all eleven genes in TT, BT, BB, BL, LL as well as reaction cases of leprosy. *accA* (ML0726) and *tlyA* (ML 1358) were found to be hyper-expressed during the reactions in leprosy patients.

Conclusion: In present study *acc*A appeared as a useful molecular marker for monitoring the diseases and provided a clue for better understand mechanism of leprosy reactions. RT PCR targeting *tlyA* appears to be more sensitive then 16S rRNA for detection of viable bacilli.

O-080

Presentation Time: **Tuesday 17/09/2013 at 16:00 – 17:30**
Symposium Session: **Microbiology**
Presenter: Carlos Adriano Matos e Silva

INTERACTION OF MYCOBACTERIUM LEPRAE WITH HUMAN AIRWAY EPITHELIAL CELLS: ADHERENCE, INVASION, SURVIVAL AND IDENTIFICATION OF POTENTIAL ADHESINS BY SURFACE PROTEOME ANALYSIS.

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Introduction: The airways are considered the major port of entry of *Mycobacterium leprae*. Therefore, studies on the *M. leprae* interaction with epithelial cells are of great relevance to shed light on earlier events in *M. leprae*-host interaction.

Methods: We examined the *in vitro* interaction between *M. leprae* and two humans airways epithelial cell lines (the alveolar A549 cell line and the nasal septal cell line RPMI 2650) by confocal microscopy and electron microscopy. Also, we tested the capacity of the leprosy bacillus to interact with nasal primary epithelial cells obtained from patients with nasal polyposis. *M. leprae* intracellular viability in epithelial cells was determined by the LIVE/DEAD BacLight Bacterial Viability Kit. To further validate the *in vitro* findings, C57BL/6 mice were intranasally challenged with *M. leprae* to evaluate whether the bacteria can interact *in vivo* with airway epithelial cells. Finally, to uncover potential adhesin candidates relevant in *M. leprae*-epithelial cell interaction, we studied the surface proteome of nude mouse-derived *M. leprae* based on selective surface biotinylation, streptavidin-affinity purification and shotgun mass spectrometry.

Results: Confocal and electron microscopy revealed that *M. leprae* can enter in both cell lineages and nasal primary epithelial cells, and that bacteria viability does not affect the invasion process. However, *M. leprae* showed higher capacity to bind and invade alveolar epithelial cells. *M. leprae* entry into epithelial cells was inhibited by cytochalasin and colchichine pre-treatments, indicating that *M. leprae* uptake in epithelial cells is actin/tubulin-dependent. Additionally, *M. leprae* was able to survive inside epithelial cells up to ten days, suggesting that epithelial cells can sustain bacteria viability. Moreover, delivery of *M. leprae* to the nasal septum of mice resulted in infection of macrophages and also epithelial cells in the lung tissue. Finally, 280 cell surface-exposed proteins were identified in our proteomics studies. Among these proteins, the histone-like protein (Hlp) and hemaglutinin binding heparin (HBHA), two major mycobacterial adhesins, were shown to be exposed on the *M. leprae* surface and to mediate bacterial attachment to epithelial cells.

Conclusion: Altogether, our data point to the potential of the epithelial airway mucosa as the primary site of *M. leprae* infection in humans. Thus, a greater understanding of the interaction between the leprosy bacillus and airway epithelial cells could contribute to the development of more effective preventive tools for leprosy control.

O-081

Presentation Time: **Tuesday 17/09/2013 at 16:00 – 17:30**
Symposium Session: **Microbiology**
Presenter: Flavio Lara

M. LEPRAE MODULATES GLUCOSE UPTAKE AND METABOLISM IN THE HOST CELL

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Introduction: It is well described the importance of Schwann cell metabolism in the axonal homeostasis. Therefore, any changes in lactate release by Schwann cells, could generate axonal energy deprivation and loss of function. In the present work we measured glucose metabolic parameters in *M. leprae* infected Schwann cells and in peripheral blood mononuclear cells (PBMC) of patients.

Methods: We used ST8814, a schwannoma cell line, as a model for *in vitro* infection by live *M. leprae* produced in nu/nu mice. These cells were also exposed to irradiated bacillus. Uptake of glucose was analyzed by the signal intensity of its fluorescent analog (2-NBDG). Lactate production was quantified by the generation of quinone imine, monitored at 550 nm. The activity of key enzymes for glucose metabolism, such as glucose 6 - phosphate dehydrogenase (G6PD) and phosphofructokinase-1 (PFK) was also measure by the reduction of NADPH and oxidation of NADH, respectively at 340 nm. Mitochondria activity, such as oxygen consumption, complex I-III and IV activity was also determined in *in vitro* infected cells and in PBMC of patients.

Results: Our results demonstrated that *M. leprae* infected Schwann cells increase glucose uptake and G6PD activity, indicating an increase in cellular reduction potential (NADH). We also observe a decrease in lactate production and activity of PFK in cells infected or exposed to the pathogen. Glucose uptake increase does not follow the activity of PFK and lactate production, which can result in axonal energy deprivation. A drastic reduction in mitochondria activity was also observed after *in vitro* infection and in patients PBMC.

Conclusion: In our *in vitro* infection model, a paradoxal reduction of both fermentation and oxidative pathways was observed. We believe that this phenomenon could be a collateral effect of a strong anabolic demand of glucose, in order to liberate carbon and NADH to lipid synthesis. More studies on the molecular mechanisms involved in the bacterial modulation of these pathways can help in the development of new therapeutic targets and the understanding of the neuronal pathogenesis of leprosy.

O-082

Presentation Time: **Tuesday 17/09/2013 at 16:00 – 17:30**
Symposium Session: **Microbiology**
Presenter: Marcia Moreira

MYCOBACTERIUM LEPRAE INDUCES CHOLESTEROL ACCUMULATION IN INFECTED MACROPHAGES BY UPREGULATING THE EXPRESSION OF LOW DENSITY LIPOPROTEIN RECEPTORS AND THE DE NOVO CHOLESTEROL SYNTHESIS

K. A. Mattos [1], M. P. M. Berredo [1,*], V. C. G. Oliveira [1], J. J. Amaral [1], D. F. Moura [2], L. C. M. Antunes [3], J. Han [4], P. S. Rosa [5], P. E. Almeida [6], E. N. Sarno [2], C. Borchers [4], B. Finlay [3], G. C. Atella [7], P. T. Bozza [6], M. C. V. Pessolani [1]

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Introduction: Across the leprosy spectrum, the lepromatous leprosy (LL) shows a classical hallmark that is the presence of collection of foamy macrophage cells characterized by high bacillary infection and lipid content. Recently, the origin and nature of the lipid molecules accumulated in *Mycobacterium leprae* (ML) infected cells has been explored; however the mechanisms that governs the ML-trigger host lipid accumulation and their potential as mycobacterial intracellular strategy in the leprosy disease remains poorly understood. Herein we report how ML infection influences the lipid status of infected macrophages.

Methods: Skin biopsies from LL and borderline tuberculoid patients (BT) were analyzed comparatively to understand the lipid metabolic pathways triggered *in vivo* by chronic infection. In addition, macrophages isolated from LL lesions were studied as an *ex vivo* model of long-term infected cells. To study early lipid modulation during ML infection, macrophages from lineage or derived from PBMC were used in *in vitro* studies. These models were used for the measurement of neutral lipids and the study of lipid pathways modulated by ML infection. Complex lipidomic profiles were obtained by HPTLC and DI-FT-ICR MS analysis pointing to cholesterol ester accumulation in infected macrophages. The multiple steps involved in cholesterol homeostasis control, including the expression of key transcriptional factors, enzymes and Low Density Lipoprotein (LDL) receptors were investigated by RT-PCR and/or western blotting.

Results: We showed that ML induces both the uptake as well as the *de novo* synthesis in ML-infected macrophages. Interestingly, we also showed lipid recruitment to ML-containing phagosomes. Notably, cholesterol metabolism impairment either through *de novo* synthesis inhibition or through capture blockage decreased intracellular bacterial survival.

Conclusion: These findings highlight the importance of the metabolic integration between host and bacteria to leprosy pathophysiology and open news avenues for novel therapeutic strategies to mycobacterial diseases.

0-083

Presentation Time: Tuesday 17/09/2013 at 16:00 – 17:30
Symposium Session: Epidemiological Surveillance
Presenter: Kumar Anil

PREVALENCE OF DISABILITY IN PREVIOUSLY UNDETECTED LEPROSY CASES: RESULTS OF A POPULATION SURVEY IN TWO STATES OF INDIA

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Introduction: To assess the disability burden, in India, due to leprosy.

Methods: A survey was conducted using multistage cluster random sampling in 8 districts of India; 4 in U.P. (High endemic) and 4 in Haryana (low endemic) and 804534 persons were examined using physical examination. All the suspects by field staff were examined by PHC medical officers or district medical/leprosy officer to confirm diagnosis for treatment at nearby health facility. Prevalence per lakh is estimated and $\chi 2$ test of significance was used to compare proportions.

Results: Survey suggested that prevalence of disability in Uttar Pradesh was 47.3 per 1 lakh population surveyed (96%CI:42.0-52.7) and varied from 83.2(95%CI: 66.8-99.7) in Badaun district to 18.6(13.1-24.2) in Mathura district. Similarly, prevalence of disability in Haryana was observed to be 16.8 per 1 lakh population surveyed (95%CI:13.6-20.1) and varied from 40.6(95%CI:26.3-54.9) in Krukshetra district to 2.0(1.5-2.5) in Mewat district. The disability rate among new leprosy cases detected was found to be 17.7% in Haryana and 15.2% in Uttar Pradesh. Maximum disability was found in hands and feet together (51.3%).
The prevalence of disability appeared to have increased by age (Figure 1), touching zero level at young age of under 10 years and then slowly increased to maximum of 34.4% in ages of beyond 60 years. The disability rate among males was 24.0% significantly higher (χ^2 =18.2, P<0.0001) than 7.0% among females, however, prevalence was not significantly different in rural comparing to urban areas (18.3% vs. 12.0%,χ^2 =2.3, P=0.13).In all, 31.9% female patients had disability. The Grade 2 disability alone among new leprosy cases was found to be much higher 10.7% (38/355) than 1.8% as reported in registered data of India 2008-09.

Conclusion: The study suggests that prevalence of disability per lakh population is found to be 31.9 (95% CI:27.7-36.3) in both states together.

0-084

Presentation Time: Tuesday 17/09/2013 at 16:00 – 17:30
Symposium Session: Epidemiological Surveillance
Presenter: Josafá Barreto

CLINICAL AND SEROLOGIC COHORT IN HYPERENDEMIC AREAS OF THE BRAZILIAN AMAZON REGION: HIGH RATE OF UNDIAGNOSED LEPROSY AND SUBCLINICAL INFECTION

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Introduction: Brazil has one of the highest annual case detection rates of leprosy in the world (17.65/100,000 inhabitants), and it is characterized by high-burden pockets in the North, Central-West and Northeast regions of the country. In highly endemic areas, the prevalence of undiagnosed leprosy in the general population can be up to six times higher than the registered prevalence. In several areas of the Brazilian Amazon Region, leprosy is hyperendemic among children under 15 years-old, suggesting recent disease and active foci of transmission in those communities. Serology to detect antibodies against PGL-I has been used to identify individuals at a higher risk of contracting leprosy than the general public. Thus, a cohort study combining a clinical and serological survey has been carried out in hyperendemic municipalities in the North of Brazil.

Methods: An initial cross-sectional survey was carried out in 2009-2011 in hyperendemic municipalities of the Brazilian Amazon. Since then, the same group of researchers has travelled to the selected municipalities in order to perform active clinical and serological surveillance amongst school children (SC) and household contacts (HC) of leprosy cases detected during the last five years. We clinically evaluated and collected blood samples to test for APGL1 (ELISA anti-PGL-1-IgM) from 2,160 HC and 1,592 randomly selected SC in 8 municipalities of Para State. Based on the preliminary survey, the individual are being followed in a cohort study to compare the findings from seropositive and seronegative subjects.

Results: During the initial survey, sixty-three (4%) SC, with a mean age of 13.3 years and 134 (6.2%) HC group were diagnosed with leprosy. APGL1 was considered positive (Optical density > 0.295) in 777 (48.8%) SC and in 924 (43%) HC. Seroprevalence was significantly higher among girls, students from urban areas and students from public schools. Forty-five (71.4%) new cases detected among SC were classified as paucibacillary, and 59 (93.6%) did not demonstrate any degree of physical disability at diagnosis. When a SC was diagnosed with leprosy, his house was visited to examine his HC. Among 256 HC of those students diagnosed with leprosy, 24 (9.4%) were also diagnosed with leprosy and 107 (41.8%) were seropositive. After two years of the first examination, we returned to two cities to reevaluate the same subjects. We reexamined 483 individuals from houses with at least one seropositive dweller. As a result, 84 (17.4%) new cases were detected during the follow up, while 7 (7.4%) new cases were detected among 95 reexamined subjects from houses without seropositive individuals (p = 0.02). The relative risk of developing leprosy was 136% higher among dwellers of seropositive houses than of seronegative, in a two years follow up period (p = 0.01; 95%IC = 1.13 – 4.94).

Conclusion: Serology to detected APGL1 demonstrated significant capacity to identify individuals and families at higher risk of developing clinical manifestations of leprosy. These results suggest a high rate of undiagnosed leprosy cases and subclinical infection among children and household contacts in the Brazilian Amazon Region. The advantages of school surveys in hyperendemic areas are finding early leprosy cases with no physical disabilities, preventing the spread of the infection to the community and breaking the chain of transmission. If no strong, continuous and decisive interventions are implemented, leprosy will remain an important public health problem for the coming decades in the hyperendemic regions of the world. Support CNPQ DECIT/MS CAPES FAPESPA SESPA.

0-085

Presentation Time: Tuesday 17/09/2013 at 16:00 – 17:30
Symposium Session: Epidemiological Surveillance
Presenter: Ashutosh Prabhavalkar

VALIDATING DISEASE BURDEN DUE TO LEPROSY FROM EPIDEMIOLOGICAL PERSPECTIVE IN 31 LOW ENDEMIC BLOCKS OF 12 HIGH ENDEMIC DISTRICTS IN MAHARASHTRA STATE, INDIA

A. B. PRABHAVALKAR [1,*], S. Kingsley [2], R. B. DUDHALKAR [3], P. R. DEWARKAR [3], P. GAIKWAD [4], A. A. Samy [3]

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Introduction: Annual New Case Detection Rate (ANCDR) based on the actual number of new leprosy cases detected during the year in proportion to the population is considered as a core indicator to estimate the disease burden and used as a monitoring tool to measure the results of leprosy control programme. It is considered as a proxy indicator to 'incidence' rate and highly sensitive, which is predisposed by case detection activities. In the absence of active leprosy case detection following the integration, ANCDR is a mere measure of new leprosy cases reported for diagnosis & treatment at the general health care system. Therefore, ANCDR is not necessarily a reliable indication of actual disease burden from epidemiological perspective as the health seeking behaviour of the communities is disappointing with regard to leprosy. In contrast, the national government gives priority to the areas with high ANCDR (>10 per 1 lac population) for planning special focused disease control activities and invariably neglect the areas with reportedly low ANCDR (<10 per 1 lac population). Disregarding vast geographical area on account of reported low endemicity may pose challenge to prospects of leprosy elimination. Hence, a study was undertaken to validate the actual disease burden in a defined area, which are excluded from special search activities for new case detection on the basis of low endemicity.

Methods: 31 blocks with low endemicity (NCDR < 10 per 1 lac population as on March 2010) located in 12 high endemic districts of Maharashtra state was selected for the study. An Epidemiological Validation Drive (EVD) was conducted in 35 health sub-centres (SCs) remotely located from each of 31 PHC areas selected on the basis of low leprosy endemicity (ANCDR reported in the last 3 yrs) in 31 blocks during December 2011 to January 2012. An active search (physical screening) of 1,53,009 population was carried out by trained health staff of respective primary health care (PHC) centres.

Results: 1,36,544 out of 1,53,009 (89.2%) population enumerated was screened from 35 selected SCs of 31 PHCs during EVD and 923 persons were identified as leprosy suspects of which 107 new cases were confirmed with overall NCDR of 78.36 per one lac population. The MB proportion was 39.3%. The study revealed that the NCDR in 17 (54.8%) out of 31 selected SCs was alarmingly higher (>50 per lac population) than reported NCDR by NLEP as on March 2011. The NCDR in 28 SCs ranged from 19.2 to 382.4 per one lac population with mean NCDR being 64.03. Only 3 out of 31 SCs (9.7%) reported zero NCDR.

Conclusion: It is confirmed that even the areas signified as low endemic, the difference between the reported new case detection rate and actual incidence have been substantial. Therefore the value assigned for the selection of areas for disease control activities should not based on NCDR. There is empirical evidence that warrants uniform implementation of intensified leprosy control activities that alone can contribute to sustain the achievements made so far and further reduce the disease burden.

0-086

Presentation Time: **Tuesday 17/09/2013 at 16:00 – 17:30**
Symposium Session: **Epidemiological Surveillance**
Presenter: Aparna Pandey

COMPARATIVE TREND ANALYSIS OF NEW LEPROSY CASES REPORTED TO TERTIARY INSTITUTION OF ENDEMIC DISTRICT AND STATE OF CENTRAL INDIA (2001-12) : HOW FAR IS ELIMINATION ?

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Introduction: India has achieved leprosy elimination in 2005 but still contributes to > 55 % of new leprosy cases detected globally. New cases differ widely in time and place. Enhanced global strategy and MDG6 pays special emphasis on sustaining early case detection, thereby interrupting transmission. Roles of peripheral and referral public health institutions has also changed, post integration. Thus the profile of cases also differ. Peripheral Institutions suppose to undertake early diagnosis of cases while referral instiitions to cater complicated cases.
The sudy compares and analyses the pattern of new cases coming to tertiary referral institution of GOI, the district and endemic state where the institution is located as well national profile. Thereby assessing the magnitude of transmission and progress towards elimination

Methods: Retrospective record based analysis of new cases registered during 2001-12. Information sources were records and reports of Regional Leprosy Training and Research Institute (RLTRI), Chhattisgarh state health department and Central Leprosy division of Government of India. Selected indicators viz P.R., ANCDR, Proportion of MB, females, child and grade II deformity was calculated and analyised over time (2001-12). Comparative analysis was performed.

Results: Average annual attendance of new cases registered in RLTRI was 350-450 during 2001-2003 (pre-integrated period) rose to more than 600-700 cases since 2004 and continued thereafter. In contrast Raipur district, Chhattisgarh state and India recorded continued declining trend of new cases during the period. However the share of new cases in Chhattisgarh province and Raipur district continued to rise. Grade II deformity proportion rose from <1 % to about 10 % in RLTRI compared to 15 % to 9 % in Raipur district and 15 % to 6.8 % in Chhattisgarh state during the period under analysis. Child proportion declined from 20 % to 10 % in RLTRI, while Raipur and Chhattisgarh figures declined from 15 % to 5 -7 % during the period.

Conclusion: RLTRI showed increasing trend of new cases with higher proportion of Grade II deformity. This indicates that more cases are going to referral institution and less are reported to periphery, which may lead to delay in diagnosis and continued transmission in the community. Intensified monitoring and closer supervision is required to check and reverse the trend.

0-087

Presentation Time: **Tuesday 17/09/2013 at 16:00 – 17:30**
Symposium Session: **Epidemiological Surveillance**
Presenter: Dr.Boosbun Chua-Intra

DEVELOPMENT OF LEPROSY DATA BASE USING UCHA AND GEOGRAPHICAL INFORMATION SYSTEM OF LEPROSY CONTROL IN THAILAND

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Introduction: In the past, the leprosy surveillance system in Thailand was conducted by reporting the detection of new leprosy cases through official paper reports. Provincial Health offices collected reports from hospitals and sent to Regional Disease Control Offices which further sent to the central office, namely Raj Pracha Samasai Institute. The patient data were corrected and saved in MicrosoftOffice Excel. However, there were several mistakes and delay in reporting patient data. Thus, since 2009, UCHA system has been introduced for reporting and collecting leprosy patient data in Thailand through internet system.

Methods: Data structure was created and set. All available leprosy patient data since 1997 to 2009 were transferred from Microsoft Office Excel to UCHA. Workshops were arranged for regional leprosy officers to practice the techniques of reporting patient data through UCHA system and data analysis.

Results: The patient data have been presented in real time. This innovative system helps both central and regional leprosy officers be able to access and examine the data at the same time. The repetition of the patient data has been reduced. Analysis of data can be performed in every aspect rapidly. Data safety is very high since only involved staff who have passwords can access the UCHA system.Since 2011, Raj Pracha Samasai Institute has linked leprosy patient data base in UCHA system to geographical information system (GIS). GIS can present the patient mapping at all levels; country, region, district, sub-district and village. It can present update leprosy situation and patient mapping.

Conclusion: These advantages of UCHA and GIS help the planning of leprosy control be conducted efficiently. (www.thaileprosy.org menu : GIS leprosy)

0-088

Presentation Time: **Tuesday 17/09/2013 at 16:00 – 17:30**
Symposium Session: **Epidemiological Surveillance**
Presenter: Anthony Meka

IN SEARCH OF REMAINING FOCI: MAPPING NEWLY REGISTERED LEPROSY CASES IN 14 STATES IN SOUTHERN NIGERIA.

C. Nwafor [1,*], J. Chukwu [1], D. Oshi [1], C. Ogbudebe [1], A. Meka [1], N. Ekeke [1], J. Ikebudu [1], N. Madichie [1]

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Introduction: Nigeria achieved the WHO leprosy elimination target at national level in 1998, two years ahead of the global target year of 2000. Since then, the country has been notifying between 3,000 and 4,000 cases annually. There are 272 local government areas (districts) with a population of 53.2 million in the 14 GLRA-assisted states. The 14 states account for about a third of the national total case notification. As is the case in many leprosy endemic regions of the world, the burden of the disease appears to be markedly unevenly distributed between and within Nigeria's 36 states and the Federal Capital Territory. To provide policy-makers and programme managers an easily accessible appreciation of the remaining foci of disease in the region, GLRA embarked on a systematic mapping of newly registered leprosy cases in the area. The result of the exercise was expected to inform programming and greater efficiency in allocation of scare programme resources.

Methods: A cross sectional mapping of the burden and distribution of new leprosy cases across and within the 14 southern states supported by the GLRA was done. All newly registered cases in 2011 were captured according to their areas of residence in the local government areas (district) in each state. The data were processed with WHO HEALTH MAPPER software using the individual state geographical maps as backdrop. The colour coding was such that red, yellow and green represented high, medium and low burden respectively.

Results: The results (presented on tables and maps of the various states) indicate that residents of 19 local government areas in 5 states have 'high endemicity' (≥ 30/100,000 population) while 25 local government areas in 9 states met the conditions for 'moderate endemicity' (20-29/100,000 population).

Conclusion: The exercise provides empirical evidence for the continued existence of foci of leprosy in southern Nigeria and makes the problem more easily appreciated by policy- makers/ programme managers. Uneven distribution which appears to be a hallmark of the disease elsewhere in the world is also evident here. Arguably, using only one year notification data for the exercise impedes ability to take account of annual variations in case-finding and should therefore be considered a limitation. It is planned to repeat the exercise using appropriate global positioning system (GPS) equipment for greater accuracy and wider applicability.

0-089

Presentation Time: **Tuesday 17/09/2013 at 16:00 – 17:30**
Symposium Session: **Prevention of Disability**
Presenter: Rajni Singh

"INTEGRATED PREVENTION OF DISABILITY (IPOD) PROGRAMME IN RURAL SET UP OF MUNGER DISTRICT, BIHAR (INDIA)"

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Introduction: India is contributing more than 60% of Leprosy and 40% of Lymphatic Filariasis cases of the world. One-third population of over 40 years age in India have diabetise who develope foot ulcers in long term. 89% of Bihar population lives in villages and contributes more than 20% of India's case load of leprosy and 17% Lymphatic Filariasis. These diseases produce foot disability which reduces the functional ability of individuals leading further to stigma, discrimination and separation from the community.
IPOD aims to improve the functional ability of individuals having foot disability, reduce social and self stigma and discrimination from the community.

Methods: IPoD camps were designed and organized at all Primary Health Centers with the support of District Health Society of Munger in January 2008. Before camps intensive IEC campaigning about the camp was done well in advance with the support of IEC mobile Van. IPC conducted through community health workers. 561 foot disabled (Leprosy- 165, Lymphatic Filariasis (Elephantiasis) - 303 and Diabetic ulcer- 3) persons were screened and received the techniques of Self care practices, IPOD Kit, Protective Footwear, Podiatry appliances, Exercise (Active & Passive). Self Support Groups were formed among beneficiaries at Panchayat level and monthly monitoring system was introduced through community.

Results: After one year, data showed that 94% of ulcers healed, only 2% recurrent new ulcers, swelling of Elephantiasis was reduced in 65%. Economic status was increased by 35 %. Acute attack among Lymphatic patients was reduced, Stigma in community, self-Stigma, reduced and participation was increased.

Conclusion: IPoD camps are reaching out to large no. of patients at a time and help them learn the techniques of morbidity/self-care management. There was a significant decrease in cases of ulcer and decrease in swelling in the affected region. Being a community based approach the results are more than anticipated. IEC campaign created awareness to wide spectrum of people. The technique of integrated Morbidity/self-care management (self-care and selected Exercise – Pumping & rolling) was accepted by community. It reduced stigma among individuals and in community. It is cost effective and can be replicated in larger area.

O-090

Presentation Time: **Tuesday 17/09/2013 at 16:00 – 17:30**
Symposium Session: **Prevention of Disability**
Presenter: Inge Wagenaar

TWO RANDOMIZED CONTROLLED CLINICAL TRIALS TO STUDY THE EFFECTIVENESS OF PREDNISOLONE TREATMENT IN PREVENTING AND RESTORING CLINICAL NERVE FUNCTION LOSS IN LEPROSY: THE TENLEP STUDY PROTOCOLS

I. Wagenaar [1,*], W. Brandsma [2], E. Post [3], W. van Brakel [3], D. Lockwood [4], P. Nicholls [5], P. Saunderson [6], C. Smith [7], E. Wilder-Smith [8], J. H. Richardus [1]

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Introduction: Nerve damage in leprosy often causes disabilities and deformities. Prednisolone is used to treat nerve function impairment (NFI). However, optimal dose and duration of prednisolone treatment has not been established yet. Besides treating existing NFI it would be desirable to prevent NFI. Studies show that before NFI is clinically detectable, nerves often show subclinical damage. Within the 'Treatment of Early Neuropathy in LEProsy' (TENLEP) study two double blind randomized placebo-controlled clinical trials will be carried out: a trial to establish whether prednisolone treatment of 32 weeks duration is more effective than 20 weeks in restoring nerve function in leprosy patients with clinical NFI (Clinical trial) and a trial to determine whether prednisolone treatment of early subclinical NFI can prevent clinical NFI (Subclinical trial).

Methods: Two randomized controlled trials (RCT) with a follow up of 18 months will be conducted in six centers in Asia. In the Clinical trial, leprosy patients with recent (< 6 months) clinical NFI, as determined by Monofilament Test and Voluntary Muscle Test, are included. The primary outcomes are the proportion of patients with restored or improved nerve function. In the Subclinical trial, leprosy patients with subclinical neuropathy, as determined by Nerve Conduction Studies (NCS) and/or Warm Detection Threshold (WDT), and without any clinical signs of NFI are randomly allocated to a placebo group or treatment group receiving 20 weeks prednisolone. The primary outcome is the proportion of patients developing clinical NFI. Reliability and normative studies are carried out before the start of the trial.

Results: The two RCTs of the TENLEP study were successfully started in April 2011. Details on these trials will be explained in this presentation.

Conclusion: This study is the first RCT testing a prednisolone regimen with a duration longer than 24 weeks. Also it is the first RCT assessing the effect of prednisolone in the prevention of clinical NFI in patients with established subclinical neuropathy. The TENLEP study will add to the current understanding of neuropathy due to leprosy and provide insight in the effectiveness of prednisolone on the prevention and recovery of NFI in leprosy patients. In this paper we present the research protocols for both Clinical and Subclinical trials and discuss the possible findings and implications.

O-091

Presentation Time: **Tuesday 17/09/2013 at 16:00 – 17:30**
Symposium Session: **Prevention of Disability**
Presenter: Thanyakittikul Pojana

FACTORS CONTRIBUTING TO ADDITIONAL DISABILITIES DURING TREATMENT IN LEPROSY PATIENTS IN THAILAND

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Introduction: Prevention of disability (POD) during treatment is aimed at preventing further additional disability which may occur during such period. In 1990, National Leprosy Programme (NLEP) by Leprosy Division undertook the "Evaluation of Leprosy Elimination Programme" and found that less than 50 percent of health units could provide qualified nerve function assessment (NFA), and 10 percent of leprosy patients suffered additional disabilities during treatment. The objectives of this health system research was to identify factors contributing to additional disability developed during treatment in leprosy patients, in order to recommend on coverage and quality of POD service in Thailand.

Methods: The quantitative research part was cross-sectional descriptive study and conducted by distributing questionnaires to find the coverage and quality of POD services in health units of Ministry of Public Health (MOPH). The qualitative research part was performed by in-depth interviews in hospital directors, doctors, health workers and leprosy patients; observing POD services system; documentary review of OPD cards, leprosy patient cards, POD record form, health education checklist form, leprosy manual, leprosy clinical practice guideline(CPG) and annual report in 12 hospitals sampled out of 12 Disease Prevention and Control offices.

Results: The results revealed that 212 hospitals (29.7%) of all MOPH hospitals in Thailand provided POD services, with only 178 hospitals (24.9%) could provide qualified POD services. When it was compared to those of the previous year, a decline was observed. Factors contributing to the decreasing coverage and quality of POD services on the provider's side were policy declaration, human resource administration, workload, service system, knowledge, attitude, complexity and monitoring, priority and complexity of POD activities. Factors on patient side were unaware of one's right to receive POD services, receiving incomprehensive treatment and care of complications emerging during MDT treatment and lack of counseling. Most patients were optimistic with respect to providers and POD activities.

Conclusion: It was recommended that improvements need to be made in terms of policy, strategies and activities to revitalize leprosy control system. Focus should be made on human resource development, referral system, setting up hotline services system and adequate leprosy experts are needed.

O-092

Presentation Time: **Tuesday 17/09/2013 at 16:00 – 17:30**
Symposium Session: **Prevention of Disability**
Presenter: Maria De Jesus Alencar

EVOLUTION OF DISABILITIES IN INDIVIDUALS WITH LEPROSY REACTIONS AFTER RELEASE FROM MULTIDRUG THERAPY IN BRAZIL

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Introduction: Leprosy reactions before, during and after multidrug therapy increase the risk of chronic sequels, such as disabilities and deformities. Thus, reactions should be diagnosed and treated as soon as possible. However, there are only few systematic studies on the occurrence of reactions, patient follow-up and factors associated with leprosy reactions, especially after release from treatment. The objectives of this study were to identify the frequency of reactions occurring after RFT (Release From Treatment), to describe the evolution of the reactions and possible impairments, and to identify its associated factors.

Methods: We included individuals with leprosy reactions after release from multidrug therapy, presenting to health facilities in five highly endemic municipalities in north Brazil, 2007-2009. The cross-sectional study, consisted of dermato-neurological examination, inspection of patients' charts and structured interviews. We compared the EHF (eye-hand-foot) score at diagnosis with the current score and assessed factors associated with increased disability since diagnosis.

Results: Of the 280 patients included, 190 (67.9%) were males. A total of 45 (16.1%) were classified as PB and 232 (83.7%) as MB leprosy. Type 1 reaction was present in 104 patients (37.1%), type 2 reactions in 52 (18.6%), and pure neuritis in 39 (13.9%). Associated neuritis was found in 51.9% of patients with type 2 reactions. The number of reaction episodes ranged from one to six, with 215 patients (77.3%) presenting one episode. The first episode occurred during anti-leprosy treatment in 121 patients (43.2%). The EHF score at diagnosis was 0 in 139 (70,2%) patients,(range: 0-11). However, at examination after MDT only 111 (39,8%) patients had no disabilities (EHF score 0). In 88 out of 198 patients (44.4%) the score increased. The risk of increased EHF score was associated with illiteracy (RR=1.64, 95% CI: 1.21-2.21, p=0.003), being widow (RR=1.98, 95% CI: 1.20-3.96, p=0.013), borderline leprosy (RR=3.71, 95% CI: 1.00-13.70, p=0.009), reactional episode during MDT (RR=1,70; 95% CI: 1.13-2.54 p=0.004), and the presence of a thickened nerve (RR=1.78, 95% CI: 1.30-3.08 p=0.024).

Conclusion: The EHF score is an important tool to apply in primary health care, to detect the progression of physical disability and to initiate adequate preventive measures. The EHF score should always be assessed at diagnosis, during multidrug therapy and reactional episodes, and after release from treatment. A special focus should be given to patients after release from treatment, as they do not present regularly to healh facilities. The results of this study lead to the suggestion to establish a system for monitoring and surveillance of leprosy reactions for a period of six months up to five years after release from treatment.

O-093

Presentation Time: **Tuesday 17/09/2013 at 16:00 – 17:30**
Symposium Session: **Prevention of Disability**
Presenter: Marcia Jardim

REVISITING THE WORSENING OF NERVE IMPAIRMENT AFTER MDT

M. M. Jardim [1,*], R. T. Vital [1], S. L. G. Antunez [1], J. A. C. Nery [1], E. N. Sarno [1], X. Illarramendi [1]

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Introduction: It is well recognized that the presence of *Mycobacterium leprae* within the peripheral nerves may lead to the aggravation of neuropathy. While most of the patients recover after release from treatment, some remain with recurrent or prolonged reactions and with progressive insidious nerve impairment. The presence of acid-fast bacilli (AFB) in the nerve biopsy was used to define the diagnosis and to aid the treatment decision in patients with worsening of neuropathy after release from MDT.

Methods: Between 1998 and 2012, patients treated for MB and/or PB leprosy with progressive or new nerve impairment that showed no improvement after steroid therapy were evaluated at the Souza Araujo Outpatient Clinic, Fiocruz, Rio de Janeiro, Brazil. Since all patients were evaluated and cleared by experienced dermatologists, nerve biopsy was indicated, following neurological examination and nerve conduction study, to define the cause of the insidious nerve impairment. Relapse (R) was defined as the progression of nerve impairment after 5 years of release from MDT and presence of AFB in the nerve biopsy. Neuritis (N) was diagnosed in patients with no AFB in the biopsy and treated with oral prednisone.

Results: Nerve biopsy was performed in 46 patients (70% male, mean age 42 ± 10.6 years) that had been treated for leprosy (MB=91%) a mean of 8.79 years before. The sural nerve was the most frequently biopsied nerve (49%), followed by the dorsal cutaneous branch of the ulnar (40%) and the superficial peroneal nerves (11%). AFB was found in 31 (67%) samples and signs of inflammation were observed in 15 (33%). Nerve conduction study showed sensorimotor polineuropathy in 15% of the patients (14% in R and 20% with N). Both groups of patients had a median of 11/14 nerves impaired. Sensory neuropathy predominated in both groups, a median of 8 nerves (95% CI= 5.6-8.4) in patients with N and of 7 nerves impaired (95% CI= 5.6-7.2) in patients in R. No conduction could be registered in sensory nerves more frequently in R (median=6, 95% CI= 4.3-6.7) than in patients with N (median=5, 95% CI= 3.2-6.9). Motor neuropathy was more frequent in patients in R than with N, median of 4 (95% CI= 3.1-4.4) and 3.5 (95% CI= 2.2-4.8) nerves, respectively. The difference in the number of impaired nerves was not significant between the groups (Mann-Whitney U test, p>0.05).

Conclusion: Nerve impairment deterioration can be observed long after release from treatment with MDT. Patients may not respond to corticosteroid treatment due to the persistence of infection which requires specific anti-leprosy MDT.

O-094

Presentation Time: **Tuesday 17/09/2013 at 16:00 – 17:30**
Symposium Session: **Vaccines**
Presenter: Malcolm Duthie

IS THERE A ROLE FOR A VACCINE IN LEPROSY CONTROL?

M. S. Duthie [1,*], S. G. Reed [1]

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Introduction: The widespread provision and use of multi-drug therapy has resulted in a massive reduction in the number of registered worldwide leprosy cases. Over the last decade, however, the number of new cases detected each year has remained relatively stable. While detect-and-treat or chemoprophylactic strategies can interrupt *M. leprae* infection, the nature of drug activity dictates that efficacy is limited to individuals who are already infected and means such strategies provide only a short term benefit. A vaccine has the potential to provide a longer term solution.

Methods: The host immune response is critically involved in leprosy development and it is estimated that 80-90% of those who become infected with *M. leprae* naturally clear the infection. Those individuals that develop symptoms present across a wide clinical, histopathological and immunological spectrum. The pro-inflammatory response of paucibacillary (PB) patients limits bacterial replication and dissemination, suggesting that this could be harnessed to prevent multibacillary (MB) cases and interrupt transmission.

Results: Several vaccines strategies centered on the use of whole mycobacteria have been evaluated but BCG is the only vaccine currently administered for the prevention of leprosy. Leprosy remains prevalent in countries with widespread BCG vaccination programs, however, and protection afforded by BCG against leprosy appears to wane over time. Experimental immunizations with crude *M. leprae* antigens have demonstrated that proteins within the cell wall, cell membrane and cytosol fractions can provide protection when administered with adjuvant before infection. The use of *M. leprae*-derived material, however, prohibits large-scale production. We are currently developing a defined sub-unit vaccine, using specific proteins produced by standard recombinant methods and utilizing a safe and potent adjuvant. Proteins have been selected on the basis of recognition by, and secretion of the pro-inflammatory cytokine IFNγ from, cells of PB patents and healthy household contacts of MB patients (HHC). Further selection has been achieved by evaluation in experimental models, resulting in the generation of a single chimeric fusion protein comprising 4 *M. leprae* antigens. Adjuvant has been selected on the basis of immune biasing toward a T helper 1-type response and current use in clinical trials for other indications.

Conclusion: It is our belief that the introduction of a defined vaccine with the ability to limit the spread of *M. leprae* infection would have a great and lasting impact on leprosy. The principles of traditional prophylactic immunization can be applied in both pre-or post-exposure/ infection settings, with the aim or of preventing infection, disease progression, or both. Strategies to permit such trials will be discussed.

O-095

Presentation Time: **Tuesday 17/09/2013 at 16:00 – 17:30**
Symposium Session: **Vaccines**
Presenter: Masahiko Makino

A NOVEL VACCINE DEVELOPMENT AGAINST LEPROSY

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Introduction: In order to globally control the emergence of new cases of leprosy, development of effective vaccine against leprosy is required. To achieve this end, the vaccine need to be highly immunogenic and should activate T cells strongly.

Methods: To activate naïve T cells convincingly using *Mycobacterium bovis* BCG (BCG), rBCG (BCG-D70M) deficient in urease, expressing the fusion protein of BCG-derived heat shock protein (HSP) 70 and *Mycobacterium leprae*-derived major membrane protein (MMP)-II, one of the immunodominant antigens (Ags) of *M. leprae*, was newly constructed.

Results: BCG-D70M was more potent in activation of both $CD4^+$ and $CD8^+$ subsets of naïve T cells than other rBCGs including urease-deficient BCG and BCG-70M secreting HSP70-MMP-II fusion protein, when assessed using human monocyte-derived dendritic cells (DC) as Ag-presenting cells (APCs). BCG-D70M efficiently activated DC to induce cytokine production and phenotypic changes, and activated $CD4^+$ T cells even when macrophages were used as APCs. The activation of both subsets of T cells was MHC and CD86 dependent. Pre-treatment of DC with chloroquine inhibited both surface expression of MMP-II on DC and the activation of T cells by BCG-D70M-infected APCs. The naïve $CD8^+$ T cell activation was inhibited by treatment of DC with brefeldin A, an inhibitor of TAP-dependent Ag transportation, and lactacystin, an inhibitor of proteosomal protein degradation, so that the T cells was activated by TAP- and proteosome-dependent cytosolic cross-priming pathway. From naïve $CD8^+$ T cells, effector T cells producing perforin and memory T cells having migration markers, were produced by BCG-D70M stimulation. Primary infection with BCG-D70M in C57BL/6 mice produced T cells responsive to *in vitro* secondary stimulation with MMP-II and HSP70, and more efficiently inhibited the multiplication of subsequently challenged *M. leprae* in the footpad than vector control BCG.

Conclusion: These results indicate that the triple combination of HSP70, MMP-II and urease depletion may provide useful tool for inducing better activation of naïve T cells, and BCG-D70M could be a good vaccine candidate.

O-096

Presentation Time: **Tuesday 17/09/2013 at 16:00 – 17:30**
Symposium Session: **Vaccines**
Presenter: Roberta Pinheiro

IMPACT OF PGL-1 SEROPOSITIVITY ON THE IMMUNE RESPONSE TO MYCOBACTERIUM LEPRAE ANTIGENS

R. O. Pinheiro [1,*], D. S. Carvalho [1], M. G. D. M. Barbosa [1], É. M. Macena [1], F. L. D. Vale [1], A. C. F. Gomes [1], A. L. Oliveira [1], A. Geluk [2], J. A. C. Nery [1], A. M. Sales [1], N. C. Düppre [1], E. N. Sarno [1]

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Introduction: The detection of antibodies to the phenolic glycolipid 1 (PGL-1) antigens of *M. leprae* has been used to understand the epidemiology of subclinical infection. Our previous data demonstrated that contact examination combined with PGL-1 testing and BCG vaccination remain important strategies for leprosy control. The finding that rates of leprosy cases were highest among seropositive contacts justifies targeting this specific group for close monitoring. Therefore it is possible that the combination of IgM antibodies and cell-mediated immune markers can distinguish active disease from sub-clinical infection. The aim of this study was to evaluate the immune response in PGL-1 seropositive contacts.

Methods: Leprosy contacts were examined as part of the surveillance programme of the Oswaldo Cruz Institute Leprosy Outpatient clinic in Rio de Janeiro. The presence of IgM antibodies to PGL-1 in sera at the time of index case diagnosis were evaluated in 149 contacts. Whole blood was collected in Pax gene tubes to evaluate *VDR, FoxP3, IDO, IFN*γ and *IL-10* gene expression by real time PCR. Peripheral blood mononuclear cells (PBMC) was stimulated with 10 mg/mL sonicated *M. leprae* or with the *M. leprae* proteins ML0840 e ML2478. Pro- (IFN-γ, IL-1B, IL-6, TNF, IL-12p40, IL-12p70,IL-17) and anti-inflammatory cytokines (IL-4, IL-10, IL-13) were measured in stimulated supernatants collections by multiplex assay after 72h of culture. IFN-γ production was also measured in the supernatants after 5-days of culture. Cytokine gene expressions were evaluated by real time PCR after 3h of stimulus. Multiparametric flow cytometry was performed to determine parameters of adaptative immune response in 72h of culture.

Results: The present study included 149 contacts (97 from multibacilar index case and 52 from paucibacilar index case). 91 contacts were female (mean age= 38,3, SD=16,6) and 58 were male (mean age=39,5, SD=17,7). The rate of seropositivity to PGL-1 was 18,12% among contacts. Analysis of gene expression in whole blood demonstrated that PGL-1 seropositive (PGL-1(+)) contacts have increased expression of *VDR* (p= 0.0173) and *FoxP3* (p = 0.0024) when compared with PGL-1 seronegative ones (PGL-1(-)). In contrast, *IFN-*γ (p=0.0075) and *IL-10* (p=0.0046) expression were increased in PGL-1(-) contacts. No significant changes were observed in *IDO* gene expression in the different groups tested, although the median was higher in PGL-1(-) group. Analysis of cytokine production demonstrated that PGL-1(+) contacts present decreased gene expression and secretion of IL-1B, IL-10, IL-12p40, IFN-γ and IL-17 in response to sonicated *M. leprae* and ML2478, but not ML0840. ML0840 increased *IL-17* gene expression in stimulated cultures, but no significant changes were observed between IL-17 levels in ML0840 stimulated supernatants from the different tested groups. Analysis of cell phenotype demonstrated that PGL-1(+) contacts have decreased expression of $CD4^+CD69^+IFN\text{-}\gamma^+$ and increased expression of $CD4^+CD25^+FoxP3^+$ phenotype in *M. leprae* and ML2478-stimulated cultures, but not ML0840.

Conclusion: Our data suggest that in PGL-1(+) contacts a regulatory pathway that involves vitamin D and FoxP3 is increased which contributes to lower *in vitro* responses to *M. leprae* antigens.

O-097

Presentation Time: **Tuesday 17/09/2013 at 16:00 – 17:30**
Symposium Session: **Vaccines**
Presenter: John Spencer

EVOLUTION OF THE ANTIBODY RESPONSE IN HEALTHY HOUSEHOLD CONTACTS THAT PROGRESSED TO CLINICALLY DIAGNOSED HANSEN'S DISEASE

J. S. Spencer [1,*], M. S. Duthie [2], M. C. V. Pessolani [3], A. Geluk [4], P. J. Brennan [1], N. C. Duppre [3], J. A. S. Nery [3], E. N. Sarno [3]

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Introduction: Household contacts of individuals with untreated leprosy disease likely have the highest risk of eventually succumbing to disease. Serum samples were obtained at two separate timepoints from twenty-four healthy household contacts of index cases, one at enrolment and another sample at the time that the individual was clinically diagnosed with Hansen's disease. The duration of time elapsed between these two timepoints ranged from 1 month to over 11 years. The sera from these two timepoints were examined for changes to the antibody titer against *M. leprae* antigens by immunoblot and ELISA.

Methods: The paired serum samples were examined for reactivity by immunoblot to the protein antigens LID-1, Ag85B (ML2028), and the native *M. leprae* cytosolic subcellular fraction (MLSA). The antibody titer was also assessed by ELISA against ML2028, ND-O-BSA (to measure the anti-PGL-I titer), and lipoarabinomannan (LAM).

Results: Individuals were classified in the disease spectrum at diagnosis as tuberculoid (10/24, 42%), indeterminate (9/24, 38%), lepromatous (2/24, 8%), or the pure neural form (3/24, 12%). Only two individuals had a measurable bacillary index (BI), the rest had a BI = 0. Eight individuals showed increased reactivity over the baseline sample to one or more antigens in both immunoblot and ELISA. Overall, increases in the titers in the individuals in this group were found against PGL-I (5/8, 63%), protein antigens (6/8, 75%) and LAM (7/8, 88%). Interestingly, the individual that showed the most dramatic increase in titers to all antigens by both immunoblot and ELISA over a three year time period was a patient that developed pure neural disease.

Conclusion: The antibody titer of those household contacts who eventually developed disease symptoms was found to increase over time in about one third of the individuals in this study. It may be possible to monitor these changes over time to predict those individuals who are most at risk of succumbing to disease.

ePOSTER PRESENTATIONS

P-001

Presentation Time: Tuesday 17/09/2013 at 10:30 – 10:40
Abstract Topic Name: Best Clinical Practice
Presentation Screen Number: 1
Presenter: Maria Angela Trindade

POST CALAZAR DERMAL LEISHMANIASIS AND ERYTHEMA NODOSUM LEPROSUM: CASE REPORT AND LITERATURE REVIEW

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Introduction: Leprosy and leishmaniasis both are endemic infections diseases and important public health problems in developing countries like Brazil. We present a case report of these two neglected diseases, which coinfection has been rarely reported and call attention to the diagnosis of post calazar dermal leishmaniasis, without any case reported at Latin or North America.

Methods: Female patient, 53 years old, born and raised in Arapiraca · Alagoas, with a history of leprosy treated for 14 months (finished three months ago), came to the dermatology clinic presenting subpolar lepromatous leprosy with necrotizing erythema nodosum leprosum (ENL) reaction. Despite the introduction of prednisone and thalidomide, it evolved to a worsening of erythema nodosum, pancytopenia, hepatosplenomegaly and liver failure. New skin biopsies were performed, being consistent with leprosy in regression. Bone marrow examination showed intra and extracellular leishmania. Amphotericin B was added for the treatment of visceral leishmaniasis (calazar). In spite of the good clinical response, six months after the end of treatment, the patient had erythematous papules on the forehead, with histopathology and immunohistochemistry demonstrating leishmania, confirming dermal leishmaniasis post calazar diagnosis, treated with reintroduction of amphotericin B which leaded to regression of cutaneous lesions. About 6 months after these treatments the patient had no signs or symptoms suggestive of leprosy and leishmaniasis.

Results: The post calazar dermal leishmaniasis is characterized by erythematous or hypopigmented macules, papules and nodules or infiltrates on the face, which spread throughout the body and can affect mucous. This case, the patient developed after the treatment for leprosy and Calazar, possibly by improving your cellular response. This entity should be considered in cases of leprosy not responsive to treatment or in repeated reactive reactions or severe ones.

Conclusion: The post calazar dermal leishmaniasis is a hypersensitivity response of visceral leishmaniasis, and is rarely associated with leprosy.

P-003

Presentation Time: Tuesday 17/09/2013 at 10:40 – 10:50
Abstract Topic Name: Best Clinical Practice
Presentation Screen Number: 1
Presenter: Prof Dr Oleg Degtyarev

IRON-CONTAINING PROTEINS AS A MARKER OF M.LEPRAE PERSISTENCE IN LEPROSY PATIENTS IN THE CLINICAL REGRESSION STAGE

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Introduction: The aim of the study was to examine the levels of lactoferrin and ferritin in sera of lepromatous leprosy patients shooting range in clinical and microscopy recourse and determine the correlative relationship between the concentration of lactoferrin and ferritin in serum and persistence of *M.leprae*.

Methods: The dynamics oflactoferrin (commercialELISA test-systems, the manufacturer «Vector-Best», Russia), ferritin (commercial ELISA test-systems, the manufacturer «Sentinel C.H.», Milan, Italy) in the serum of 160 patients with lepromatoustype of leprosyin the clinical regression stage, smear-negative, treatedas out patients was studied. Specificserodiagnosisof leprosy (detectionof antibodies tospecies-specificandcross-reactiveantigens *M.leprae*) was carried out by ELISA andcounter-reaction of immunoelectrophoresis.

Results: From 160 patients of outpatient group, 100 patients were seropositive by the level of antibody response, ie antibodies to different epitopes *M.leprae*,were revealed. 60 patients were seronegative. Patients from seropositive group showed a significant decrease in the concentration of lactoferrin and ferritin in serum comparative patients of seronegative group ($p < 0.001$). In seronegative patients of ambulatory group the concetration of studied proteins was significantly higher than indices of patients of seropositive group.

Conclusion: Indicators of overall seropositivity of lepromatous leprosy patients beeing in clinical and bacterioscopic regression correlated with low levels of lactoferrin and ferritin in blood serum and indicated the presence of focus of *M.Leprae* persistence.

P-006

Presentation Time: Tuesday 17/09/2013 at 10:50 – 11:00
Abstract Topic Name: Best Clinical Practice
Presentation Screen Number: 1
Presenter: Artur Gosling

PREVALENCE AND CHARACTERISTICS OF NEUROPATHIC PAIN IN TREATED LEPROSY PATIENTS IN A TERTIARY CARE REFERENCE HOSPITAL

A. P. Gosling [1,*], L. E. Castro [1], L. SAADI [1], M. K. GOMES [1], A. CUNHA [1] and Interdisciplinary Program of Leprosy · HUCFF/UFRJ

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Introduction: Neuropathic pain in leprosy has been recognized as an important complication after multidrug therapy. However, only a few studies were conducted to determine the prevalence and characteristics. The purpose of this study was to describe the prevalence and characteristics of neuropathic pain in treated leprosy patients.

Methods: Cross sectional study during 12 months between 2011 and 2012. An interview was conducted with 114 patients reporting persistent pain after multidrug therapy for leprosy. Patients with hand and foot injuries, presenting reactions, deformities or other painful syndromes described in medical registries were excluded. Douleur Neuropathic 4 Questionnaire and clinical assessment were used to describe the prevalence of neuropathic pain. Mcgill Pain Questionnaire, Visual Analogue Scale and self-reporting were used to describe the characteristics of pain. Ethical and Research Committee of Clementino Fraga Filho University Hospital approved this study.

Results: 50 patients were eligible for the final sample and all of them have neuropathic pain according to clinical assessment (43,8%) and 48 (42,1%) from Douleur Neuropathic 4 Questionnaire. 64% were male, mean age 45,6 years old and 70% received lepromatous classification. All the patients have more than 1 year of diagnosis and were using prednisone for pain control. 70% have more than 5 injured nerve trunks. In 48% the pain was the first symptom of the disease. Ulnar nerve sensory location represents 68% of pain complains in upper limbs and 66% in tibial nerve for lower limbs. All the patients have more than 1 year of pain, mean of intensity in Visual Analogue Scale was 5 and 76% have moderate to severe pain. 54% report constant pain and 56% have limitations in daily activities. Physical stress (88%) and sustained postures (78%) were worsened factors. Numbness, tingling and burning were the most important pain descriptors for neuropathic pain. Tugging and tiring were the most important descriptors for Mcgill Pain Questionnaire. 86% have motor and 100% have sensory impairments.

Conclusion: The prevalence of neuropathic pain was high in this sample. The patients of this study have classical characteristics of neuropathic pain. However, pain persistence, more than 1 year of complain, moderate to severe intensity and multiple mechanisms are typical chronic pain characteristics.

P-161

Presentation Time: Tuesday 17/09/2013 at 10:30 – 10:40
Abstract Topic Name: Epidemiological Surveillance
Presentation Screen Number: 2
Presenter: Maria Da Graca Cunha

CLINICAL AND EPIDEMIOLOGICAL LEPROSY PROFILE AMONG CHILDREN BELLOW 15 YEAR OLD DIAGNOSED AT THE FUNDACAO ALFREDO DA MATTA IN MANAUS, BRAZIL FROM JANUARY 2006 TO DECEMBER 2011

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Introduction: The profile and magnitud of leprosy in pediatric population has an important bearing on the epidemiology of the disease and reflects the level of control in a community. The monitoring of the endemy in this age group has become a priority for leprosy control programs in Brazil. Therefore, the detection rate in children has beenincluded in the Growth Acceleration Plan-PAC in 2007 as an indicator to monitor the endemy in the country.

Methods: A retrospective study based on the Information System of Notifiable Diseases-SINAN database and on official medical records of leprosy cases detected in children from January 2006 to December 2011 at the Fundação Alfredo da Matta (FUAM), a reference center for leprosy and other skin diseases, in Manaus, Brazil, where the study population was selected. Data were collected from medical records and from the PCID <15. Epidemiological and operational indicators were recommended by the Ministry of Health to analize the results.

Results: During study period, a total of 1.742 leprosy cases were detected at FUAM. Among them, 164 new leprosy cases in children, representing 9.6% of all new cases detected. Of these, 157 cases were included in the study. Males were slightly predominant corresponding 52.2% of all cases, being the age group 10 to 14 years the most prevalent, representing 59,9%. The most frequent subtypes of leprosy were borderline tuberculoid 38.9%, followed by tuberculoid leprosy 31.98%. Regarding operational classification, paucibacillary forms represented 51.0% of the cases. The degree of disability at diagnosis was assessed in 99.4% of patients, of these, 3.2% and 8.3% had grade I and grade II disability, respectively. During the study it was observed that 43.9% of cases had registered contacts affected by the disease, of which 33.3% were parents, and 30.5% had the presence of more than one family contacts affected by the disease. Comorbidities were recorded in 28% of patients, with a higher prevalence of skin diseases and intestinal parasites with 38.6% each.

Conclusion: Based on Brazilian Ministry of Health official data,despite ofthe success of leprosy control actions, the Amazonas state remains with high levels of endemicity of the disease including among children. This should not be overlooked by health authorities since the detection rate of leprosy in children is related to recent disease outbreaks and transmission assets. The decline in the prevalence of leprosy should not run alongside with the cessation of active surveillance for detection of leprosy cases by the government health systems.

P-168

Presentation Time: **Tuesday 17/09/2013 at 10:40 – 10:50**
Abstract Topic Name: **Epidemiological Surveillance**
Presentation Screen Number: **2**
Presenter: Attyla Drabik

THE ACTUAL STATE OF LEPROSY IN ESTONIA – AN UPDATE REPORT AFTER 20 YEARS

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Introduction: At the International Leprosy Congress in Orlando, Florida in 1993, a report was presented on the situation of leprosy in Estonia, beginning with its history during the time of occupation by the Soviet Union up to 1990.
(Drabik, A., Sarv, A., Smits, J. (1993) "The actual state of leprosy in the Baltic States" published in: International Journal of Leprosy and Other Mycobacterial Diseases Volume: 61 Issue: 4 Suppl. Pages: 70A).
The present publication shows the progress in leprosy work in Estonia during the last 20 years.

Methods: Systematic, centralized, on-site detection of leprosy patients in Estonia.

Results: From 1993 – 1995 the Estonian physicians all over this country were informed on hand of papers and speeches on this topic.
The 33 patients registered up to that time were put on MDT therapy. 27of them were on out-clinic treatment and 6 on in-clinic treatment in the Estonian Leprosarium Kuuda.
In 1995 after finishing the MDT therapy, the Leprosarium Kuuda was changed into an old-people's home and the 6 patients continued to stay there because of their advanced age.
Every year the contact persons known so far were checked up and the attention of the local doctors were aroused. So, 4 new cases were detected.
During the last 20 years, 28 patients died because in 1993 the overage age of leprosy patients was over sixty years.
At present there are 9 registered leprosy patients: one of them in the Island Saarema (endemic territory), and eight inland.

Conclusion: Because of the intensive training of physicians and due to the check-up of the contact persons known during a long period of time, four new cases of leprosy could be detected in Estonia.

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Presentation Time: **Tuesday 17/09/2013 at 10:50 – 11:00**
Abstract Topic Name: **Epidemiological Surveillance**
Presentation Screen Number: **2**
Presenter: Erik Post

A SYSTEMATIC REVIEW ON THE EPIDEMIOLOGICAL DATA OF ERYTHEMA NODOSUM LEPROSUM, A TYPE 2 LEPROSY REACTION

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Introduction: Erythema Nodosum Leprosum (ENL) is a humoral immunological reaction in leprosy that leads to inflammatory skin nodules and can cause nerve and organ damage, even long after antibiotic treatment, and can occur in multiple episodes. Its suppression requires high doses of steroids or clofazimine. Its global occurrence is not well known, making logistics of drug distribution a challenging task. The study aimed to clarify the global incidence of ENL, based on the PB-MB classification as is done at field level.

Methods: A systematic review was done. We looked at cohort studies on incidence or prevalence of ENL and published after 1980. Different forms of ENL were included : single acute episodes, multiple acute episodes, and chronic ENL (ENL lasting for more than 6 months, in either single or multiple episodes).

Results: The review found 61 scientific papers, mainly from India(24), other Asian countries(11), Africa(10) and Brazil(9), and in addition 4 reviews. For studies above 100 patients (maximum 26.403), means were calculated based on cumulative incidence and size of study populations. In field-based studies 1.2% of all leprosy cases (range 0.7-4.6%) and 5.3% of all MB leprosy cases (range 1.2-7.3%) develop ENL. Only a few studies calculate the incidence rate in person-years at risk (PYAR) among MB cases, finding a range of 1 to 8 per 100 PYAR. Hospital samples show that 12.8% (range 2-37%) of MB cases develop ENL. Regional differences, often suggested, could not be confirmed due to scarce regional studies and wide variations in the studies that were found. Reoccurrence ranges between 39 to 77.3% of patients with ENL, with a crude cumulative average number of 2.6 episodes per ENL patient. Some studies find a peak in ENL incidence in the first year of treatment, but other studies during the second and third year after starting MDT.

Conclusion: Data are poor data due to the scarcity of studies reporting ENL as primary outcome. Differences in diagnosis and definition restricted firm conclusions. Whereas means are calculated in the present review, accurate data on global and regional cumulative incidence of ENL is lacking. Large prospective studies or publication of data from accurate epidemiological surveillance would be needed to clarify this. Awareness of late reactions is needed amongst relevant health providers, as new ENL occurs as late as 5 years after completing MDT, and reoccurrences may occur up to 8 years after MDT.

P-211

Presentation Time: **Tuesday 17/09/2013 at 10:30 – 10:40**
Abstract Topic Name: **Epidemiological Surveillance**
Presentation Screen Number: **3**
Presenter: Ana Paula Carvalho

SEROPOSITIVITY ANTI PGL-I IN HOUSEHOLD CONTACTS OF CASES DIAGNOSED WITH LEPROSY

A. P. M. Carvalho [1,*], A. C. O. C. Fabri [1], E. P. Amaral [1], F. N. Lopes [1], M. A. F. A. Lautner [1], F. C. F. Lana 1

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Introduction: The diagnosis of leprosy is mainly clinical and complementary examinations, as the smear, the histopathological exam of the skin tissue, the reaction of Mitsuda, identification of *Mycobacterium leprae* by polymerase chain reaction and serological tests, can be used for confirmation of diagnosis and for the classification of patients. Serologic tests, which identify antibodies to phenolic-I, glycolipid specific antigen of *M. leprae*, in addition to being used for classification of patients, have been conducted to monitor the treatment with multidrug therapy, assess the risk of relapse and to identify individuals who have a higher risk of developing leprosy, especially among household contacts. The objective of this study was to analyze the seropositivity anti PGL-I in household contacts of reported cases with leprosy.

Methods: The design was analytical type of study which was developed in seven municipalities of micro region of Almenara, located in the State of Minas Gerais, Brazil, which had the largest number of cases and household contacts recorded in the Sistema de Informação de Agravos de Notificação over the period 2006 to 2010. The criteria for inclusion of household contacts in the study were be not less than seven years, reside with the index case of leprosy at the time of diagnosis and have no history of illness by leprosy. Individual notification form was used for identification of cases of leprosy and the data were collected by home visits. During the visits, we used a structured questionnaire, the test ML Flow has been carried out to serological analysis and all household contacts were submitted for dermatoneurologic evaluation. The *Software* Epi

Info was used for the preparation of the database and the *Software Statistical Package for the Social Sciences* and *Statistical Software for Professionals* were used for statistical analysis.

Results: The general rate of seropositivity anti PGL-I was 13.9%, and between the contacts of cases classified as multibacillary and paucibacillary was 8.8% and 18.2%, respectively. The seropositivity anti PGL-I was highest among household contacts aged between 14 and 7 years old, and among contacts that showed suggestive signs of leprosy with significant association ($p < 0.05$). In relation to the clinical characteristics of indexes cases of leprosy, operational classification and degree of physical incapacity in diagnosis also showed significant association with seropositivity of contacts, which was highest among multibacillary cases and contacts of cases with grade 2 in physical disability. In multivariate analysis, age (RP = 0.49, P = 0.008), the presence of signs suggestive of leprosy (RP = 4.27; P < 0.001) and the operational classification of index case (RP = 2.14; P = 0.008) remained associated with seropositivity anti PGL-I.

Conclusion: The results suggest that the seropositivity anti PGL-I in household contacts is related to clinical characteristics of cases of leprosy and serological evaluation can be considered a strategy for identifying individuals at greater risk of developing leprosy or at an early stage of the disease. Although serologic tests available are not considered diagnostic tests, they can be used as auxiliary strategies, when associated with clinical parameters.

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Presentation Time: Tuesday 17/09/2013 at 10:40 – 10:50
Abstract Topic Name: Epidemiological Surveillance
Presentation Screen Number: 3
Presenter: Angélica Fabri

DEGREE OF DEFORMITY IN LEPROSY CASES DIAGNOSED IN CHILDREN UNDER 15 YEARS OLD AND ITS RELATIONSHIP WITH OPERATIONAL AND EPIDEMIOLOGICAL FACTORS

A. C. O. C. Fabri [1,*], A. P. M. Carvalho [1], F. N. Lopes [1], F. M. Lanza [1], I. T. M. Neto [1], I. D. C. Bueno [1], F. C. F. Lana [1]

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Introduction: The detection of leprosy in children under 15 years old and the occurrence of deformity can be related to the exposure to cases not detected by the health service and with late diagnosis. The reduction of the number of cases among those under 15 years old and the reduction of new case detection with grade 2 deformity are strategy adopted by World Health Organization to reduce the disease burden in the world. The present study aims at analysing the degree of deformity in leprosy cases diagnosed in children under 15 years old and its relationship with operational and epidemiological factors.

Methods: This epidemiological cross-sectional study was carried out at the Almenara, Araçuaí, and Diamantina, micro regions located in the Jequitinhonha Valley, northeast of the State of Minas Gerais - Brazil. Almenara and Araçuaí were selected because the high rates of new leprosy cases and they are considered priority in the state's disease control; Diamantina presented a high percentage of leprosy cases with deformity. Data between 1998 and 2010 was collected from the Information System for Notifiable Diseases database. Were analyzed the mean coefficient of detection and the proportion of cases in patients under 15 years old. For patients under 15 years old were assessed the proportion of new cases with grade 2 deformity, the proportion of new leprosy cases with deformity grade assessed at diagnosis and the proportion of cured cases at year with deformity grade assessed. Furthermore were investigated the variables gender, operational classification and detection mode. Treatment and analysis of data were carried out by software *Statistical Package for Social Sciences* version 18.0 and *Statistical Software for Professionals*, version 11.0.

Results: The average coefficient of detection was 32.96/100.000 inhabitants; 7.61% (n = 140) of new cases were diagnosed in children under 15 years old; 5% (n = 7) in this age group were grade 2 deformity at diagnosis. All leprosy cases in children under 15 years old had their deformity degree assessed at diagnosis and only 49% (n=69) of the ones discharged after cure were assessed. Prevalence of leprosy cases in children under 15 years old with deformity was higher in males (PR = 2.65; P = 0.032; CI 95%:1.09-6.45) and in multibacillary patients (PR = 14.68; P <0.001; CI 95%:3.54-60.87) and lower when the detection mode was passive (PR = 0.73, p = 0.47, 95% CI :0.31-1.73).

Conclusion: Such this context suggests high transmissibility and early exposure to *Mycobacterium leprae*. This situation contributes to maintaining the chain of disease transmission in the area and indicates that health care services should intensify leprosy control as more investment in health professionals training and educational activities regarding the signs and symptoms of the disease. Furthermore, it is important intensify the search for new cases and household contacts. Early diagnosis might break the chain of transmission and reduce the physical, psychological, social and behavioural burden of the disease.

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Presentation Time: Tuesday 17/09/2013 at 10:50 – 11:00
Abstract Topic Name: Epidemiological Surveillance
Presentation Screen Number: 3
Presenter: Eliane Ignotti

DEATHS BY LEPROSY AS THE UNDERLYING CAUSE MATO GROSSO FROM 2000 TO 2007

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Introduction: The mortality from leprosy has been little studied, however the disease has been recorded frequently as a cause of death. In Mato Grosso, an endemic disease in the Brazilian Amazon, there were 129 deaths from leprosy in the period 2000 to 2007.

Methods: Study cross-sectional epidemiological analysis of deaths from leprosy registered in the SIM of Mato Grosso from 2000 to 2007 and identified in Sinan / MT. The comparison and calculation of the proportions of variables were performed using Epi-Info 3.3.2 at a significance level of 5%.

Results: Of the 129 deaths from leprosy in MT,88 deaths were identified as cases of leprosy in Sinan. Of the 88 deaths the frequency of those who were discharged after cure is equal to high per death (n = 36, 40.9%). For the group that was discharged because of cure time between diagnosis and death ranged from 5 to 122 months, while in the group classified as high due to death was 0-31 months. The cause of death with the highest proportion in the SIM is not leprosy specific (n = 88, 75.9%). Most cases were multibacillary (n = 73; 82.9%), of the clinical form Virchowian (n = 46; 52.2%). In most cases it has not been evaluated the degree of incapacity (n = 60; 68 1%). Higher frequency of deaths occurred among the elderly (n = 45, 51.1%) male (n = 68, 77.2%), with a low educational level (n = 35, 39.7 %) and color/race white (n = 21, 23.8%).

Conclusion: The death registrations include people cured leprosy with multidrug therapy, and individuals who die during the first months of treatment. Deaths were more frequent among the elderly with low education and those with the lepromatous clinical form.

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Presentation Time: Tuesday 17/09/2013 at 10:30 – 10:40
Abstract Topic Name: Prevention of Disability
Presentation Screen Number: 4
Presenter: Dr Atul Shah

KEY MODALITIES OF FIELD AREA DISABILITY CARE

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[1]Director, [2]Managing Director, Novartis Comprehensive Leprosy Care Association, Mumbai, India

Introduction: The authors working through Novartis Comprehensive Leprosy Care Association has developed certain modalities for field area disability care application. This has happened over the years, almost two decades of experience, testing and finalizing the best practice methods. These methods are as follows.

Methods: Health Education Materials - We have designed an educational pamphlet with simple illustrations to explain numbness and loss of sensation in the hands and feet. It has been adopted in many languages. Physiotherapy Exercises- Physiotherapy exercises are aimed at maintaining the range of movements in finger joints, which would otherwise worsen. We have introduced one main exercise for each major deformity, which can easily be done at home by the patient. Prefabricated standardized splints - made out of durable and easily available materials have proved to be highly effective in the prevention and correction of claw-hand.For the effective management of plantar ulcers we have designed a special "Self-care Kit", which is distributed for free at camps and follows ups by health workers. MCR Footwear NCLCA has designed MCR footwear using commercially available patterns in order to overcome the reluctance of patients to use the typical leprosy footwear. NCLCA provides the footwear free of cost in its project areas. Instant Grip-Aid Kit is one such modality who have difficulty in holding and using articles of daily use. This kit increases a patient's quality of life and self-esteem as it enables them to perform everyday tasks with very little dependence. Economic rehabilitation is offered to those who are found eligible, particularly after RCS.

Results: The poster on disability prevention have been adopted and translated in many languages and used not only in India but also abroad. While splints have increased the frequency of exercises by finger loops it has also helped to draw the attention of keeping the joints mobile and preventing stiffness or worsening of disability. Nearly 2500 cases have been given either preoperative or post-operative splintage in reconstructive surgery camps. MCR footwear has been made in commercial designs but what is most important is now it can be made at remote location. In such instances about 70 cases have shown good acceptance of custom made footwear made at remote location by NCLCA. More than 2000 grip-aid kits have been distributed free of which nearly 1500 have been reportedly using them in day to day activities. With self-care practice with self-care kit between 40 to 60 % cases have reported healing of ulcers in 4 months' time. At Gujarat alone

NCLCA has conducted reconstructive surgery camps in which more than 7500 patient have been operated. Voices from the field are positive about impact of economic rehabilitation for income generation activities and many of them now have good income from the use of articles given.

Conclusion: In conclusion, Novartis Comprehensive Leprosy Care Association founded by Novartis Foundation for Sustainable Development has fulfilled its role in pioneering the disability care modalities, reaching it to patients in need with increased patient outcome in each condition and training the health care staff who offer these on regular basis following adoption of many modalities by the government and other NGOs. Awards received by NCLCA include Golden Peacock Award for Innovative products and services and Reader's Digest gold award for CSR. Appreciation by scientific community helps to serve the society better with the best available practices.

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Presentation Time: **Tuesday 17/09/2013 at 10:40 – 10:50**
Abstract Topic Name: **Prevention of Disability**
Presentation Screen Number: **4**
Presenter: Dr Atul Shah

DPMR CAMPS - A PRAGMATIC APPROACH TO RENDER DISABILITY CARE SERVICES AND TRAIN HEALTH CARE STAFF

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Introduction: Current studies put the figure of existing leprosy-disabled cases in India at nearly 0.6 million. With a 3% disability rate in new case detection, annually about 3000 cases are added to this pool. Although multi-drug therapy (MDT) has prevented over 2 million people from developing disabilities, the need for disability care is overwhelming. Due to poor availability of disability prevention and care services almost throughout India, and also self-neglect because of poverty and lack of proper knowledge about self-care, the affected people continue to develop secondary deformities and become crippled. Therefore, Novartis Foundation for Sustainable Development has established Novartis Comprehensive Leprosy Care Association at India since over two decade. NCLCA's focus is on providing services to prevent, correct and care for leprosy-related disabilities, transferring new skills and technology to healthcare providers, and empowering the disabled to help themselves.

Methods: The procedure followed at the camps is very simple and very organised. A few days prior to the camp the patients are made aware of the date and time of the camp by the local health officer or health worker. In some places, patients are sent letters informing them about the camp that is to take place in their area. This letter bears a clear notification that the patients will be compensated for loss of daily wages and travelling expenses. On the day of the camp, as soon as the patient arrives he/she is first registered and given a token by a health worker. From there on the children are attended to on a separate table and adults are examined on another one by the medical officers. The children are examined to detect high risk cases which are likely to develop into deformities. At the adult table, a medical officer checks the patient for deformities and ulcers. The patients suffering from hand or foot deformities are provided with splints and taught physiotherapy exercises in a group. Patients suffering from ulcers are provided with self-care kits and given a demonstration on how to use it. They are also provided with special MCR footwear. While examining the patients, Medical Officers also select those who need to undergo RCS and ascertain their willingness to undergo surgery for correction of their deformities. The selected patients are referred and allotted a date for the operation.

Results: The concept of comprehensive leprosy care is based on the fact that disabilities in leprosy are a major source of de-habilitation, detachment from the family and community as also of stigma in society. The disability prevention, correction or care could make a tangible difference to the quality of life of affected individuals, make them ergonomically independent, help them live a gainful life in society and eventually decrease the stigma. More than 25000 patients have been benefited through the camps.

Conclusion: Organising Disability Prevention and Medical Rehabilitation Camps seems an extremely good approach to render services to both old and new leprosy cases. On the job training of the health care staff is carried out for pragmatic approach to disability care and follow up. It has reduced community load of disability to a great extent.

P-227

Presentation Time: **Tuesday 17/09/2013 at 10:50 – 11:00**
Abstract Topic Name: **Prevention of Disability**
Presentation Screen Number: **4**
Presenter: Linda Lehman

MONITORING OUTCOMES AT THE END OF ANTIBIOTIC TREATMENT USING BU01, POD AND BUFLS FORMS WITH 23 NEW CASES IN 2012 AT KUKUOM HEALTH CENTER ASUNAFO SOUTH DISTRICT, BRONG AHAFO REGION OF GHANA

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Introduction: Kukuom health center is located in Asunafo South District of Brong Ahafo Region of Ghana. In 2012 they detected 45 new cases of Buruli ulcer (BU) of which 23 (51%) had been seen at the Kukuom Health Center. The Kukuom Health Center documentation on BU01 forms was poor in 2011 and no documentation was done on prevention of disability. Efforts were made by the district health directorate and Kukuom Health Center to improve documentation and care of BU patients during and after BU antibiotics.

Methods: A monitoring form was utilized to collect and assess all information on the BU01, POD and BUFLS forms of 23 persons in 2012 who had been put on BU antibiotic treatment. A statistical analysis was made using Pearson Test to compare proportions of cases at the beginning and end with wounds, pain, limitations of movement and functional limitations using BUFLS.

Results: There was significant improvement in documentation in 2012 compared to 2011 on the BU01 forms and the with the inclusion of POD and BUFLS documentation for all patients. The completeness of information on the POD and BUFLS forms was 18 out of 23 (78%) filled completely versus only 10 of 23 (43%) of the BU01 forms filled completely.
Ninety-one percent (21) had information on whether they saw a traditional healer or not. The majority, 18 (78%) were more than 15 years and 5 (22%) were children ranging from 2.5 to 14 years. The majority, 13 (57%) were female. All new cases had PCR done of which sixty-one percent (14) were PCR positive and the majority (83%) completed their antibiotic treatment within seventy days. The majority of lesions were categorized as 1 or 2 (57%). Seventy percent (16) of lesions were on the lower leg followed by twenty-two percent (5) on the upper limb.
This presentation shows the significant ($p < 0.05$) changes that could be observed with the POD forms and BUFLS form. Although the same number of wounds was present at the end, all decreased in size. Pain, limitations of movement and functional limitations were significantly reduced. At the end of BU antibiotic treatment, 88% had wounds, functional limitations changed from 94% to 47%, LOM changed from 76% to 24% and pain wast initially present in 94% versus 12% at the end. This showed improvement but areas that required continued care and possible referral.

Conclusion: The POD forms could realistically be used within BU control programs at all levels of the health system to identify problems needing care during and after the completion of antibiotic treatment. It can also be used to plan for resources needed to provide the care. The POD forms permitted comparison of impairments and disability at the beginning and end to evaluate quality and outcomes of care. Besides wound management, attention is needed to manage pain, movement and functional limitations (BUFLS). The Monitoring Form enabled the district team to easily collect data and summarize findings from the forms, determine quality of services and make management decisions. It provided them with a «snapshot view» of their situation.
The POD and BUFLS forms are important to use along with the BU01 forms to identify conditions and quality of care. A study could evaluate the feasibility of using the Monitoring form with cell phone technology. Lessons learned with BU monitoring are applicable to monitoring leprosy care outcomes.

P-038

Presentation Time: **Tuesday 17/09/2013 at 10:30 – 10:40**
Abstract Topic Name: **Leprosy Control – Urban and Special Populations**
Presentation Screen Number: **5**
Presenter: Dr Atul Shah

CHILD CARE CAMPS FOR DISABILITY PREVENTION AND CARE FOR RFT CASES

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Introduction: Leprosy in children generally manifest after the age of 6 years, the reason being the incubation period is 2 to 5 years. When developed indeterminate type is common form, followed by borderline group. In the indeterminate group over 80% may heal or become frank PB or MB leprosy. Some of the children are more immunocompromised than others developing reactions. A patch on the face which does not disappear in 3 months is not likely to be pityriasis and leprosy diagnosis may be considered. A reversal reaction may be suspected if a lesion becomes inflamed suddenly or there is painful tender nerves. However, the difficulty lies in the fact that RR can occur even after treatment and some children may not seek treatment early.

Methods: In order to study the current situation in the RFT (released from treatment) children all children registered in past 3 years were listed out and called for follow up in "Child Care Camp" organized by Novartis Comprehensive Leprosy Care Association and Government of Gujarat or Maharashtra. The selected areas were endemic for leprosy and had nearly 10 to 15 % of leprosy cases detected annually. All children were examined for any "high risk" i.e. multiple patches or nodules still existing after treatment, thickened nerves particularly ulnar or median in upper extremity and lateral popliteal and posterior tibial in lower extremity. The thickened nerve in the vicinity of the patch except on the face was not considered as high risk. The other objective was to prepare medical officers to identify high risk cases and initiate a regular follow up to prevent or correct deformities.

Results: The results were startling in the form of detection of 33% cases comprising of those with disability grade 2 and those at high risk with weakness or loss of sensations and multiple patches which did not seem to have healed. Of the remaining children, in nearly 30% cases there were no signs or symptoms of having suffered from leprosy. All others were cases of treated leprosy.

Conclusion: "Child care camps" has demonstrated that follow up of discharged cases is essential to prevent and correct disability. It has reduced the load of surveillance to bare minimum and with likely maximum benefit to cases. It has served as early reference for surgery – preventive neural decompression or corrective tendon transfers. The ancilliary benefits include identification of child not going to school and reasons thereof or recognition of those in need of financial support for higher education.

P-039

Presentation Time: **Tuesday 17/09/2013 at 10:40 – 10:50**
Abstract Topic Name: **Leprosy Control – Urban and Special Populations**
Presentation Screen Number: **5**
Presenter: Abraham Selvasekar

IMPARTING AWARENESS ABOUT LEPROSY AMONG CHILDREN OF MADRASAS SCHOOLS, AS A NEW CASE DETECTION METHOD

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Introduction: Before Integration, School survey is one of the most important methods in new case detection strategy adopted during vertical program of National Leprosy Eradication Program (NLEP). The child proportion among new cases is a key indicator denoting transmission of leprosy. Hence interventions at schools cannot be ignored. In the post integration scenario, any new case detection intervention carried out should satify all these criterias such as... should be cost effective, participatory in nature, should not trigger stigma, less labour intensive, sustained outcome/impact and expected satisfactory yield. Hence educating and empowering Madrasas children would be an innovative method of new case detection strategy.

Methods: First the main religious leader controlling the Madrasa was identified and explained about usefulness of the leprosy awareness program. After obtaining permission a time table was design to conduct orientation in planned manner to cover all the madrasa in the North East District. Firstly, one hour orientation training was given to the Head master and other teachers of the Madrasa schools. They have been oriented about early signs & symptoms, causes and consequences about the disease. Secondly, in every class flash cards and posters about Leprosy have been displayed. The Children were distributed with pamphlets on leprosy. The children those imparted the knowledge about leprosy, were also empowered to spread the message of leprosy in a positive manner. The children have been encourged to asked questions about the disease. Later they were asked to self examine themselves at home, and spread the message to their family members and neighbours. And those having skin lesions were asked to report to The Leprosy Mission hospital.

Results: There are about 124 registered Madrasas in the National Capital Territory of Delhi. As a pilot study Madrasas located in one of the 11 districts were selected for the intervention. All the 26 Madrasas located in the North East district of Delhi is included in the study. So far 6 Madrasas have been completed in a planned manner. Total number of Boys and Girls oriented in leprosy were 1293. In turn they were able to identify one Pauci Bacillary case so far. The project will be completed sometime June 2013.

Conclusion: Imparting awareness about leprosy among children of Madrasas schools followed by self examination; Later Empowering them to spread the message about leprosy and screen the family member and neighbours would certainly expect to yield satisfactory results. The Leaders of Madrasas gave an overwhelming support and their participation in leprosy awareness program is encouraging. As children are our future leaders, certainly this initiative would contribute in new case detection in a sustained manner. Similarly leaders from Gurudwara also have shown keen interest in conducting similiar exercises.

P-041

Presentation Time: **Tuesday 17/09/2013 at 10:50 – 11:00**
Abstract Topic Name: **Leprosy Control – Urban and Special Populations**
Presentation Screen Number: **5**
Presenter: Yoshiko Okano

RELAPSE OF HANSEN'S DISEASE DIAGNOSED BY LEPROMA IN NASAL CAVITY-A CASE REPORT-

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Introduction: In Japan today leprosy is a disease already well under control. We, however, believe that a more cautious attitude is needed for the disease. This is because, although their number is limited, there are still cases in which fresh leprosy lesions that can be recognized as leprosy lesions are found quite unexpectedly by observation of pathologic tissues from patients who had gone through routine skin smear test for a long time without having any *Mycobacterium leprae* detected. We experienced such a case and we will describe this case and report the findings obtained from the pathological specimen.

Methods: Case: 88 years old female
She had suffered from leprosy since she was 48 years old. She was initially treated by dapson, promin, isoniazid, clofazimine, rifampicin etc... The yearly routine skin smear always showed negative results for about 20 years. However in April of 1997 at the age of 87, she complained of having an uncomfortable feeling in her right nasal cavity and a small polypous nodule was found and extripated. The specimen consists of a pinkish soft and moist material which showed ulceration on the mucosal surface. It measures 4 mm in diameter. The specimen was examined pathologically.

Results: HE stain of this specimen shows a thin layer of necrotic surface which contains numerous polymorphnuclear leukocytes cells and some amorphous necrotic material. The submucosal layer shows histiocytic swollen and often foamy cytoplasmic cellural infiltration in great numbers and scattered lymphocytic infiltration in destructed layers. Ziehl-Neelsen stain shows numerous and swollen polymorphnuclear leukocytes cells containing rod like pink stained bacilli in their cytoplasm in the uppermost necrotic layer. The deep inner necrotic mucosal layer shows quite a few Ziehl-Neelsen positive bacilli. It was identified as a leproma.

Conclusion: In this case, the patient had been bacillus negative in skin smear test for nearly 20 years and had been considered clinically cured.We thought that the Case lesion showed early symptoms of a relapse of Hansen's disease. It must be noted, that the relapse region of this patient was the vestibular nasal cavity, which can be regarded as one of the favorable places of the human body for the bacillus to lodge in. The fact that relapses occur suggests the possibility that the acid-fast bacilli has been living in some parts of the human body after it is cured successfully.

P-058

Presentation Time: **Tuesday 17/09/2013 at 10:30 – 10:40**
Abstract Topic Name: **Leprosy Control – Urban and Special Populations**
Presentation Screen Number: **6**
Presenter: Dr Venkata Ranganadha Rao Pemmaraju

EPIDEMIOLOGICAL SITUATION OF LEPROSY IN URBAN AREAS IN INDIA - A RAPID ASSESSMENT STUDY

V. R. R. Pemmaraju [1,*], K. S. Baghotia [2], R. Babu G [3], S. Peri [1], P. R. Manglani [4], R. K. Allam [5], A. Samy [6]

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Introduction: Leprosy eradication is essentially based on breaking the chain of transmission through detecting all patients in a geographical location and treating them with Multi Drug Therapy (MDT). National Leprosy Eradication Programme (NLEP) is planned considering the rural health structure. To define an effective NLEP in urban areas understanding the disease epidemiology and capacity of urban health structure in managing leprosy patients is elementary. A Rapid assessment was done with an objective to understand the epidemiological situation of leprosy in different urban locations and assess the capacity of urban health facilities to provide leprosy services.

Methods: A sample of 30 urban locations in India has been identified for assessment of leprosy situation and capacity of health staff. The main tools are desk review of the secondary data and interview of health staff working at district and urban health centres. Questionnaires were designed and field tested before collecting information using Microsoft Excel. Field investigation team after training collected information and computerised the data. The data was analysed to define epidemiological situation of leprosy and capacity of urban health staff to define a leprosy control strategy for urban settings. Population particulars, epidemiological data pertaining to leprosy cases, information on health facilities and their capacities to manage leprosy problem were collected.

Results: The decennial growth in urban population over the last decade showed a growth by 28.46%. 1,122 health facilities were found delivering health services and each centre covers a population of 15.4 Million on average as compared to 50,000 per health facility in rural areas. Extending services in 2,749 slums and 374 peri-urban villages was found challenging due to migration of population. Annual new case detection rate of leprosy patients in 11 out of the 30 locations are higher than the national average. Disability rate locations is 4.99%, which is higher than national average (3%). Treatment completion rate is also less than acceptable levels. 11 out of 30 urban locations do not have adequate health staff. 30% of health staff were not trained in leprosy.

Conclusion: Leprosy is still an important public health problem. Growing urban population in slums and peri-urban villages with migrant population was the main operational challenge. Distribution of population for each urban health facility should be at feasible levels to improve

access to services. Considering the above results of the rapid assessment, leprosy control model in urban settings needs to include activities like training of all health staff in leprosy, improving awareness on leprosy in the community and access to health services particularly in inadequately served areas like urban slums and peri-urban villages.

P-059

Presentation Time: **Tuesday 17/09/2013 at 10:40 – 10:50**
Abstract Topic Name: **Leprosy Control – Urban and Special Populations**
Presentation Screen Number: **6**
Presenter: Vivek Pai

TREND OF SMEAR POSITIVE CASES IN THE URBAN SLUMS OF MUMBAI – A FIELD STUDY IN MUMBAI

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Introduction: Bombay Leprosy Project (BLP) covers an urban population of 2 million comprising mainly of slums including Dharavi one of the biggest slums in Asia. How leprosy case detection and treatment is managed in the post integration scenario in Mumbai was reported earlier in 2008 (Ganapati et al 2008). We present our experience in BLP in the post integration period (July 2004 to 2012) pertaining to the study of occurrence of new smear positive patients in urban slums of Mumbai.

Methods: The leprosy programme was integrated with the Health Posts (HP) of the General Health Care System (GHC) in Mumbai (population: 12 million) in July 2004. Health delivery in the city of Mumbai is highly complex. The health structure primarily comprises of HP, medical colleges besides the non teaching hospitals. There are also General practitioners and Practicing dermatologists besides several specialists and corporate and private hospitals. Keeping in mind this backdrop, BLP has been offering services after reorganization post integration through few satellite clinics and extension units in public hospitals. These clinics are being strengthened and retained at the ward level and services sustained. Monitoring of detection of new cases with special emphasis on smear positive cases was undertaken and analyzed for the period after integration in the city of Mumbai.

Results: From July 2004 till December 2012, a total of 158 smear positive cases were detected out of 945 total new cases detected and registered for treatment in the Project area in a population of 2 million giving a trend of an average of 17 (16.7%) new smear positive cases in a year. Most of these cases reported directly to the satellite clinics and referral centre and teaching medical colleges and a few practicing dermatologists. These cases as well as those identified through catchment clinics of BLP were confirmed by senior supervisory staff.

Conclusion: It is observed that there is a static trend in detection of new smear positive cases in project area during the study period indicating a constant pool of reservoir of infection in the community. Though the practice of taking skin smear is done away with in the routine programme, BLP has been continuing the practice of taking skin smears to identify the quantum of reservoir of infection responsible for chain of transmission of infection in the slums.

P-060

Presentation Time: **Tuesday 17/09/2013 at 10:50 – 11:00**
Abstract Topic Name: **Leprosy Control – Urban and Special Populations**
Presentation Screen Number: **6**
Presenter: Nicole Holmes

TWO WOMEN FROM THE SAME FAMILY WITH SIMILAR EXPERIENCES WITH LEPROSY

N. H. Holmes [1,*]

[1]IDEA, Rex, United States

Introduction: My aunt, Michelle McKenzie, and I were born in Trinidad, but while she grew up there, I immigrated to the United States and lived in Brooklyn, NY. Although we were separated by hundreds of miles, we both contracted leprosy, and were the only ones in our family to do so. We may have had different experiences, but many similar themes related to stigma, social isolation and rejection, as well as self image and depression, came about in the course of our illness.

Methods: Michelle and I would share our experiences with each other, and she was a constant reminder to me, that I would someday be well again. In preparation for this presentation, I came up with a list of questions that I emailed to my aunt in order to determine her experiences related to her diagnosis, treatment, and recovery; as well as her mental and emotional health, physical, and social changes. I also collected photos of my aunt and myself before, during, and after treatment to further document the transformations we both endured in all aspects of our lives.

Results: My aunt and I were both diagnosed in our late teens while in higher education. We noticed changes in our bodies that prompted us to seek medical attention, and resulted in us being diagnosed with leprosy. Michelle describes that "I was devastated, depressed and angry. Asking God why he did this to me, and thinking I was being punished for my sins." I too felt this way, would often recreate in my mind my life's actions, and which thing I did in particular that warranted this punishment.

I was impacted by how people treated me, in particular, some medical professionals who regarded me as a specimen instead of a person, or did not want to interact or deal with me because of my illness. I still think about the doctor who did not want to come into his office to greet me, but instead choose to speak to me from across the room, in the safety of the doorway. Michelle explains that "I was treated with scorn and neglected. Nurses didn't want to touch me, but this was because of the Steven Johnson's Syndrome." In addition to my aunt coping with a diagnosis of leprosy, she also suffered from the effects of having an allergic reaction to Dapsone. There were also times we had to pick and choose who we shared our diagnosis with, in fear of the response we would receive. My aunt's boyfriend left her shortly after he learned about her diagnosis, and I rarely told anyone about my illness in the beginning.

We were both active, pretty, young women at the time we were diagnosed, who were admired and looked up to by family and friends. As a result of the side effects of the medications we took, our complexions changed, we both had scars from nodules, and we gained weight. This resulted in changes in how we now saw ourselves, and in our self-confidence. We both endured periods of depression, but were able to seek out and get help through counseling.

Conclusion: My aunt and I may have lived in different countries, but our stories are similar. Michelle and I share the same message because of our struggles with leprosy, and our acceptance and appreciation for how it has shaped our lives for the better. My aunt expresses this best when she says: "My experience with this disease has made me stronger and closer to God. It has taught me that looks are not all in life, and that you must love yourself first, before you can love others."

P-124

Presentation Time: **Tuesday 17/09/2013 at 10:30 – 10:40**
Abstract Topic Name: **History of Leprosy**
Presentation Screen Number: **7**
Presenter: Dr Jose Terencio de las Aguas

HISTORY OF LEPROSY IN SPAIN

J. Terencio De Las Aguas [1,*]

[1]Jose Terencio de las Aguas, DENIA, Spain

Introduction: Leprosy arrived in Spainfirst through Phoenicians who came to Andalusia, and later through Roman soldiers and civil servants who came from the Middle Eastand remained in Spainfor 600 years. Then the Muslim presence for 8 centuries, being Valencia, Murciaand Andalusiathe most affected areas.

Methods: The first leper colonies were founded in the Christian Spain, Barcelona, Asturiasy Galicia: and after the Reconquest Valencia, Granada, Sevilla, Málaga and Canarias Island Avicenaand Averroes from Muslim Spain and Arnau de Vilanova from the Christian Spain are quoted to be among the most important medical figures.

Results: It is discussed the growing of leprosy during the 19th century, especially in Valencia, fact that caused the foundation of the Fontilles sanatorium in 1909,commenting its important medical attention, investigation and teaching roles; in the same way the great work of the Spanish dermatology in the diagnosis and treatment of sick people what has lead to the fact that of the 600 cases that there were in the sixties, with an annual rate of 300 new cases, in the last 10 years are only diagnosed 10 to 14 new cases, being immigrants the 90 %.

Conclusion: Nowadays leprosy is not a danger for the Spanish Public Health and it will never be an emergent disease.

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Presentation Time: **Tuesday 17/09/2013 at 10:40 – 10:50**
Abstract Topic Name: **History of Leprosy**
Presentation Screen Number: **7**
Presenter: Bimo Aksono

DIVERSITY OF MYCOBACTERIUM LEPRAE ON THE BASIS OF REPETITIVE SEQUENCES OF TTC FROM ANCIENT BONES FOUND IN BALI AND EAST NUSA TENGGARA, EAST INDONESIA

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Introduction: Excavations of the genetic material of pathogenic organisms in the ancient bones provide important information for the study of certain infectious diseases in ancient populations. In addition, the identification of bacterial DNA provides direct evidence and the frequency of occurrence of infectious diseases in ancient populations and may provide information about the evolution of microorganisms and related diseases. Several recent reports have succeeded in

isolating several *Mycobacterium* by using PCR technique, because the PCR technique, although very small amount of DNA in ancient biomaterials such as bone or soft tissue but can be identified. This new approach not only of knowledge related to the evolution of different strains of *Mycobacterium*, but may also provide correlative data on the influence of environment on the development of *Mycobacterium* and biodiversity. However until now has never reported any *Mycobacterium* especially *Mycobacterium leprae* was found in a ancient bones from Indonesia, so too has not been widely reported throughout the world of *M. leprae* from ancient bones found on the old 2990 + / -160 BP. The purpose of this study was performed diversity analysis of *M.leprae* on the basis of repetitive sequences of TTC from ancient bones found in Bali and East Nusa Tenggara, East Indonesia.

Methods: One of ancient bones who lived 2990 +/-160 BP from Lembata Island-Flores, Indonesia (code LL 1/5) and the one of ancient bones who lived Paleometallic period derived from Semawang-Bali, Indonesia (code SMW/III/1990). The DNA extraction was performed using a kit from Qiagen products and its TTC repeating pattern were seen with the method of direct sequencing.

Results: The inner part of the ancient bone from Lembata Island-Flores, Indonesia (code LL 1/5) was obtained by 13 repetitions TTC and the one derived from Semawang-Bali was obtained by 20 repetitions TTC. The different number of TTC repetitions have showed the different isolates of *M. leprae* between in the ancient bone from Lembata-Island-Flores, Indonesia and from Semawang-Bali, Indonesia

Conclusion: The result towards of TTC. Its commonly show that 13X TTC motif was found of ancient bone from Flores, Indonesia. Whereas 20X TTC motif was found of ancient bone from Bali, Indonesia. If it was related to leprosy spreading in Indonesia. That alot of them were found in East Indonesia. Whereas in the middle area was few relatively and it West area, it was none relatively, except in Aceh. In historical, if it was indeed so leprosy always follows in human migration from Asia continent to Indonesia. So it shouldn't empty space of leprosy in the middle area. In spite of it was estimated that also interrelated to the influences of Wallacea area, that covered Sulawesi, Maluku and Papua which have different environment like in West area excited.

P-127

Presentation Time: **Tuesday 17/09/2013 at 10:50 – 11:00**
Abstract Topic Name: **History of Leprosy**
Presentation Screen Number: **7**
Presenter: Mamina Turegano

THE RISE AND FALL OF CHAULMOOGRA OIL

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Introduction: For many decades, chaulmoogra oil was the treatment of choice for leprosy but in the past 75 years, chaulmoogra has vanished from our formularies and very nearly from our memories. This presentation will review chaulmoogra: its botany, its use in traditional Asian medicine, its entry into Western medicine, and its place on the history, lore, art, and literature of leprosy.

Methods: Chaulmoogra oil (CO) is extracted from seeds of several closely related trees in the genus *Hydnocarpus*, found in scattered areas in southeast Asia. CO entered Western medicine in the mid-1800's when British Army physicians reported that traditional healers in India's Western Ghats treated leprosy with oil made from crushed seeds of an unknown tree. For the next half-century, Western supplies of CO were obtained from bazaars in India and Indochina but the product was scarce and often of poor quality. Any doubts about CO's efficacy, however, were regarded as the fault of adulterated supplies of CO.

Results: To provide reliable oil for leprosy patients in the US and territorial Hawaii, the United States government decided to create its own chaulmoogra plantation. At this time, only a few remote hill tribes knew which trees produced the desired seed so the US Department of Agriculture sought a botanist for a chaulmoogra collecting expedition. They chose Joseph Rock, instructor of botany and Chinese languages at Honolulu College in Hawaii. Viennese by birth and sinophile by nature, Rock learned to speak several Chinese dialects as a youth and emigrated to Hawaii in 1907, where he gained recognition as an authoritative tropical botanist. In 1920, the USDA dispatched Rock to southeast Asia, where he traveled among hill tribes of Burma, Siam, and Assam for nearly 2 years before identifying which trees produced chaulmoogra seeds. Rock's expedition through Southeast Asia and his early explorations of Tibet are described in *Lamas, Princes, and Brigands* by Michael Aris, (deceased) husband of Burmese Nobel laureate, An Song Su Kyi.
With Rock's seeds, the USDA started a chaulmoogra plantation in Oahu's rugged Waiahole Valley. Within a few years, maturing trees provided enough seed to treat American leprosy patients in Carville and Kalaupapa. Soon the valley supplied much of the world's CO and major pharmaceutical corporations used Waiahole seed to formulate new antileprotics. Treatment with CO was painful, however – up to 5ml was injected subcutaneously or intramuscularly daily for months. Many patients found this unacceptably painful and considered letting their disease go untreated.

Arthur Dean, president of University of Hawaii and a distinguished biochemist, studied chaulmoogra's properties and identified the chemical structures of its allegedly active components, chaulmoogrin and hydnocarpin. There were several theories on CO's mechanism of action but proper studies on its efficacy and safety were never conducted. Although *in vitro* investigations of chaulmoogra still appear in the biochemistry literature, we still do not know if it had any clinical efficacy. In the 1930s, sulfone medications were developed and now, dapsone (along with rifampin, clofazimine, & thalidomide) have made leprosy an entirely treatable disease.

Conclusion: One hundred years ago, the chaulmoogra branch symbolized international efforts to combat leprosy. Now chaulmoogra appears mostly as footnotes in quaint and curious volumes of forgotten lore.

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Presentation Time: **Tuesday 17/09/2013 at 10:30 – 10:40**
Abstract Topic Name: **Microbiology**
Presentation Screen Number: **8**
Presenter: Yuji Miyamoto

METABOLOME ANALYSIS OF MYCOBACTERIUM LEPRAE

Y. Miyamoto [1,*], M. Matsuoka [1], Y. Fukutomi [1], T. Mukai [1], M. Kai [1], Y. Maeda [1], M. Makino [1]

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Introduction: Mycobacteria have a characteristic feature that the cell envelope is composed of complex molecules. Among them, glycolipids are abundantly present on the cell surface, and they are reported to be associated with pathogenicity of mycobacteria. On the other hand, the functional and quantitative profiles of intracellular metabolites such as organic acids, amino acids, nucleic acids, which are responsible for maintaining the cellular metabolism of the bacteria, are still unclear. *Mycobacterium leprae*, causative agent of leprosy, is known as the only bacteria that cannot proliferate *in vitro*. Thus, it is predicted that *M. leprae* possesses the specific metabolic systems that are different from other bacteria. In this study, to elucidate the specific metabolism involved in pathogenicity of *M. leprae*, the metabolome analysis, which is a powerful tool for clarification of comprehensive metabolism, was performed.

Methods: *M. leprae*Thai-53 strain was inoculated into the foot-pad of nude mouse and was grown for 9 months. According to the procedure previously reported, foot-pad were homogenized by Hanks' balanced salt solution (HBSS), and incubated in 0.05% trypsin at 37°C for 60min and 1% sodium hydroxide at 37°C for 15min, resulting in isolation of *M. leprae*. *Mycobacterium bovis* BCG Tokyo was harvested from 14 day-culture of 7H9 broth supplemented with 10% ADC enrichment. *M. bovis* BCG was further mixed with foot-pad of non-infected nude mouse and the resulting mixture was also subjected to above procedure of *M. leprae* isolation. For preparation of intracellular metabolites, harvested mycobacterial cells were exposed to methanol followed by water extraction and ultrafiltration. Resulting extracts were subjected to Capillary electrophoresis-mass spectrometry (CE-MS) analysis. Relative quantity was estimated by peak area of detected cationic or anionic metabolites compared with that of internal standard and also calibrated by equal amount of mycobacterial cells.

Results: Since *M. leprae* was isolated from nude mouse foot-pad by specific procedure including treatment of alkaline solution, it was necessary to ascertain that the following possibilities could be eliminated: (i) the remnants of mouse tissue metabolites from foot-pad was not completely excluded during *M. leprae* isolation procedure and consequently could be contaminants (ii) components of intracellular metabolites were altered by the isolation procedure. Firstly, as control mycobacteria, *in vitro*-grown *M. bovis* BCG was used for analysis. Next, we prepared the mixture of above *M. bovis* BCG and intact nude mouse foot-pad, followed by isolation procedure in a similar way to *M. leprae* (designated *M. bovis* BCG-foot-pad). CE-MS analysis was performed on intracellular extract from *M. leprae*, *M. bovis* BCG and *M. bovis* BCG-foot-pad. Comparison of their mass spectrum with those from known compounds revealed that quantitative ratio of several amino acid species were around 10-40 fold higher than those of both *M. bovis* BCG and *M. bovis* BCG-foot-pad. Their elevated level in *M. leprae* was assumed to be due to intrinsicmetabolism, and not an artifact of the isolation procedure described above, because the level in *M. bovis* BCG is approximately the same as that in *M. bovis*BCG-foot-pad.

Conclusion: CE-MS analysis for retrieving the quantitative profiles of intracellular metabolites demonstrated that several species of amino acid were significantly accumulated in the extract of *M. leprae*, compared with that of *M. bovis* BCG.

P-152

Presentation Time: **Tuesday 17/09/2013 at 10:40 – 10:50**
Abstract Topic Name: **Microbiology**
Presentation Screen Number: **8**
Presenter: Abraham Selvasekar

SIGNIFICANCE OF SLIT SKIN SMEARS FACILITY IN A TERTIARY CARE REFERRAL CENTRE: TLM COMMUNITY HOSPITAL SHARING ITS EXPERIENCES FROM NATIONAL CAPITAL TERRITORY OF DELHI

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Introduction: The National Capital Territory of Delhi is the fastest growing metropolis in the world with a population of 17 million (2011 census). It attracts a huge migrant population seeking livelihood options from surrounding states which are endemic for leprosy. The migrant's population are deprived of proper living conditions such as safe water, hygienic food, housing, sanitary toilets etc.
TLM community hospital was then established as drug delivery point in 1984; situated strategically in trans-yamuna region with a close proximity to Uttar Pradesh state border. Now the hospital has transformed into a busy community Hospital attracting variety of skin, general and sizable number of leprosy cases across the country. It is recognised tertiary care referral centre providing comprehensive care for those leprosy affected such as diagnostic facilities (smears, biopsy, molecular techniques), manage complications like reactions & ulcer, footwear and reconstructive services. TLM community hospital is the only centre where slit skin smears are available.

Methods: This is a descriptive, observational, and retrospective study in which hospital data on leprosy was analysed. All the suspects and those with cardinal signs were subjected to detailed physical examination (screening for patches and nerves), slit skin smears (SSS), Voluntary Muscle Testing (VMT) after obtaining due content from the patient; those cases that are doubtful were subjected to Histopathological Examination (HPE) as well. The smears were done from routine sites such as ear lobes, forehead, gluteal area plus one over the patch. The smears are fixed, stained, graded and reported following standard procedures. The data on new cases and their smear reports from the medical records department were analysed.

Results: The total numbers of new cases of leprosy detected over 5 yrs period (2008-12) were 1481. On an average 296 new cases have been detected annually. All the new cases were subjected to smear testing mandatorily. The average smear positivity rate was 31% of which 15% showed bacteriological Index (BI) of 4 +. In 2012 there is a 19% increase in smear positivity rate and 28% rise in 4 + BI cases on comparing the 5-yr average. A subset of 680 (47%) patients had reactions at the first visit during diagnoses, of which 522 (36%) had T1R / neuritis and 158 (11%) had ENLs respectively. At diagnosis WHO Disability grading were 1025 (70%) as Grade 0, 241 (17%) as Grade 1 and 191(13%) as Grade 2 respectively.

Conclusion: A 1/3rd of the new leprosy cases detected were found be smear positive. In the terminal phase of well managed national program (NLEP) would obviously show an increasing trend of smear positive MB cases among new cases. The following observations such high disability rate, high smear positivity rate, % of cases exhibiting lepra-reactions at diagnosis would infer delayed detection of new cases, hence to test new strategies to pick hidden cases early. A significant proportion of dermatological cases presenting as nodular lesions mimicking leprosy! Slit skin smears is an invaluable tool for the clinicians while encountering such cases, unfortunately it lost its importance since integration. It's a simple useful diagnostic tool can be easily replicated in all tertiary care centres. It can be piggybacked wherever sputum microscopy of TB program is available.

P-146

Presentation Time: **Tuesday 17/09/2013 at 10:50 – 11:00**
Abstract Topic Name: **Microbiology**
Presentation Screen Number: **8**
Presenter: Thomas Gillis

SEMI-AUTOMATED PROTOCOL FOR PURIFICATION OF MYCOBACTERIUM LEPRAE USING THE GENTLEMACSTM DISSOCIATOR

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Introduction: Since *Mycobacterium leprae* has not been cultivated on artificial medium, highly viable *M. leprae* for research purposes is propagated using a high dose athymic nude mouse footpad (MFP) model. This model consists of injecting 2 x 10^7 bacteria into both hind footpads and harvesting bacteria 6-7mth post infection. The current protocol for purification of *M. leprae*is is based on making a homogenate of infected tissue using a hand-held homogenizer (HH). Although this technique produces viable *M. leprae* with yields of between 5 x 10^9 to 1 x 10^{10}/ mouse, it is tedious and time consuming. HH is especially difficult to perform when large numbers of mice are processed within a short time such as in vaccine and drug studies. Therefore the objective of this research was to develop a semi-automated protocol for purification of highly viable *M. leprae* from infected MFP tissues using agentleMACS™ Dissociator(GM).

Methods: Athymic nudemice, 5-6mth post-infection with 3 x 10^7 *M. leprae*/footpad, were euthanized by CO_2 asphyxiation. Feet were decontaminated in Betadine then rinsed in 70% ethanol. For the GM protocol MFP tissues were chopped using a disposable scalpel and added to a gentleMACS™M tube containing10 ml RPMI-1640 + ampicillin 50 µg/ml (RPMI/Amp). Tissues were dissociated using the Protein 1 setting gentleMACS™OctoDissociator. MFP tissues from 8 mice were processed in 8 separate M tubesfor 53 secs andcooled on ice 2 min.Theprocess was repeated twice. *M. leprae* were also purified using the HH protocol. MFP tissuewas finely minced by hand for 3-5 min with fine curved scissors and homogenized in 10 ml of RPMI/Amp using a sterile glass HH for 5 min. Large tissue debris from both procedures were removed from homogenates using slow speed centrifugation (100 x g, 2 min 25°C). Bacteria were pelleted from the supernatant fluids at 10,000rpm 30 min 4°C, resuspended in RPMI/Amp +10% FBS and incubated at 37°C for 2 hr for antibiotic treatment. Bacterial pellets were treated with 0.1 NaOH 8 min then washed x 3 in RPMI +10% FBS to remove residual tissue debris. Bacterial preparations were tested for: 1) microbial contamination using blood agar plates; 2) bacterial yield/mouse using acid fast staining; 3) viability using LIVE/DEAD®BacLight™Bacterial Viability Assay; 4) metabolic activity using radiorespirometry; and 5) mouse tissue contamination using scanning electron microscopy (SEM).

Results: Bacterial preparations were free of microbial contaminants. SEM demonstrated that mouse tissue contamination was minimal in bacterial preparations from both protocols. In addition, yield, viability and metabolic activity of *M. leprae* from the GM protocol were comparable to that of the HH method. The GM efficiently processed the tissues from 8 mice in a single 7 min run without the need for prior tissue mincing or homogenization.

Conclusion: A novel semi-automated protocol for purification of *M. leprae* from MFP significantly increases the number of mice that can be processed at one time while reducing the need for expensive instruments and HH which need to be decontaminated, cleaned and sterilized after each use. This is especially important when large numbers of mice are being processed for large scale vaccine or drug studies.

P-030

Presentation Time: **Tuesday 17/09/2013 at 10:30 – 10:40**
Abstract Topic Name: **Molecular Biology**
Presentation Screen Number: **9**
Presenter: Abudl Rahim AL-Samie

RELAPSES AMONG LEPROSY CASES IN YEMEN: 10 YEARS OF OPERATIONAL REVIEW AND FIRST MOLECULAR EPIDEMIOLOGICAL ANALYSIS.

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Introduction: Yemen has been known as a leprosy endemic country with a prevalence rate of 5 cases per 10,000 people but only 2 leprosy control sites (sanatoriums) operate in the country.
MDT recommended by *WHO* was introduced in Yemen in 1982 after decades of dapsone monotherapy, but real leprosy control activities only started with the *National Leprosy Elimination Program (NLEP)* in 1989 after an agreement had been signed between the *Ministry of Public Health and German Leprosy Relief Association* (GLRA). In 2000, Yemen reached the goal of leprosy elimination according to the *WHO* global target.
Reported relapse is low (0,13-0,02) in the last 10 years, but potential relapse cases may have gone unobserved previously as the *NLEP* concentrated on case-finding and patient management. In 2010, *WHO* selected Yemen as a sentinel site for the MDT resistance programme, so screening of possible leprosy relapse cases then began as part of the global surveillance network. Samples were sent to the *Global Health Institute*, Lausanne, Switzerland for molecular diagnostic analysis.

Methods: For 6 samples, PCR amplification and sequencing has been performed to study the drug resistance loci in the *rpoB, folP1* and *gyrA* genes, and also to genotype the strains using SNP typing.

Results: Laboratory investigations on biopsy specimens from six suspected Yemeni relapse cases (with 1-2 years of MB-MDT in the past 7-15 years) were carried out. PCR amplification was successful with only three strains, while the remaining three smear negative cases yielded no amplification. No mutation was found in the *rpoB, folP1* and *gyrA* genes in these three cases indicating that either the relapse occurred with a drug sensitive strain or re-infection took place.

Conclusion: The genotyping results indicated that these samples belonged to SNP-subtype 1B, 1D and 2E, indicating a wide diversity of strains in Yemen. A SNP type 2 strain is consistent with our knowledge of such strains in the middle-east (e.g. 2F in Iran & Turkey). The presence of SNP type 1 strains could be a reflection of immigration from South Asian countries where these strains are prevalent.

P-031

Presentation Time: **Tuesday 17/09/2013 at 10:40 – 10:50**
Abstract Topic Name: **Molecular Biology**
Presentation Screen Number: **9**
Presenter: Amanda Fontes

DISTRIBUTION OF MYCOBACTERIUM LEPRAE STRAINS IN PERNAMBUCO, BRAZIL.

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Introduction: Leprosy is a chronic infectious disease caused by *Mycobacterium leprae*. After sequencing the genome of this pathogen, numerous markers for genotyping and evaluation of the variability of the bacterial populations and for aiding transmission studies have been reported. The latter is difficult due the long period incubation of the disease and also the small amount of variation in bacterial genomic DNA. The discovery of variable number of tandem repeats (VNTRs) and short tandem repeats (STRs) allowed the detection of strain variation in areas with a high prevalence of leprosy. Another form of genetic polymorphism, namely single nucleotide polymorphisms (SNPs) elucidated aspects related to the spread of leprosy in the world.

Methods: In the present study, new cases of leprosyfrom Recife (n=97), the capital of the State of Pernambuco, and from 14 surrounding towns (n=20) were enrolled during 2012. Slit skin smears (SSS) were collected from lesion and other body sites and transferred onto two microscope slides: one for determination of bacterial index (BI) and another for strain typing. For the latter analysis the SSSs present on the slide were scraped, pooled and the DNA extraction was performed using Chelex 100. The genetic variability of 17 VNTRs was evaluated by Multiple-locus VNTR analysis (MLVA) using Fragment length analysis (FLA) while the SNPs were analyzed by PCR-RFLP and/or sequencing.

Results: Among the 117 samples analyzed, 75 were genotyped by SNP. In this analysis we observed the prevalence of genotype 4 (70.8%) followed by genotype 3 (20.8%) and genotype 1 or 2 (8.4%). Of the seven samples that demonstrated genotype 1 or 2, two (28.6%) were from Recife and five (71.4%) were from other cities in the state of Pernambuco. More samples must be analyzed in order to confirm eventual predominance of this genotype in other cities than Recife. By VNTR typing, 81 samples were positive for any genetic markers, including 5 where we could define copy number for 2, 4, 7, 9 or 11 VNTRs and 76 samples could genotyped for at least 13 VNTRs. Part of the samples that did not generate any VNTR copy number or SNP type (n=18) demonstrated BI equal to zero at time of collection. Upon evaluation of VNTR variability, alleles for GGT5, AC9, 6-3 e 21-3 were conserved in this study population while the AT dinucleotides (15 and 18) demonstrated the highest rates of allelic discrimination. When decreasing stringency for genotype similarity 6 groups of two isolates were identified. Three of these were composed by individuals living in the same or close political administrative regions (PARs) of Recife.

Conclusion: These results confirm the predominance of SNP 4 type in Recife but could be a feature limited to the State's capital and needs further investigation. In addition, the presence of samples with similar genotypes according to VNTRs, even covering only 14% of all new leprosy cases reported in Recife during the period of sampling, could suggest the usefulness of fingerprinting to add to transmission studies in this region of Brazil.

P-032

Presentation Time: **Tuesday 17/09/2013 at 10:50 – 11:00**
Abstract Topic Name: **Molecular Biology**
Presentation Screen Number: **9**
Presenter: Ravindra Turankar

SINGLE NUCLEOTIDE POLYMORPHISM BASED MOLECULAR TYPING OF M. LEPRAE FROM MULTI-CASE FAMILIES OF LEPROSY PATIENTS AND THEIR SURROUNDINGS TO UNDERSTAND THE TRANSMISSION OF LEPROSY

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Introduction: The exact mode of transmission of leprosy is not clearly understood however many studies demonstrated active transmission of leprosy around a source case. It is believed that transmission occurs by droplet infection through the discharge of bacilli from nose and mouth and also by direct contact between an infected person and a susceptible individual. We report here the role of environment in the transmission of leprosy.The objective of this study was to detect and compare Single Nucleotide Polymorphism (SNP) based molecular subtypes of *M.leprae* prevailing within multi-case families of leprosy patients and in their surrounding environmental sources to prove their role in transmission.

Methods: Families of five active leprosy cases with positive bacteriological index having contacts in their families were chosen from The Leprosy Mission hospital patient records in a high endemic area in Purulia, West Bengal –India. Intense clinical assessment of the contacts in each family revealed a total of 6 contacts manifesting cardinal signs of leprosy and 22 contacts without any signs and symptoms of leprosy. Slit skin smears samples were collected and AFB staining was performed for all. Along with these a total of 52 soil samples were also collected from different inhabitant areas of their houses. DNA was extracted from slit skin smears and soil samples and *M.leprae* specific gene region *rlep (129bp)* was amplified for PCR based detection and molecular typing of *M.leprae* was performed for all *rlep* PCR positive samples by SNP typing and confirmation by DNA Sequencing.

Results: We observed that the mean BI of all the 5 patients was 3+ and of the 6 contacts detected in the assessment was 2+. Slit skin smears of 5 patients and 6 out of total 28 contacts were PCR positive for *rlep* whereas 17 soil samples out of 52 showed presence of *M.leprae* DNA. SNP typing of *M.leprae* from all *rlep* PCR positive subjects showed SNP type 1 genotype. We could genotype 10 of the soil samples which also showed SNP Type 1 genotype. *M. leprae* DNA from the 5 leprosy patients and the 6 contacts were further sub-typed and D sub-type was noted in all patients and contacts except in 1 contact where C subtype was identified.

Conclusion: Typing followed by sub-typing of *M.leprae* clearly revealed that either the contacts were infected by the patients or both patients and contacts had the same source of infection. It also revealed that the *M. leprae* type in the soil in the inhabitant areas where patients resided also was of the same type as that was found in patients. However, role of the contaminated soil in transmission is not yet clear. Further studies on determination of viable nature of *M. leprae* along with genotyping of soil and water samples near the patient's habitation (environment) in such a situation could help in understanding the role of environment in transmission of leprosy.

P-081

Presentation Time: **Tuesday 17/09/2013 at 10:30 – 10:40**
Abstract Topic Name: **Chemotherapy**
Presentation Screen Number: **10**
Presenter: Dr Jingping Shen

OBSERVATIONS ON EFFECTIVENESS OF UNIFORM MULTIDRUG THERAPY AMONG MB LEPROSY PATIENTS IN 4 YEARS AFTER STOPPING TREATMENT

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Introduction: Leprosy multidrug therapy for MB patients for one year recommended by WHO is a most strong regimen. The long term relapsed rate is still very low. If there was a possibility to short the course of treatment to half year is deserved to be studied. We carried out a UMDT study under the support of WHO from October 2003 to value the effectiveness of Uniform multidrug therapy (UMDT) among MB leprosy patients in 4 years after stopping treatment.

Methods: Seventy nine MB leprosy patients were treated with 6 months' of UMDT, then were followed up with clinical and bacteriological examination including investigation of leprosy reaction once year.

Results: Of 79 MB leprosy patients, their mean BI was 2.89±1.40 before treatment. The BI were declined to 0.97,0.71,0.38,0.21 at the first, second, third and fourth years ' follow up after stopping treatment, respectively. The rate of BI negativity was 36.7%, 48.1%, 68.4% and 84.8% at the same follow-up time. During study, there were 33 leprosy reactions with a leprosy reaction rate of 41.8%. The rate of type I and II reaction was 17.7% and 24.1%, respectively during study. There was a patient developed relapse 13 months after stopping treatment.

Conclusions: The effectiveness of UMDT among 79 MB leprosy patients during 4 years 'follow up was satisfying. It seems that there is no significant difference during 4 years' follow up in BI negativity between UMDT and routine multidrug therapy as compared with other researches. However the further follow-up is still needed to investigate the relapse rate among these patients treated with UMDT.

P-082

Presentation Time: **Tuesday 17/09/2013 at 10:40 – 10:50**
Abstract Topic Name: **Chemotherapy**
Presentation Screen Number: **10**
Presenter: Maria Araci Pontes

CAUSES OF DEATH AMONG PATIENTS OF CLINICAL TRIAL FOR UNIFORM MULTIDRUG THERAPY FOR LEPROSY PATIENTS IN BRAZIL (U-MDT/CT-BR)

M. A. D. A. Pontes [1,*], S. Bührer-Sékula [2], M. L. Penna [3], R. Cruz [4], H. S. Gonçalves [1], G. O. Penna [5]

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Introduction: The causes of death in most patients with Hansen's disease are the same the rest of general population. For Lombardi, the low lethality is classic, consensus enshrined in the assertive that the patient dies with leprosy and not because of leprosy. However, it is likely that there is an increase in mortality by the side effects of drugs used both in treatment and in leprosy reactional states, which is not always considered in filling of declarations of death.

Methods: Between February 2007 and February of 2012, 859 patients were included in the study, of which 20 died. We analyze aspects such as age at death, sex, clinical classification, MDT schema, death during or after multidrug therapy (MDT), the presence of leprosy reactions, use of medications for control of reactional states close to death, the presence of associated diseases and medications, in order to identify if leprosy and its complications were or not the probable cause of death.

Results: The median age at death was 57 years; 17 were male, 11 lepromatous and 08 borderline lepromatous and all used MDT/MB. In five patients deaths occurred during the MDT, 05 had reactions next to death, 07 were using corticosteroids and 05 thalidomide at the time of death. Among the causes of death listed on death certificates were the most frequent pulmonary thromboembolism and septic shock.

Conclusion: Our study suggests sub notification in the civil register of deaths related to leprosy, since the unsatisfactory fulfilling until errors in the diagnosis of the basic cause and/or the concomitant causes. The death certificates are incapable to offer specific information on the mortality of leprosy.

P-083

Presentation Time: **Tuesday 17/09/2013 at 10:50 – 11:00**
Abstract Topic Name: **Chemotherapy**
Presentation Screen Number: **10**
Presenter: Marco Floriano

ASSESSMENT OF THE FIXED DURATION MULTIDRUG THERAPY IN LEPROSY: A HISTOPATHOLOGICAL AND IMMUNOHISTOCHEMISTRY ANALYSIS

M. C. Floriano [1,*], O. Rotta [1], S. M. Maeda [1], M. M. Enokihara [2], N. S. Michalany [2], J. Tomimori [1]

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Introduction: The assessment of the multidrug therapy (MDT) based in the immune cellular response is little reported. The presence of the *M. leprae* in the tissues is not necessarily followed by the local tissue reaction, and the presence of this reaction is not always related to the *bacilli* demonstration. The present study aims the assessment of MDT in leprosy analyzing the tecidual response and mycobacterial antigens by immunohistochemistry techniques prior to the start and after the treatment.

Methods: Twenty-eight patients with leprosy (11 female, 17 male) were included in the present study. Seven received multidrug therapy-paucibacillary (PB) and 21 received multidrug therapy-multibacillary (MB). All patients were submitted to skin biopsy for the diagnosis. A new biopsy was done at the end of the treatment or one month afterwards, at the same site and beside of the first biopsy. All of the 56 skin fragments were stained for hematoxilin-eosin and Ziehl-Neelsen staining and for immunohistochemical with antibodies anti-BCG, anti-CD4, anti-CD8 and anti-CD68. All these material were evaluated using a semi quantitative method. For the statistical analysis the McNemar test, the Wilcoxon test and the qui homogeneity test were performed when necessary and $p<0.05$ was considered significant.

Results: There was a decrease in all of the parameters analyzed after the treatment in relation to before the treatment. The inflammatory infiltrate and the CD4+ cells showed a statistically significant decrease in both PB and MB after the treatment and we noticed a high quantification of this expression before the treatment in PB in relation to MB, but we did not observe statistical significance ($p=0.070$). As expected, we noticed a higher quantification of BCG+ cells in MB-leprosy in relation to PB-leprosy before the treatment ($p=0.009$). After the treatment there was a general decrease of the CD4+ and BCG+ cells, but we noticed that some MB-patients remained with a great presence of the BCG+ cells. The inflammatory infiltrate, CD8+ cells and CD68+ cells showed a general decrease after the treatment, but they did not show a distinct distribution regarding the clinical forms of the leprosy, before as well as after the treatment. When we analyzed the tecidual bacilli positivity by Ziehl-Neelsen stain (ZN) and the presence of BCG+ cells, before as well as after the treatment, we noticed that a great number of ZN negative patients showed BCG+ cells. Analyzing PB-patients, 57.1% remained positive for mycobacterial antigens whereas among the MB-patients, 73.7% showed positive results for this antigen after the treatment.

Conclusion: Direct demonstration of *M. leprae* in tissue could be considered a very important method for diagnosis as well as for evaluation of the therapeutic effectiveness in leprosy. Immunohistochemistry techniques using antibodies against *Mycobacteria* can increase the sensitivity for identification of antigens in the tissue sections. The presence of *M. leprae* in the tissue is not necessarily followed by the host reaction. The presence of CD4+ cells in the inflammatory infiltrate of leprosy is related to resistant forms (PB). After MDT, the T-lymphocytes and macrophages decrease in different patterns. The CD4+ cells proportion in the infiltrate did not increase after MDT, indicating that there is a healing but not a modification of the individual immune response.

P-005

Presentation Time: **Tuesday 17/09/2013 at 12:30 – 12:40**
Abstract Topic Name: **Best Clinical Practice**
Presentation Screen Number: **1**
Presenter: Dr Kiran Koduri

HOW TO SET UP PAINLESS SKIN SMEAR FOR AFB AT YOUR CLINIC

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Introduction: Skin smear examination for acid fast bacteria (AFB) is a simple, rapid and useful test for the diagnosis of leprosy. We propose modification with occasional inclusion of internal controls and regular use of occlusive dressing with local anesthetic to the smear sites. The improvements that we propose here would not only make preparation of skin smears for AFB easier but also the microscopic reading user friendly and consistent. It is easy for even untrained/newly appointed technician to learn. It is uncomfortable and painful for adult patients and not well tolerated by the children to undergo slit skin smear procedure and often intimidating, resulting in non-compliance by patients. Our approach improves the conventional procedure and makes it painless, by using local anesthetic cream on skin smear sites. We also suggest a user friendly way to read and interpret the AFB smears of patients by incorporating occasionally as required additional control slides both positive and negative collected from voluntary donors with proper consent.

Methods: Our protocol is described below. The patient should be examined and then the sites for skin smear are chosen, one ear lobe is always included and the other two sites are from prominent patch or infiltration usually from the limbs. Adequate amount of anesthetic (e.g.:· tetracaine & lidocaine cream) is applied under occlusion at the selected sites. After thirty **minutes** the sites are cleaned with alcohol, the area is grasped between the thumb and forefinger of the non-dormant hand until the skin becomes very pale (1). This may not be possible in certain area like trunk and thigh and taking smear from such sites is more difficult than taking from the ear lobes. A 5 to 6 mm long and 3 mm deep incision is made with Bard Parker scalpel blade which is rotated 90 degrees, and used to scrape the cut surface of the tissue. The tissue fluid thus obtained is smeared on the slide, spreading in circular motion by the flat of the blade, to produce uniform moderately thick smear over the area of 5·6 mm diameter and allowed to dry. The slide is then gently flamed to fix the smear. Freshly filtered **Carbol fuchsin** is poured on to the slide and kept for twenty minutes and washed well with distilled water. The slide is flooded with 5 % (v/v) Sulphuric acid (sometimes 1% HCl v/v and 5 % v/v Sulphuric acid} and rinsed after 5 min to decolorize. The slide is flooded with methylene blue for 3 min for counterstaining and rinsed with water. The excess water is allowed to drain and the slide is dried at room temperature and examined under microscope along with the control smears.

Results: Total 70 cases of skin smear were done in the past 2 years. None of the patients complained of pain or discomfort. There was excellent correlation with the clinical presentation. The extra cost involved towards the anesthetic was around 30 dollars for all the cases.

Conclusion: The use of local anesthetic has made the taking of skin smear painless with good patient acceptance. This modification may be made where ever possible for the sake of patient comfort. We think Positive control will help learn in identifying AFB and also in checking quality of staining procedure. Negative control will help identify artifacts and avoid false positives. These controls can be used at regular intervals and also when the case depends solely on skin smear for AFB.Dermatologists and Leprologists in endemic areas should consider setting up in there clinic.

P-004

Presentation Time: Tuesday 17/09/2013 at 12:40 – 12:50
Abstract Topic Name: Best Clinical Practice
Presentation Screen Number: 1
Presenter: Mamina Turegano

OROPHARYNGEAL DISEASE AS THE INITIAL PRESENTATION OF LEPROSY

M. M. Turegano [1,*], S. A. Norton [2], L. O. Coster [3], D. M. Scollard [4]

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Introduction: In 2011, a 35-year-old Bolivian man with end-stage renal disease and a history of leprosy was undergoing extensive evaluation in preparation for kidney transplantation. A diagnosis of lepromatous leprosy had been made in 2007 during a work-up for recurrent epistaxis. At that time, biopsy tissue from his nasal septum showed globi of acid-fast bacilli, an unexpected finding, but the diagnosis of lepromatous leprosy was confirmed with biopsy tissue from a cutaneous nodule on his left hand.

Methods: During a review of the patient's medical records, we noted that he had a tonsillectomy in 2006 to manage recurrent pharyngitis. The pathology report from that procedure described "hyperplastic lymphoid tissue with numerous colonies of actinomyces". We wondered if the "colonies of actinomyces," a normal commensal in the oropharynx, were perhaps lepra bacilli. Therefore, we submitted the original tissue blocks to the National Hansen's Disease Center for PCR and immunohistochemical stains, which were, indeed, markedly positive for *M leprae*.

Results: A review of this case suggests that the diagnosis of lepromatous leprosy might have been made earlier if the pathologist who examined the tonsillar tissue had a higher index of suspicion – but the initial presentation of leprosy as oropharyngeal disease is exceedingly rare. In this presentation, we use our patient's history, clinical examination, and histologic findings to detail the spectrum of early oropharyngeal involvement in leprosy.

Conclusion: Clinical inflammatory lesions in the nasal and oral mucosa are a feature of the natural history of untreated lepromatous disease – but it is rare that leprosy's initial, diagnostic presentation is based on oropharyngeal disease. Early or subclinical involvement of the nasopharynx and oropharynx may be nonspecific and difficult to diagnose, and therefore, may initially go unnoticed. In general, detection of oropharyngeal leprosy usually occurs in patients with a known diagnosis of leprosy, whereas our patient presented with pharyngitis due to tonsillar leprosy several years before his diagnosis of leprosy was suspected. The usual sites of oropharyngeal involvement in leprosy include the hard and soft palate, tongue, gingiva, and uvula. While tonsillar involvement is extremely rare and usually in the setting of other clinical manifestations, our patient's history shows that leprosy can initially present as tonsillitis or pharyngitis, often long before clinical manifestations of the disease appear elsewhere. The diagnosis can be made histologically by examining biopsy material of oropharyngeal tissues. Awareness and clinical examination of early or subclinical lesions of the nasopharynx and oropharynx may assist in earlier diagnosis and treatment of Hansen's disease with subsequent prevention of associated medical complications.

P-007

Presentation Time: Tuesday 17/09/2013 at 12:50 – 13:00
Abstract Topic Name: Best Clinical Practice
Presentation Screen Number: 1
Presenter: Prof Mecciene Rodrigues

COMMITMENT OF THE TWENTY NAILS IN A PATIENT WITH LEPROSY: SIX MONTHS AGO, PATIENT COMPLAINED OF NUMBNESS IN LEGS AND INVOLVEMENT OF THE NAILS;CUTANEOUS LYMPH SMEAR POSITIVE;HISTOLOGY:ZIEHL-NEELSEN ACID-FAST BACILLI POSITIVE;NAIL PLATE DISTROPHIC

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Introduction: Nail disorders are common in leprosy and attributed to a combination of factors such as neuropathy, trauma, vascular disorders and infections. It is estimated that 56% of paucibacillary patients and 87% of multibacillary patients have nail changes, of which the most common are: nail hyperkeratosis, onychogryphosis, onychorrexis, micronîquia, anonîquia, grooves Beau, esleronîquia, melanonychia longitudinal and nail inverse pterygium. Despite differences bacteriological, immunological and pathological between tuberculoid and lepromatous leprosy, the nail involvement appears to be similar in the two poles due to neurological and vascular disorders present in both. In lepromatous pole nail involvement appears later in the disease course and the distribution is more symmetrical and bilateral than in the tuberculoid.

Methods: For six months ago the patient complained of numbness in legs and posterior involvement of the nails of the fingers; on examination there was diffuse infiltration of the face and ears; madarosis; thickening of the left auricular nerve and onychodystrophy with involvement of 20 nails with onychorrexis, longitudinal grooves, pterygium and subungual hyperkeratosis. Cutaneous lymph smear: positive; whose nail bed biopsy result showed diffuse infiltrate composed of large cells with granular cytoplasm, sometimes sketching nódulos.Ziehl-Neelsen coloring revealed numerous acid-fast bacilli, the nail plate showed signs of dystrophy.

Results: Initiated with multibacillary multidrug therapy and there was regression of cutaneous infiltration and the onychodystrophy

Conclusion: This case presents clinical features lush with nail changes in leprosy rarer manifestation of onset of 20 nails and intense destruction of the nail plate, making important differential diagnosis with other dermatoses such as lichen planus nail, pachydermoperiostosis, mucocutaneous candidiasis and other neuropathies such as diabetes mellitus

P-008

Presentation Time: Tuesday 17/09/2013 at 13:00 – 13:10
Abstract Topic Name: Best Clinical Practice
Presentation Screen Number: 1
Presenter: Maria Maroja

HISTOID LEPROSY: A RETROSPECTIVE STUDY OF THE CLINICAL EVOLUTION OF PATIENTS DIAGNOSED IN MANAUS, BRAZIL FROM 1990 TO 2010

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Introduction: Leprosy is a important health problem in Brazil. In 2011, 33.995 new cases of Leprosy were diagnosed (detection rate of 17,6/100.000 inhabitants). In Amazonas State, 587 news cases were diagnosed (detection rate of 16,5/100.000 inhabitants. Among the news cases, 58 were in children (detection rate of 4,94/100.000 inhabitants) and 342 multibacillary forms (58,3%) Histoid Leprosy is a rare variant of Lepromatous Leprosy, which is considered by many authors as a form of disease recurrence in patients with drug resistance to sulfone or acquiring the shape already with primary resistance. Other authors consider that may arise in patients with no prior history of leprosy or irregular treatment. Studies regarding this form of disease are rare. In Brazil, we have no data on the incidence of this clinical variant.
Our study aimed to study the epidemiological and clinical characteristics of patients with diagnosis of Histoid Leprosy.
The evolution of the smear at the beginning and end of treatment and to verify the relapse rate among this cases.

Methods: We conducted aretrospective observational study of clinical, laboratory and epidemiological of patients with diagnosis of Histoid Leprosy and treated at Alfredo da Matta Foundation (FUAM) - Manaus, Brazil. The project was submitted to the Ethics Committee in Research of FUAM.

Results: 32 cases were diagnosed, these 4 women and 28 men. The mean age of patients was 38 years. We evaluated the bacterial index and the degree of disability of patients at diagnosis and at the end of treatment, the percentage of leprosy reactions and the frequency of relapses.

Conclusion: The patientsresponded well to treatment with multidrug regimens, however relapses were observed. This may be an indicator that studies be carried out in relation to drug resistance in this clinical form

P-012

Presentation Time: Tuesday 17/09/2013 at 13:10 – 13:20
Abstract Topic Name: Best Clinical Practice
Presentation Screen Number: 1
Presenter: Dr Viacheslav Tsemba

FEATURES OF LEPROSY PATIENTS WITH DIABETES MELLITUS

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Introduction: Occurrence in leprosy and diabetes mellitus (DM) lesions of the skin, liver, kidneys, eyes, nervous system, the formation of venous ulcers are required a differential diagnosis between these two diseases (Schaller KF, 1971). On CD as an associated disease with leprosy pointed previously M. Singh et al. (1987) and M. Bergel (1998). According to our data, the prevalence of diabetes among leprosy patients exceed in 2.4 and 2.6 times the prevalence among residents of the city of Astrakhan and Russia in general, respectively (Tsemba V.P., 2006).

Methods: The disease was studied in 40 patients with multibacllary (MB) form of leprosy with the accompanying CD. Comparison group: free choice of 40 MB patients with normal levels of glycosylated hemoglobin (HbA1c). Compared groups of patients were fully comparable by sex

and age, forms and duration of leprosy (p> 0,05). The level of HbA1c was determined by a colorimetric thiobarbituric method (Fluckiger K. et. al., 1976).

Results: Manifestation of diabetes in 97.5% of cases occurred mainly in women (60%) with MB leprosy (80%) not older than 58.1±1.7 years old. In most patients (75%) the period of regression being before the appearance of clinical symptoms of diabetes was relatively short (12 years) and in 24.1% of patients was less than 5 years. Manifestation of diabetes mellitus in 25% of patients were combined with active leprosy process and 90% of them had MB form of leprosy. Firstly only one patient (10%) had tuberculoid type of leprosy which later was transformed in MB against the background of diabetes. 40% of patients the manifestation of DM developed in the first year from the time of its relapse. Heavy and prolong exacerbations as with erythema nodosum leprosum (ENL) were presented before the clinical manifestation of DM (66.7%). Therefore prednisolone was prescribed to 35% of cases. Exacerbations of leprosy process were developed directly after the evident manifestations of DM in others (33.3%), accompanied by a worsening of chronic persistent hepatitis, chronic osteomyelitis, neurotrophic ulcers and leprous neuritis in 22.5%,32.5%, 15% and 12.5% cases respectively. In patients with DM abacillary period (7.9±0.8 years) and histologic regression (10.3±1.5 years) occurred significantly later than in those of comparison group (p <0.001). Transformation of leprous process in the descending leprosy spectrum occurred significantly more often (35%, p <0,01) in patients with concomitant diabetes mellitus. Despite the preventive treatment, diabetes increased the risk of relapse (55%, p <0,001). Affection of Liver and peripheral nervous system of leprosy patients with concomitant diabetes was observed in 80% and 90%, respectively. Thereby disabled neurogenic complications (85%) of leprosy process dominated whereas only 5% of patients had disturbance of skin sensitivity and amyotrophy. The combination of leprosy and diabetes significantly increased the risk of neurotrophic ulcers (70% p<0.001) in leprosy patients.

Conclusion: Prolonged course of the disease in leprosy patients with concomitant diabetes is characterized by a long period of bacterioscopic and histological activity, the frequent development of downstream transformation, ENL, relapses liver damage and disabled neurogenic complications which indicate the relationship of leprosy process with carbohydrate metabolism. Monitoring of carbohydrate metabolism in leprosy patients with concomitant diabetes can further evaluate the course of the disease and plan of treatment and preventive measures in leprosy complications.

P-013

Presentation Time: Tuesday 17/09/2013 at 13:20 – 13:30
Abstract Topic Name: Best Clinical Practice
Presentation Screen Number: 1
Presenter: Dr Olga Mesniankina

USAGE OF SYSTEMIC ENZYME THERAPY IN THE COMPLEX TREATMENT OF CHRONIC HEPATITIS IN LEPROSY PATIENTS

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Introduction: Searches for new approaches, that might effect the pathogenesis of leprosy disease and possess high effectiveness and safety as well as capable of preventing or eliminating side-effects of the treatment, simultaneously decreasing drug load on organism, are urgent for optimization of traditional methods of therapy.
Usage of multi-enzymatic medicines became a novel approach in the treatment and prophylaxis of a number of the diseases, including infections. A total effect of exogamic enzymes is provided by a direct or indirect action of hydrolyses on the activity of the main human organs and systems through modulation of the work of internal enzymatic systems or through the antiproteases system, in particular a1-antitrypsin and a2-macroglobulin. Effecting different components of immune system, protease-antiprotease complexes provide “adequacy” and “proportionality” of immune response to aggressive influences. Experimental investigations also proved hepatoprotective activity of wobenzym.
Taking into consideration all the said above the possibilities of systemic enzyme therapy in treatment of chronic liver diseases in leprosy patients should be of paramount importance.

Methods: With the aim of improving pathogenetic therapy of chronic hepatitis in leprosy patients the effect of wobenzym (Mucos Pharma GmbH Co) was studied. The medicine was administered according to the following scheme: 3 tabs x 3 times a day for a month.

Results: Against the background of the treatment administered a significant decrease in the levels of gamma-glutamyl transpeptidase, triglycerides, and C-reactive protein was noted.

Conclusion: Taking into account a wide spectrum of biological effect of wobenzym, satisfactory results of its usage in a complex therapy of leprosy patients with hepatic damages, as well as its good tolerance and absence of side-effects it should be considered expedient to include this medicine in a complex of therapy of leprosy patients.
Usage of systemic enzyme therapy seems to be an actual line towards improvement of treatment of leprosy patients with damaged liver and deserves further and more extended studies.

P-014

Presentation Time: Tuesday 17/09/2013 at 13:30 – 13:40
Abstract Topic Name: Best Clinical Practice
Presentation Screen Number: 1
Presenter: Mr Manivannan Govindarajlu

COST EFFECTIVE AESTHETIC PROSTHESIS FOR THE ABSORBED DIGITS DUE TO LEPROSY

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Introduction: The chronic nature of loss of nerve function especially sensation in hands and feet due to leprosy leads to repeated ulcer and absorption when neglected. The loss of the digits in limbs projects disease; cause stigma, psychological problems to patient and participation restriction. In addition, loss of digits in upper extremity especially thumb jeopardizes the hand function as it leads to loss of strength and grasp.
Commercially available prostheses using silicon are available as artificial substitutes to restore natural appearance, there by social acceptance and participation. However, silicon made prosthesis are expensive and leprosy affected person cannot afford to avail this service though it can improve the social acceptance. In this paper a latex prosthesis construction method is discussed with case study. The advantages, cost effectiveness and limitations are presented.

Methods: The Plaster of Paris is used to make the impression of the fingers and thumb. The plaster mould is immersed into the latex and kept for dry. After this process the shape is trimmed for the fit and color matching and artificial nail is incorporated. The prosthesis retention is by using adhesive. The advantage of the latex prosthesis is cost effective, ease fabrication.

Results: Case study 1 - 40 years old, carpenter from Allahabad district, presented with absorbed thumb. He had complete loss of sensation in his right hand. He had loss of thumb from MCP joint. He was concerned about loss of digit. Therefore, he was given latex thumb prosthesis. After prosthesis he was satisfied and felt confident as his hand appearance improved.
Case study 2 - 16 years old, female presented with absorbed great toe. She was hiding her foot with shoes. She was given latex toe prosthesis. She felt good comfort with toe prosthesis and wearing sandals

Conclusion: Latex Aesthetic prosthesis gives good cosmetic appearance and it is cost effective as compared to commercially available silicon prosthesis.

P-016

Presentation Time: Tuesday 17/09/2013 at 13:40 – 13:50
Abstract Topic Name: Best Clinical Practice
Presentation Screen Number: 1
Presenter: Vijay Jain

CLINICOPATHOLOGICAL CORRELATION IN LEPROSY: 5 YEAR RETROSPECTIVE ANALYSIS IN A TERTIARY CARE CENTRE OF NORTH INDIA

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Introduction: Leprosy is a chronic granulomatous infection caused by *Mycobacterium Leprae* and is characterized by well-recognized pathological changes. Complex interaction among host-mycobacterium and its antigens produce distinct histopathological changes. Histopathological confirmation of leprosy diagnosis is an important tool for exact determination of the disease load in a given population. Further, correct clinical classification helps in determining the patients at risk of developing deformities and disabilities.

Methods: The study was undertaken to do histopathological correlation of skin biopsies in clinically diagnosed leprosy cases. Ridley Jopling classification was used for clinical categorisation. Skin biopsies of clinically suspected leprosy cases visiting the leprosy clinic, department of Dermatology, Venereology and Leprosy, PGIMS, Rohtak, Haryana (India) during January 2007 to December 2011 were analysed. Percentage of biopsy proven cases was determined and further sub categorisation was done.

Results: 76.64% (187) out of 244 cases had histopathologically confirmed leprosy 28 of the remaining 57 showed non specific chronic inflammatory infiltrate. 80% of the biopsy proven cases correlated with the clinical type. Clinicopathological concordance was highest for polar tuberculoid (88%) and lowest for borderline borderline (25%) leprosy.

Conclusion: Histopathology provides an early insight for disease process and has a central role in understanding the spectral concept of leprosy. Importance of skin biopsy in validating the diagnosis and thus predicting the outcome cannot be overlooked.

P-017

Presentation Time: Tuesday 17/09/2013 at 13:50 – 14:00
Abstract Topic Name: Best Clinical Practice
Presentation Screen Number: 1
Presenter: Dr Shamanth

CLINICOHISTOPATHOLOGICAL CORELATION IN HANSEN'S DISEASE-A STUDY OF 150 CASES IN SOUTH INDIA

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Introduction: Analysis of different histological types of leprosy helps to correlate histological diagnosis with clinical diagnosis and to study uniformity of clinical and histological findings in diagnosis of leprosy. Clinical judgement and histopathological examination is required for early diagnosis and adequate treatment to make the patient non-infectious. But in some early and borderline cases of leprosy it is difficult to label only on clinical basis. Hence histopathological examination is must for confirmation of diagnosis in doubtful cases of leprosy.

Methods: A retrospective study of 150 patients of Hansen's disease at a medical institute in Karnataka,south india between the year 2008 to 2011 was done.

Results: Out of 150 patients studied the male to female ratio was 2.3:1 and clinically 80 patients were in BT spectrum (53%), 32 in BL (21.3%), 25 in LL (16.6%) and 13 in TT spectrum (8.6%). Slit skin smear was done for all cases, bacteriological index was supportive in according to the spectrum of the disease. Histopathological study was done in all 150 cases, out of which 65 cases (43.3%) had clinicohistopathological correlation of spectrum. BT spectrum had the maximum correlation of 53.3% followed by BL (21.3%), LL (16.6%) and least with TT (8.6%).
Since BT being the most common clinical spectrum and having classical clinical features, it had the highest clinicohistopathological correlation. Inadequate history, prior false knowledge about the disease to the patient and errors in clinical examination could lead to wrong diagnosis of spectrum of Hansen's. In case of solitary hypopigmented patch sometimes be mistaken for the TT spectrum along with above mentioned factors.

Conclusion: Hansen's disease is a chronic granulomatous disease with dynamic spectrum of disease. Clinician must do detailed examination and mandatory histopathological correlation of the spectrum with fite faraco stain along with slit skin smear before the start of MDT. This will help in determining the spectrum of the disease, proper monitoring of response to treatment during follow up, also determining the upgrading or downgrading of the disease and to prevent the complication associated with particular spectrum of the Hansen's disease.

P-164

Presentation Time: Tuesday 17/09/2013 at 12:30 – 12:40
Abstract Topic Name: Epidemiological Surveillance
Presentation Screen Number: 2
Presenter: Amar Kant Jha Amar

POST ELIMINATION SCENARIO IN LEPROSY

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Introduction: 122 Countries to 3 Countries Angola, Brazil, Central African Republic, Congo, India, Madagascar, Mozambique, Nepal & United Republic of Tanzania India Largest Case Load (40%) Bihar & Jharkhand Largest Case Load in India (50%) In 2006: Angola, CAR, India – Excluded from The List Monotherapy – MDT (Emergence of Drug Resistance, Incubating Possible Drug Resistance)(Blocking the Transmission)

Methods: success in Bihar Where in MLECs, about 85000 new cases were detected in 1st survey and brought under treatment and in successive surveys same effort could bring down PR below 1/10000 pop. Also less childhood leprosy & less deformity rate .Now programme integrated with General Health care. 14 million 5.4 million (1985) 0.54 million (2003) 0.22 million (2011) 0.18 million (2012) NCDR 1998- 804000

2001	2010	2011	2012	Countries
39612	42814	~38000	~36000	Africa
42830	41780	~40000	~39000	America
668658	201635	~ 1.9Lac	~1.8Lac	S E Asia

Active case detection – self reporting Vertical – Horizontal 13% Children 39% MB 3% Grade II deformity India 1983 – 2 districts 1981 PR 57.6 2003 3.23 (cases 3,45,000) (Bihar Jharkhand, UP, Maharastra, Orissa & WB – 70% plus) 2011 – Less than 1 2012 - ? More PB Some states like Bihar figuring better ®Reason –Better Infrastructure Political will & commitment Regular drug supply Better compliance, Timely RFT Better Monitoring Socio-economic, greater awareness

Results: Year PR ANCDR 1991 25.9 5.9 1996 5.9 4.6 2001 5.5 3.7 2010 3.3 1.3 2011 1st Jan 1.5 0.95 2011 1st April 1.3 0.84 2012 1 Oct 1.4 0.92 ? April to Dec 2010 : (9 months)- 0.34/10000 NCDR reduction 39% March 2011 – Bihar, Chattisgarh, Jharkhand, UP, Orrisa, WB - Target achieved for elimination Post Elimination studies at Patna®PMCH® AKJ Amar Skin Institute No. of New Cases 2010 About 3000 + 2850 = 5850 2011 About 3000 + 2880 = 5880 2012 About 3000 + 3110 = 6110 No. – Increasing 2010 2011 2012 PB/MB 3216+2634 3210+2670 3108+3002 Childhood Leprosy 20% 23% 28% MB Cases with florid manifestations 127 208 348 LL Cases with localised involvement 37 108 120 Cases with reactions : No. of Cases Year Type I Type II Classical Type II abnoramal 2010 30 24 0 2011 38 40 8 2012 52 60 17 Effectiveness of 1 yr MDT / 2 yr MDT 5 yrs follow-up : more relapse & reaction in 1yr MDT Emphasis on bringing down case load Non registry To achieve the set target ? Self Reporting Prev rate / NCDR Monolesion/ PB 6 months/ U MDT Rise in MB proportion Rise in childhood leprosy Late reporting in MB cases Hidden cases Non-availability of MDT at Govt. level

Conclusion: 1) Integration not only solution 2) SET still important 3) Early detection & early t/t still important 4) Duration of therapy – initial case load, not the no. of lesions 5) Universal MDT not good for MB cases but better for PB cases 6) MDT 2 yrs for MB cases better than 1yr for preventing relapse & reaction 7) Change of clinical pattern alarming and needs caution8) MLEP & SAPEL required even in present context 9) Collaboration with Dermatologists and other private GP doctors is key to success. 10) MDT should be provided regularly at PHC & other levels11) Constant political will and commitment and better health facilities are must for sufferers.

P-165

Presentation Time: Tuesday 17/09/2013 at 12:40 – 12:50
Abstract Topic Name: Epidemiological Surveillance
Presentation Screen Number: 2
Presenter: Yasin Alqubati

LEPROSY AMONG MIGRANT WORKERS: ENSURING PROPER TREATMENT

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Introduction: WHO's Global Leprosy Strategy for 2011–2015 adopted by 44 Leprosy Programme managers in New Delhi, India in April 2009 highlighted increasing migrant populations as workers and marginal populations living in slums, the diversity of health care providers and lack of coordination among them.The major focus within urban areas however, should be on improving the health services for marginal people living in the slums and migrant workers inside the same country who do not have the same conditions of life as in their nayive residence.

Methods: Migrant workers are populations who left their native countries or residence, because of poverty, methods of living (nomads) or political instability, to live and work in other countries to support their families. Migrant workers can also be those people moved inside their own country from one region to another with the same suffering as the migrant workers migrating outside their countries. In their new residences they are subjected to different conditions that effect their health situation including poor levels of hygiene, unsanitary working and living conditions, nutritional and structural barriers to health services. There is also a social belief that migrant workers bring with them diseases from their countries into the countries they work in; this belief led some countries to control the migrants rather than control the diseases. When it comes to health problems with diseases accompanied by stigma migrant workers suffer more than physical health problems, they are also subjected to ostracism and in some countries termination of their work and even deportation. The stigma itself creates psychological barriers among these workers preventing them from exposing themselves to health measures.

Results: In the EMR states most of these workers are living in the Gulf countries, but not exclusively as all the countries of EMRO have internal or external migrant workers. The migrant workers' situation in EMR countries is insecure. This varies from one country to another according to the legal situation and the legalisation of health services in the country concerned. Migrant workers suffer poor working and living conditions and the health services are often not easily affordable. In most of the gulf countries migrants workers will be immediately deported when they recognised as leprosy patients. The recommendations of the programme managers meeting on leprosy elimination, Lebanon, December 2010 stated that member states should guarantee that once leprosy cases are diagnosed, they should receive free treatment regardless of their nationalities, as long as they reside in the country. However official regulation against migrants and immigrant workers are based on outdated health beliefs about leprosy. In many countries leprosy is still regarded as a notifiable disease, the identification of which can have a direct impact on the rights of migrant workers and potential immigrants. In some countries, policies are in place citing leprosy as grounds for refusal of visas and for the inadmissibility of migrants or immigrants to these countries.

Conclusion: Fortunately or unfortunately there is no free significant migrant worker movements between countries in the EMR, neither is there high prevalence of leprosy in the countries of the region. However the migrant worker movements are substantial inside the territories of the same country and between countries which is a challenge for the national leprosy control managers to ensure regular MDT for their leprosy patients.

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P-166

Presentation Time: Tuesday 17/09/2013 at 12:50 – 13:00
Abstract Topic Name: Epidemiological Surveillance
Presentation Screen Number: 2
Presenter: Shahed Hossain

LEPROSY ELIMINATION IN BANGLADESH: WHAT CHANGED AND WHAT NOT?

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Introduction: Bangladesh achieved the World Health Organization declared elimination goal at national level in December 1998. The national Leprosy elimination Programme (NLEP) has been integrated into general health services and both the diagnosis and treatment (MDT) are provided free of cost. After 15 years of elimination, the national leprosy statistics started to show stagnancy in prevalence, new case detection and variations in other parameters. Loss of skilled human resources, and other health systems components, indicating alarming and rapid declination of leprosy elimination activities in Bangladesh.

Methods: Data from NLEP is analyzed. This is further supplemented with information from implementing nongovernmental organizations (NGO) data. Two workshops aiming at formulating post elimination strategy in Bangladesh were organized in 2011 and 2012. Issues and concerns from those meetings are incorporated.

Results: NLEP is currently detecting about 5000 new case each year since 2006. After initial rapid decrease the registered prevalence became static at national level since 2006, but at sub-national level some endemic areas remained the major sources of detected cases with high prevalence rate above 1/10,000 population.The proportion of MB cases among new cases detected showed uneven declination while the grade II disability rather showed an upward trend since 2006. Similarly child cases also did not follow the pattern prevalence.The major concern is loss of focus in elimination activities that resulted in rapid burn out of skilled personnel from the programme.

Conclusion: Simple figurative changes do not represent what actually happened in leprosy elimination in Bangladesh. Complacency in elimination activities cost loss of skilled persons, less fund allocation and most importantly lack of any interest in leprosy elimination at national and subsequently reflected at sub-national level.

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Presentation Time: Tuesday 17/09/2013 at 13:00 – 13:10
Abstract Topic Name: Epidemiological Surveillance
Presentation Screen Number: 2
Presenter: Ayodele Awe

THE LEPROSY SITUATION IN LIBERIA: THE NEED FOR URGENT INTERNATIONAL ACTION.

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Introduction: Liberia is one of the countries in the world that have not reached the global elimination target of less than 1 case per 10,000. Leprosy is still a major health problem in Liberia. Liberia itself has 15 counties with a total population of about 3,000,000 people. The overall objective of the study was to evaluate the Liberia National Leprosy Control in terms of the trends and progress made towards reaching the Leprosy Elimination goal, assess MDT drug supply, availability and utilization, and proffer appropriate recommendations

Methods: A review of the National leprosy data trend according to counties and health facilities was carried. Identify high leprosy prevalence counties and possible areas of hidden leprosy cases. A total of six out of the 15 counties in Liberia were studied from the July 3 to 12, 2012. These counties were Montserrado, Grand Bassa, Cape Mont, Margibi, Nimba, and Bong counties. Fourteen facilities were visited, the Central Medical Store and facility drugs stores. In each facility, the leprosy treatment cards, registers and quarterly reports were reviewed. MDT drug stock and supplies were also reviewed at National, County and health facility levels. There were interviews with the officer in charge (OIC) of the health facilities, TB/Leprosy facility focal persons, TB/Leprosy Nurse AIDS, Community Volunteer Workers and Leprosy patients. There were also interviews with international partners supporting the leprosy control in the country

Results: The Leprosy prevalence rate was 1.7/10,000. New leprosy cases was 662 (19/100,000 case detection rate). Limited access of population to MDT service (44/522) 8% facility coverage. High children proportion of 14.3% among new cases and **65% MB** proportion among the newly diagnosed cases. MDT Facility coverage was **44/522 (8%)**. In the 11 facilities visited, 274 leprosy patients were currently on leprosy treatment register, 208 (88.3%) were Multi-bacillary (MB), 11% (30) were Children. Grade 2 disability was 4%. There also seems to be gross under reporting, as each spontaneous survey carried out continued to yield unbelievable high number of new leprosy cases; majority being MB cases. There was Low Multi-drug therapy (MDT) facility coverage of the counties which ranged from 1% to 3.4%. Most counties visited have only one or 2 facilities with capacity to diagnose and manage leprosy cases. The mode of detection for leprosy cases were self-report (45%), 35% by referral and 20% by survey. The interval between appearance of first symptom and accessing health facility for diagnosis averaged of 9 years (ranging between 3-16 years). The case was poor case holding and a high default from treatment. Default from treatment was 66.4% of all patients. The major reason adduced for default included long distance, poor road network and low MDT facilities coverage. However, MDT drugs were available in all facilities expect one. The drug supply at all levels will last for 3-5 months.

Conclusion: Leprosy is still a major problem in Liberia and the Leprosy elimination target has not been reached in Liberia. There is evidence of pockets of hidden leprosy cases in Liberia, especially in 5 counties. The performance of the county officers on leprosy needs to be improved and there is a need to increase public awareness on early signs of leprosy and increase index of suspicion among health workers in all OPDs. Orientation training plans for continuing sensitization of health facility staff for increasing their awareness on Leprosy.

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Presentation Time: Tuesday 17/09/2013 at 13:10 – 13:20
Abstract Topic Name: Epidemiological Surveillance
Presentation Screen Number: 2
Presenter: Dr Minhong Gu

CHINA'S GUIZHOU QIANNAN LEPROSY POP AND SURVIVORS LIVING SITUATION INVESTIGATION

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Introduction: Qiannan guizhou province in southern China, covering an area of 26197 square kilometers and a population of 4.092 million, There are 12 county (city), History of leprosy qiannan medium popular area, the leprosy prevention and control work began in the early 1950 s, after the 1990 s, for a variety of reasons cause the prevention and control of quality to drop, In order to correctly evaluate the local leprosy disease burden condition, We in April 2008 to April 2009 made a special survey, hope for the future leprosy prevention strategy adjustment provide scientific basis.

Methods: Collect the relevant data of epidemic situation, relevant epidemiological analysis, At the same time inventory survey to all registered in qiannan over the leprosy patients, According to the current status of the leprosy questionnaire «and» the leprosy patients abnormal residual form «in investigation.

Results: For the period 1987-2009, a total of 1132 people found that leprosy patients, cases with peasants is given priority to, 12 county (city) are distribution and relatively concentrated in the remote mountainous area, Find rate from 1987 in 3.4/10 dropped to 2009 years of 0.86/10, the reduced year by year, But 1993 years later present platform period, II level anomaly residual rate 22.3%. By April 2009, The state of the registered leprosy patients a total of 2958 patients, which killed 1186 people, until the 220 cases, 220 cases were lost to follow-up existing live 1332 people. The survivors of the 995 cases of male, the female 337 cases, has 1246 cases were cured, XianZheng 86 patients. In the survivors, there are abnormal disabled people 652 (49.0%), which □ level anomaly residual 221 cases (16.6%), I level anomaly residual 431 cases (32.4%), age, diagnosis delay and distorted residual have close relations; In the survival of 652 cases of abnormal disabled people, the ability to work part of the loss of 333 (51.1%), completely lost 76 people (11.7%); Ability to independent living part of the loss of 211 (32.4%), completely lost 39 (6.0%); In the survivors, live in leprosy village of 92 people, 1240 people live in the community, away from the natural village of 174 people, 181 people live an independent life; Leprosy village resident buildings and door, social control personnel dangerous household 69 households. In the survivors, there are 731 people (54.9%) through the labor can solve their basic living security, there are 601 people (45.1%) by the government to provide social security to solve the basic living security; There are 450 people (74.9%) did not include low; There are 158 people (11.9%) did not attend the new agriculture together; There are 300 people (22.5%) no deformity card; There are 288 people (21.6%) have no id; Have people (2.9%) don't have a booklet. In 431 cases of abnormal level II disabled people, there are 431 people need surgery, Including: rabbit eyelid ectropion 180 people (41.8%), facial paralysis cataract 61 (14.2%), foot ulcer 146 people (33.9%), need amputation 17 (3.9%).

Conclusion: China qiannan leprosy disease since 1993 in the platform period, Limited degree decline, we need to strengthen the ZhaZhi strength; Existing survivors disability degree is serious, the independent living and economic security, there are many difficulties need comprehensive rehabilitation intervention.

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Presentation Time: **Tuesday 17/09/2013 at 13:20 – 13:30**
Abstract Topic Name: **Epidemiological Surveillance**
Presentation Screen Number: **2**
Presenter: Venkata Ranganadha Rao Pemmaraju

ESTIMATES OF PERSONS WITH GRADE 2 RESIDUAL MORBIDITY ATTRIBUTABLE TO LEPROSY

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Introduction: Leprosy is considered to be a public health problem and is feared by the community because of impairments which very often lead to the handicap of social ostracism. Earlier attempts were made to estimate the load of disability in the community by complex models.

Methods: A simple model with the minimal available data was worked using MS Excel for estimating disability load in India. This could be used to set priorities and planning essential activities of disability care.
The following assumptions are made while developing the model.
Data on G-2 disability among new cases detected is available from 1985 – 2011.
Backlog cases of G-2 disability at 1985 are not known. Backlog cases of G-2 disability at 1985 were assumed roughly in the model.
Yearly Mortality among Gr-2 cases is assumed to be uniform during 1985-2011 and given a single estimated value. This estimate has to be taken keeping in view the age distribution of the disability cases and Crude Death Rates of the respective years.
No new disability cases are occurring among the existing leprosy cases that are treated. It is also assumed that Gr-2 disability cases are not cured of disability.
MS Excel Template was constructed in such a way that by changing the input parameter values the final estimate of disability cases is immediately calculated and visible.

Results: It is assumed that the backlog disability cases at the beginning of 1985 in India was 500,00 and Annual average mortality for this group is 15 per 1000 per Year.
Through this model it is estimated that persons with Grade 2 disability due to leprosy (in India) could be 737,215 at the end of the year 2011.

Conclusion: This Model (in Excel) can be applied to any country if the data on new cases, Grade 2 disabilities and Crude Death Rate of the respective years are available for 25 to 30 years. Backlog cases of G-2 disability at the start of the model can be assumed roughly.
This quick rough estimation can be used for planning and organising disability care activities in the national programs.

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Presentation Time: **Tuesday 17/09/2013 at 13:30 – 13:40**
Abstract Topic Name: **Epidemiological Surveillance**
Presentation Screen Number: **2**
Presenter: Vivekanand Giri

"CLINCO- EPIDEMIOLOGICAL FEATURES OF NEW LEPROSY CASES AT CENTRAL LEPROSY TEACHING AND RESEARCH INSTITUTE, CHENGALPATTU, INDIA" – A THREE YEAR PROSPECTIVE STUDY

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Introduction: India achieved the goal of elimination of leprosy as a public health problem, at the National Level in the month of December, 2005 (0.95/10,000). The year 2011-12 started with 0.83 lakh leprosy cases on record as on 1st April 2011, with PR 0.69/10,000. Central Leprosy Teaching and Research Institute (CLTRI) is apex Training and Research Institution with tertiary care Management for Leprosy Patient's established under the Ministry of Health & Family Welfare, Government of India to desire the services for National Leprosy Eradication Programme (NLEP). Patients from all over the India attending OPD of CLTRI for Diagnosis and Referral Managements.

Objective: To study the profile of new Leprosy cases attending Central Leprosy Teaching and Research Institute, Chengalpattu, Tamil Nadu, India. To describe the clinical presentations, complications and treatment compliance of these patients.

Methods: A hospital-based Prospective study was undertaken on new case of leprosy patients registered in the CLTRI during 2009-2012. Demographic, Clinical, Investigative and Treatment data were extracted from the case report format.These patients were reported during the period from April 2009-April 2012. Data were entered and analysed by using statistical software Epi Info7.

Results: A total of 201 new cases of leprosy were registered during this period. Most of the patients 117 (58%) were from the Kacheepuram District, 11 (5%) cases from other states. Out of which 63 (31%) were female.11% patients were children.The mean age at onset of leprosy was 36.43 + 17.04 years. Slit Skin Smears were positive in 57 (28.4%) patients. The Male to Female Ratio is 2.16.MB (73%) cases were more among the patients. History of contact was present in 13 (6.5%) patients. Among children, history of contact was present in 4 cases (2%). The boy to girl ratio is 1.25. 47(23%) patients had positive smears. 21 (10.4%) patients had deformity.16 (7.9%) patients had Lepra Reaction, out of which 5 patients have Type I Reaction and 11 patients are Type II Reaction.

Conclusion: There is increase in Number of new cases of Leprosy in last three years. Maximum number of Patients of MB type. The child Proportion among new cases is high which is alarming and also increase Grade II disability among new cases.

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Presentation Time: **Tuesday 17/09/2013 at 13:40 – 13:50**
Abstract Topic Name: **Epidemiological Surveillance**
Presentation Screen Number: **2**
Presenter: Dr Victor Duiko

CURRENT SITUATION ON LEPROSY IN RUSSIA

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Introduction: Leprosy in Russia has no wide spread. For the space of the last 20 years incidence of leprosy has sporadic character. For this period only 28 new patients were revealed and in most cases it was multibacillary (MB) form of leprosy. On the beginning of 2013 about 350 patients are registrated and 58% of them are the inhabitants of Astrakhan region which located on the Volga River delta on the coast of Caspian Sea. Historically Volga's lower reaches is a main focus of leprosy in Russia, as it is contiguous with endemic leprosy regions. This territory the Great silk way was crossed, military compaigns were waged and etc.

Methods: historical, sanitary-and-statistic, epidemiologic analysis.

Results: Among registered leprosy patients 80% are the persons of elderly and senile age with various accompanying somatic diseases in 94 % of cases. The diseases of bload-forming and digestive organs are the most prevalent. About 30% of registered leprosy patients have disabilities. They are need in regular dispensary control and rehabilitation. Early diagnosis of accompanying diseases and adequate treatment are necessary for effective rehabilitation. The multidrug therapy significantly changed the duration of patients' life, the structure of morbidity and mortality that brought them nearer to the general population. The increase of life duration is the main reason of growth of oncological pathology which forms 15% among the reasons of mortality of leprosy patients.
High quality and effective dispensary supervision practically excluded the cases of relapses (over the last 5 years in Russia it is not registered any relapses). The hormonous system of organizational forms and methods of leprosy control is created. Active revealing, 100% hospitalization and treatment of patients in hospital and out-patient clinic, their medical and social rehabilitation, prophylactic medical examination of patients and contacts, complex of preventive measures, sanitary - and - educative work and etc. will assist in the leprosy control.

Conclusion: To keep of established stable situation it is necessary to continue all complex of antileprosy measures, revealing the "groups of risk", to introduce of hi-tech methods of preclinical diagnostics of leprosy, diagnostic test - system, to prevent of disabilities, rise in living standards of leprosy patients, to conduct of monitoring and control, to raise the level and quality of knowledge on leprosy among the common medical staff and population.

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Presentation Time: **Tuesday 17/09/2013 at 13:50 – 14:00**
Abstract Topic Name: **Epidemiological Surveillance**
Presentation Screen Number: **2**
Presenter: Dr Vera Anokhina

FREQUENCY AND CAUSES OF RELAPSES IN LEPROSY PATIENTS LIVING IN THE REGION OF LOW LANDS OF THE VOLGA-RIVER

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Introduction: From the early 70th of the last century when combined chemotherapy of leprosy patients became to be introduced a long period passed. This gives wide possibilities to make a real estimation of relapse frequency as a main parameter of the effectiveness of leprosy treatment.

The aim of the investigation was to study a frequency of relapses in leprosy patients as well as to precise causes of their development.

Methods: A retrospective study of frequency and causes of relapses in leprosy patients during the period from 1970 to 2009 years was performed.

Results: During 40 years of observation 228 cases of relapses in 186 patients with leprosy were detected, that comprise 17, 6% of the total number of the patients registered.

Relapses were observed in 83 males and 103 females among the patients with MB leprosy· 162 and with PB leprosy – 24. Single relapses were observed in 131 patients, repeated relapses were registered in 55 cases. In 25 patients relapses were noted before 1970th. Two relapses were observed in 45 cases, three · in 7 and four in 3 patients. Maximal number of relapses in men fell the age period from 30 to 50 years old, and in women · from 50 to 70 years old. Minimal age of a patient with relapse was 17 years, maximal – 89 years. Out of the total number of relapses early ones developing in the first 10 years after completion of the main course of antileprosy therapy and discharge for ambulatory treatment comprise 45,3% and late relapses, developing in 10, 20 30 and more years · 54,7%. In 46, 6% relapses were caused by inadequate treatment. Then follow common cold diseases (16,6%0, psychic traumas (12,6%), alcoholism (10,3%), poor living conditions (5,7%), pregnancy (2,9%) and in 5,7% cases causes were not stated. 70,6% of relapses fell on 70th years of the 20th century (1970·1979) when leprosy patients were given mainly mono therapy with sulfones and use of MDT in Russia was in an embryonic state. In the 80th (1980·1989) the number of relapses decreased 2,9 times (from 161 to 55 cases) that is 6,5% of total number of patients and 24,1% of total number of relapses. Beginning from the 90th years (1990·1999) and in 2000·2009 only single cases of relapses were detected (7 and 5 cases per each ten years) comprising 1,2 and 1,4% of total number of patients and 3,1 and 2,2% of total number of relapses, correspondingly. Decrease in number of relapses evidently is connected with a significant decrease in morbidity and total number of the patients under surveillance (from 1056 to 235) as a result of effective control measures as well as of wide usage of combined therapy.

Conclusion: A possibility of late relapse remains for many years from the moment of completion of the main course of leprosy therapy. Based on the above results we may conclude that in leprosy not only long terms of stationary and ambulatory treatment are necessary but life dispensary surveillance, especially for MB leprosy, the most dangerous from the epidemiological point of view, is extremely important. Long dispensary observation practiced in Russia allows to prevent relapses, especially late ones, leprosy development in contacts as well as to eliminate leprosy foci.

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Presentation Time: **Tuesday 17/09/2013 at 12:30 – 12:40**
Abstract Topic Name: **Epidemiological Surveillance**
Presentation Screen Number: **3**
Presenter: Maria Angela Trindade

EVALUATION OF THE EFFECTIVENESS OF THE FAMILY HEALTH STRATEGY ON THE ENDEMICITY OF LEPROSY - REVIEW OF THE LITERATURE REVIEW AND PRESENTATION OF THE STATE OF SÃO PAULO, BRAZIL

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Introduction: The reorganization of Primary Care (AB) in Brazil is being conducted by Family Health Strategy (FHS) for its potential to produce improvements in the health status of the population and to reduce inequalities and promote equity. Some publications point out the positive impact of the ESF in the detection of leprosy. Objective: To evaluate the effectiveness of the Family Health Strategy on the detection of leprosy in the State of São Paulo, Brazil.

Methods: Based on epidemiological and ecological studies in theoretical models were constructed assuming the availability of information in secondary databases. The main independent variable is the coverage of the ESF in each of the 645 cities and covariates were classified into three dimensions: context of demographic, socioeconomic and health system. The outcomes of the study consist of indicators, grouped by lines of care: Women's Health, Child Health, Adult Health, Oral Health, Mental Health (reason other reports) and Leprosy.

Results: The evaluation of the effectiveness of the ESF on indicators of endemic leprosy in São Paulo for 2001·9 showed higher detection in counties where the population has coverage of 50% FHS, controlling for the effects of socioeconomic and demographic variables [(RR set (95%) 1,115 (1007·1235) p 0036].

Conclusion: The data are consistent with the literature, which showed the positive impact of ESF on the detection of leprosy in the State of São Paulo, Brazil, suggesting a protective effect when the population has increased coverage of FHS. Interestingly, this effect was observed after controlling for social development indicator (IPRS) and population size of the municipalities. Conclusion: Given the importance of the performance of the AB in identifying and monitoring cases of leprosy is critical to conduct studies that assess the effectiveness of ESF on outcomes related to this condition.

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Presentation Time: **Tuesday 17/09/2013 at 12:40 – 12:50**
Abstract Topic Name: **Epidemiological Surveillance**
Presentation Screen Number: **3**
Presenter: Michel Sawadogo

ASPECTS ET MORPHOLOGIE DES LÉSIONS CUTANÉES CHEZ LES PATIENTS NOUVELLEMENT DÉPISTÉS DE LA LÈPRE DANS 4 PROVINCES ENDÉMIQUES DU BURUNDI

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Introduction: Une étude prospective a été conduite au Burundi en vue d'effectuer une analyse du dépistage et le suivi de la lèpre dans 4 provinces endémiques du pays (Bubanza, Cibitoke, Rutana, Makamba) de septembre 2009 à octobre 2010 avec pour objectifs de décrire les formes cliniques de la lèpre et leur évolution dans les 4 provinces endémiques, de déterminer les facteurs liés à la consultation tardive des malades, de décrire les conditions socio-économiques des malades et leurs liens avec la maladie et l'impact de l'examen des contacts des malades lépreux sur la détection de la maladie dans les provinces endémiques.

Methods: Il s'agit d'une étude prospective menée dans 4 provinces endémiques du pays (Bubanza, Cibitoke, Rutana, Makamba) de septembre 2009 à octobre 2010. Notre échantillon était constitué des malades lépreux rencontrées dans les 4 provinces du pays pendant la période de l'étude, lesquels malades ont consenti à se soumettre à l'étude et un sondage exhaustif de tous les malades inclus dans l'étude a été fait, en se basant sur le registre de la lèpre dans les hôpitaux et dispensaires des provinces choisies. Nous avons collecté entre autres des données cliniques à partir d'un questionnaire de façon à décrire la morphologie des lésions cutanées.

Results: Nous nous sommes intéressés au nombre de lésions rencontrées chez les malades. Sur un total de 78 malades inclus dans l'étude, 17,9% soit 14 malades présentaient une seule lésion, 29,9% soit 21 malades présentaient entre deux et cinq lésions. La majorité des malades (55,2% soit 43 malades) présentaient plus de cinq lésions. La province de Rutana vient en tête avec 17 malades présentant plus de cinq lésions soit 39,5%, suivie de Makamba (25,5% soit 11 malades), puis de Bubanza (23,25% soit 10 malades) et enfin Cibitoke (11, 6% soit 5 malades). La majorité présente des lésions hyper pigmentées (57 malades soit 73%), suivi de ceux présentant des lésions hypo pigmentées (17,9% soit 14 malades). D'autres patients présentaient des nodules (3,8%), des lésions bulleuses (2,5%) ou des lésions infectées (3,8%).

Conclusion: La lutte contre la lèpre constitue encore un défi pour le Burundi. La majorité des patients dépistés présentent plus de cinq lésions et constituent des réservoirs potentiels pouvant maintenir la propagation de la maladie dans le pays. Des mesures vigoureuses sont nécessaires pour dépister et mettre sous traitement le plus grand nombre possible de cas spécifiquement dans les provinces dites endémiques en vue de rompre la chaine de la transmission de la maladie.

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Presentation Time: **Tuesday 17/09/2013 at 12:50 – 13:00**
Abstract Topic Name: **Epidemiological Surveillance**
Presentation Screen Number: **3**
Presenter: Ratna Wahyuni

MYCOBACTERIUM LEPRAE EXISTENCE IN COASTAL AND AGRICULTURAL ENVIRONMENT OF LEPROSY ENDEMIC AREA IN NORTHERN EAST JAVA, INDONESIA.

R. Wahyuni [1,*], D. Adriaty [1], ·.· Iswahyudi [1], C. R. S. Prakoeswa [1, 2], I. Agusni [1, 2], S. Izumi [1]

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Introduction: The existence of *M.leprae* in the environment of leprosy endemic areas has been reported from some countries, including Indonesia. Although it supports the hypothesis on the role of environment as an important factor for leprosy transmission, this opinion is still debatable. The coastal and agricultural villages in Indonesia have different characteristic due to the water source type. Inhabitant who live in coastal area mostly fisherman and they use daily water supply from well that located inside the house, which is relatively brackish water. While those who live in agricultural area mostly farmer who use water from well outside the house, which is relatively fresh water. The aim of the study is to explore the existence of *M.leprae* in the water and soils from villager's houses of the two different environmental areas.

Methods: Ninety water samples with 90 soil samples (36 from coastal and 54 from agricultural villages) from the same house were collected. After DNA extraction with Qiagen Miniprep kit, a Polymerase Chain Reaction (PCR) was performed using RLEP repetitive sequence specific target to detect *M.leprae* in the samples.

Results: PCR positive from water samples was found in 16/36 (44%) from coastal area compared to 6/54 (11%) from agricultural area which is statistically different (p<0.5). While those from

soil samples, it revealed that only 2/36 (6%) from coastal area compared to 2/54 (4%) from agricultural area (no statistically different, p>0.5).

Conclusion: The existence of *M.leprae* in the water environment of coastal area was more frequent than the agricultural area in leprosy endemic villages of Indonesia. The existence of *M.leprae* in the environment could be just as contamination from leprosy patients but also as a non-human source of infection. Since *M.leprae* is obligate intra-cellular organism, it can only survive a few hours outside the cell. More investigation is needed to clarify this finding, since leprosy prevalence is higher in coastal areas of Indonesia, compared to agricultural areas.

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Presentation Time: **Tuesday 17/09/2013 at 13:00 – 13:10**
Abstract Topic Name: **Epidemiological Surveillance**
Presentation Screen Number: **3**
Presenter: Dinar Adriaty

THE ROLE OF FREE LIVING AMOEBA AS AN ENVIRONMENTAL HOST FOR MYCOBACTERIUM LEPRAE

D. ·.· Adriaty [1,*], R. Wahyuni [1], ·.· Iswahyudi [1], C. R. S. Prakoeswa [1,2], I. Agusni [1,2], S. Izumi [1]

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Introduction: East Java is a province with the highest new case detection in Indonesia (35% of all cases). Like other leprosy problems in every part of Indonesian province, this province has an interesting phenomenon; it is that the leprosy endemic area is not spread evenly. There are many endemic areas spread mainly in the northern coastal region and Madura Island other than the southern part. Based on various epidemiological studies in Indonesia, the suspicion arises that many individuals are infected with leprosy bacilli in the absence of an infection source, occurred partly due to the indirect transmission which is from environment. It is possible for intracellular mycobacteria such as the members of the *M.tuberculosis* complex and *M.leprae* could survive as long as they can get the potential environmental host. All intracellular mycobacteria hide themselves inside the macrophage cell and resistant to phagolysozome process. Amoeba has been known as protozoa which morphologically have some similarities with macrophage cell, especially in the phagocyte process and surface receptor system. It will indicate the role of Amoeba especially the free living type become the non human factor for transmission of the disease not only from patients. Free living amoeba is the protozoa that live commonly in the water of tropical environment like East Java Province, Indonesia. The *Acanthamoeba sp* is one of the free living amoeba, which is possible now to detect by molecular biology methods. The main purpose of study is to analyze the existence of Free Living Amoeba (FLA) in water samples from environment that contains *M.leprae*, especially the water source from endemic leprosy area in northern part of East Java.

Methods: Ninety water samples were taken from wells in one of districts in Northern coastal of East Java, they were collected from two villages, one is from the coastal area and the other is from rural area. All isolates were DNA extracted by Qiagen and amplified by PCR using specific primers in *Mycobacterium leprae* (RLEP3 sequence X17153) and *Acanthamoeba sp* (18S rDNA in region E23-2' and E-23-6). *Ziehl-Neelsen* staining is also performed to these samples to study the morphology of the protozoa and Acid Fast Bacilli.

Results: From PCR analysis, 22 samples were positives in *Mycobacterium leprae* (22/90 or 24%) and 6 of them were positives *Acanthamoeba sp* (6/22 or 27%). Ziehl Nielssen staining revealed AFB positive in 8 (8/22 or 36%) of *M.leprae* PCR positives samples. Interestingly, one samples showed microscopically AFB inside the Amoeba.

Conclusion: Although the existence of *M.leprae* in the environment of leprosy endemic areas still debatable, it needs special attention for the possibility of non-human resource of transmission of the disease. Simultaneous positivity of *M.leprae* and *Amoeba sp*. in water samples may indicate that a symbioses mutualism process is occurred between the two organisms in the environment. Further research will conduct for identifying the *Amoeba sp.* specifically that found in environment that may contain *M.leprae*, also study of viability and virulency of the bacilli.

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Presentation Time: **Tuesday 17/09/2013 at 13:10 – 13:20**
Abstract Topic Name: **Epidemiological Surveillance**
Presentation Screen Number: **3**
Presenter: Mr Adam Iswahyudi

RISK FACTORS ANALYSIS ON SUBCLINICAL STAGE OF LEPROSY AMONG ELEMENTARY SCHOOL CHILDREN IN LEPROSY ENDEMIC AREA OF EAST JAVA

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Introduction: Subclinical stage of leprosy can be detected in healthy children with high titer of specific antibody to *M.leprae*, which is related with high antigen load inside the body. This early stage of the disease is potentially progress to manifest leprosy after several years. School children are the high risk group to be affected by leprosy. Study of some epidemiological risk factors could be useful for leprosy control in leprosy endemic area

Methods: Ninety-five healthy elementary school children without any clinical signs of leprosy were involved in the study. They live in Pasuruan district of East Java Province, a leprosy endemic area in this province. Serological study for anti Phenolic Glycolipid-1 (PGL-1) antibody was conducted, using finger tip blood samples which is dried on filter paper, performed by ELISA technique to measure the level of anti IgM anti PGL-1 antibodies. Based on the cut off value of 605 u/ml (ELISA), those children which show level of IgM anti PGL-1 above the cut off will be considered as subclinical stage of leprosy cases. Some epidemiological variables : age, sex, nutritional status, parental income, lighting in the house, contact history, length duration of contact and type of contact will be analyzed using the Logistic Regression statistic test

Results: After serological test for anti PGL-1 antibody, 28 (29.5%) of these children were sero (+) or in subclinical stage of leprosy. Results of statistical analysis revealed that only two factors: contact history with leprosy patients (p = 0.021) and parental income (p = 0.036) showed the influence of risk factors of having the subclinical stage of leprosy

Conclusion: Two risk factors in epidemiological analyses of elementary school children with subclinical stage of leprosy were leprosy contact history and parental income. Contact history with leprosy patients is still the important factor for the children to be affected by leprosy. The socio-economic situation which is represented by parental income always relates with welfare and immunological status of children, makes the children prone to be affected by diseases, including leprosy.

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Presentation Time: **Tuesday 17/09/2013 at 13:20 – 13:30**
Abstract Topic Name: **Epidemiological Surveillance**
Presentation Screen Number: **3**
Presenter: Eliane Ignotti

DEATHS ATTRIBUTED TO LEPROSY IN BRAZIL (2000-2007).

A. Rosendo Dos Santos Ramos [1,1], E. Ignotti [1,*], S. Ferreira [1]

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Introduction: Researches on mortality and letality in leprosy are rare in Brazil when the disease is considered as basic cause of death. In Brazil 1850 deaths were registered leprosy from 2000 to 2007. In Mato Grosso, an endemic disease in the Brazilian Amazon were registered 129 deaths from leprosy in the same period.

Methods: Epidemiological transversal study of deaths registered and available in the database of the Mortality Information System. We selected the deaths where leprosy was the basic cause, or as one of the causes of the death. We calculated the correlation between the mortality and letality rates from leprosy and the detection rate. For the detection rate we used data from the Information System of Notified Diseases.

Results: It was possible to notice a higher proportion of deaths among people over 60 years old (56.8%), the illiterate people (27.6%) and in males (72%). The frequency of deaths from leprosy as one of the causes, or as basic cause, did not change over the years (an average of 520 and 230 deaths by year). The general rate of detection of leprosy was positively correlated with the mortality rate of the disease, and negatively correlated with the letality rate. The mortality rate from leprosy was higher in the state of Mato Grosso, with 4.8 deaths per 100 000 inhabitants and the letality rate was highest in the state of Rio Grande do Sul, with 15.4 deaths per 1000 new cases.

Conclusion: This study indicates that leprosy is characterized as basic and associated cause of deaths in Brazil, especially in male individuals, elderly and illiterate people.

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Presentation Time: **Tuesday 17/09/2013 at 13:30 – 13:40**
Abstract Topic Name: **Epidemiological Surveillance**
Presentation Screen Number: **3**
Presenter: Masanori Matsuoka

MYCOBACTERIUM LEPRAE IN DAILY USED WATER IN ENDEMIC AREA; ITS QUANTIFICATION AND EVALUATION OF THE VIABILITY

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Introduction: The elucidation of the transmission mode of leprosy is essential to establish drastic strategy to prevent infection. Although the common concept of leprosy transmission is that the

Mycobacterium leprae is transmitted from multi bacillary case by heavy contact such as house hold, many findings which are not figured out answer by this theory have been known. Some studies suggest existing causative agent *M. leprae* in the water at endemic area and transmission to resident.

Methods: Water samples were collected in the village with high leprosy prevalence in Indonesia. Smear samples stained by Ziehl-Neelsen method were examined by microscope. Conventional PCRs targeting RLEP sequence and 16S rRNA gene were applied to detect *M.leprae* DNA, bacillary number was quantified by Real-Time PCR for RLEP sequence. Reverse- Transcription PCR (RT-PCR) was applied to prove the existence of live bacilli by detecting 16SrRNA in the water as a possible infectious source of leprosy.

Results: Of 147 samples, acid fast bacilli were observed in 40 samples, 53 samples and 85 samples were positive for the PCR to amplify a fragment of 16sRNA gene and RLEP gene respectively. Real-Time PCR results showed 102 samples contain bacilli and number of the bacilli varied from 2 to 3,620/20 ml. RT-PCR showed 17 out of 54 samples contain 16s rRNA, hence exciting of live bacilli has been indicated. The mean temperature of the RT-PCR positive waters was optimal temperature, 29.9±0.6°C, for the growth of *M.leprae*.

Conclusion: The results suggest infection of the bacilli from water as a reservoir in environment.

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Presentation Time: **Tuesday 17/09/2013 at 13:40 – 13:50**
Abstract Topic Name: **Epidemiological Surveillance**
Presentation Screen Number: **3**
Presenter: Erik Post

INVESTIGATING THE CONUNDRUM OF LEPROSY TRANSMISSION: A LITERATURE REVIEW FOCUSSING ON THE TRANSDERMAL ROUTE

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Introduction: Despite the fact that leprosy was the first disease in which a link was established between a pathogen and a disease (1873), it has still not been possible to determine the precise mode of transmission. In the literature, there is a general recognition that infection takes place through the upper respiratory tract while evidence suggesting transdermal transmission is often ignored. However, there are many clinical indications that M. Leprae can survive for many months outside the human body and can enter the body by the dermal route.

Methods: Relevant literature data bases have been accessed with the appropriate keywords. Views of major leprosy textbooks regarding mode of transmission will also be given The review will look at articles suggestive of the transdermal transmission of leprosy in order to critically assess evidence for the existence of this alternative route. Relevant case presentations will also be included.

Results: Clinical papers will be presented that suggest leprosy infection through abraded, broken, skin. *M. leprae*, 'freely' living in the environment, could enter the body directly. It has also been suggested that flies, which are attracked by wounds, could be a vector in the transmission of leprosy. The review will also cover literature about the relationship between (re)active skin lesions and involvement of nerves underlying the skin lesion i.e. a single skin lesion overlying, or in proximity of a nerve with nerve function impairment of that nerve.

Conclusion: Clinicians are pointed at the possibility of transdermal leprosy transmission. Clinicians also need to be 'on the alert' of the increased risk of nerve function impairment when (reactive) skin lesions are in the proximity of or distal to the distribution area of a peripheral nerve. It is suggested that such patients are 'flagged' and carefully followed.

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Presentation Time: **Tuesday 17/09/2013 at 13:50 – 14:00**
Abstract Topic Name: **Epidemiological Surveillance**
Presentation Screen Number: **3**
Presenter: Srinivas Govindarajulu

TRENDS IN LEPROSY RESEARCH: A BIBLIOMETRIC ANALYSIS OF MEDLINE PUBLICATIONS DURING PRE-MDT AND POST-MDT PERIOD

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Introduction: Mapping the published leprosy literature provides an opportunity to assess patterns of peer-reviewed publications and characterize the trends over time in leprosy research. The aim of the study was to analyse the global trends in publication of leprosy articles through a retrospective bibliometric analysis of MEDLINE

Methods: MEDLINE database (Silver plotter) was used to retrieve articles on leprosy in free-text format for the period 1966 to 2010. Using bibliometric analysis, we studied the trends in publication of articles related to leprosy with regard to the publication type, journal category, journal name, language and the country of publication. The multi-disciplinary scatter and seepage of the published literature over different time periods reflecting diverse strategies (pre-MDT, MDT and post-elimination periods) was analysed.

Results: Over the past 12 decades (1890 to 2010), a total of 18,849 leprosy-related articles had been published across 2,008 journals. These journals were published in 37 different languages from over 95 countries of the world. Original papers constituted 80% (n= 15057), case reports 8% (n= 1560), review articles 4% (n= 831) and the remaining were in the form of comments, letters, editorials, congress and meeting reports, monographs, news and interviews. Forty-four percent (n= 8268) of the articles were published in the pre-1980 period, during the period of monotherapy. The latter period marked a shift in the focus of research from bacteriology to clinical and programmatic themes. Since the achievement of the global elimination of leprosy in the year 2000, only 12% articles were published. Majority of the articles (75%) were in English; the proportion of English language articles further increased by 11% post-global elimination. One-third of the articles had been published in specialised leprosy journals like Leprosy Review, International Journal of Leprosy and Other Mycobacterial Diseases and Indian Journal of Leprosy; Lancet, New England Journal of Medicine and Bulletin of the World Health Organization had published less than 1% of all leprosy articles. This difference was statistically significant ($p< 0.01$). The impact factor for specialised journals in leprosy had come down in the post-elimination period (Leprosy Review from 1.3 to 1.04 and International Journal of Leprosy and Other Mycobacterial Diseases from 1.1 to 0.22).

Conclusion: The results indicate that the publications in leprosy have considerably reduced over the years after global elimination was declared. As programmatic and epidemiological challenges continue to hinder the achievement of 'Enhanced Global Strategy for Further Reducing the Disease Burden Due to Leprosy by 2015'. Researchers working in high-burden countries need to conduct relevant research and ensure dissemination of the findings through publications.This would be critical to provide evidence-base for strategic and policy-level changes in an endeavour to achieve the vision of a 'World without Leprosy'.

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Presentation Time: **Tuesday 17/09/2013 at 12:30 – 13:00**
Abstract Topic Name: **Prevention of Disability**
Presentation Screen Number: **4**
Presenter: Linda Lehman

PHYSIC3AL DISABILITY IN PEOPLE AFFECTED BY LEPROSY AFTER TREATMENT COMPLETION

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Introduction: Physical disability is the main problem of leprosy. Despite multidrugtherapy (MDT) success in treating leprosy, it is known that about 25%>50% of patients may have some nerve damage and develop physical disabilities, classified by WHO disability grading (DG) as 0 for normal sensation, no visible impairments, 1 for impaired sensation, no visible impairments, or 2 for visible impairments/deformity. From 2004 to 2010 Brazil registered 21,7% of the cases as DG 1, and 7% as DG 2, while in Pará State 15,3% of the patients were diagnosed with DG 1, and 5,1% with DG 2 on the diagnosis of leprosy.

Methods: In order to investigate physical disabilities in MDT cured patients, we examined the sensory-motor functions of 517 people affected by leprosy reported from 2004 to 2010 in eight hyperendemic municipalities of the Brazilian Amazon Region, correlating our findings with epidemiological and socio-economic features, and comparing with data found at the National Information System for Notifiable Diseases (SINAN). Patients' home visits were planned with clinical assessment, simplified neurological evaluation and determination of DG, together with an interview about their demographic and socio-economic characteristics.

Results: DG 1 was found on 16,2% and DG 2 on 12,4% of the patients evaluated. It was found a statistically significant correlation between multibacillary (MB) forms and DG 1 or 2 ($p<0.001$); physical disability and males ($p<0.001$); impairment and age over 40 years-old ($p<0.001$). More than half (50,5%) of the cases did not have a BCG scar, and this was correlated to higher ages ($p<0.001$), MB cases ($p<0.001$), and disability ($p<0.005$). Finally, although SINAN showed only 5,6% of DG 2, we found 12,4% during our visits.

Conclusion: The occurrence of physical disability was predominant in MB patients, males, >40 years-old and no BCG scar, all important risk factors for developing disability. The differences of DG found in SINAN in contrast to our study suggest worsening of the sensory-motor functions after discharge from MDT, indicating the importance of monitoring these patients for years after finishing MDT treatment.

Financial support: CNPQ, DECIT, Brazilian Ministry of Health, CAPES, FAPESPA, SESPA, UFPA.

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Presentation Time: Tuesday 17/09/2013 at 12:40 – 12:50
Abstract Topic Name: Prevention of Disability
Presentation Screen Number: 4
Presenter: Dr Penvadee Pattanaprichakul

COMPARISON BETWEEN DIFFERENT METHODS OF MONOFILAMENT TEST IN MULTIBACILLARY LEPROSY.

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Introduction: Leprosy or Hansen's disease affects skin and peripheral nerves predominantly. The patients can develop disfigurements or visible deformities from sensory impairment or 'silent neuritis' condition which may occur before, between or after the treatment by multidrug therapy (MDT). Therefore, early detection of sensory deficit has been of great benefit in a vigorous preventive role. This study was designed to compare the result of sensory evaluation in multibacillary leprosy patients using Semmes-Weinstein monofilament (SWM) and conventional monofilament technique used in Thailand and to observe the course of neuritis detected during the study period.

Methods: Seventy multibacillary leprosy patients from Hansen's clinic at Department of Dermatology, Siriraj Hospital and Leprosy clinic at Ratchapracha Samasai Institute were enrolled during their follow-up visits between May and December 2012. All of them were evaluated for sensory impairment with monofilament test by both SWM and conventional technique used in Thailand for two consecutive periods, the first time at the day of recruitment and the next follow-up visit. The patients' demographic data, family history of leprosy, type of leprosy, numbness symptoms, physical examinations (skin lesions, nerve enlargement and associated deformities), investigations (slit-skin smear and skin biopsy), leprosy reactions, onset of neuritis and treatment were recorded.

Results: About two-third of the patients in this study were male (71.4%) and a mean (SD) age was 43 (15.75) years with a range of 19-85 years old. Approximately 80 percents of the patients were during the treatment or surveillant period. The interpreted results from SWM and conventional Thai technique were not statistically different for both ulnar and median nerve distribution (p=1.00), but the results were statistically different for posterior tibial nerve sensation (p<0.001). However, the result of both technique excluding the heel area for posterior tibial nerve sensation were the same (p=1.00). Moreover, twenty eight (40%) patients who mentioned of numbness at either palms or soles were correspondent with impaired sensory function detected by SWM technique (p=0.014).

Conclusion: There was no difference between SWM and conventional technique which were routinely used in Thailand for the evaluation of sensory deficit in leprosy patients. Using SWM with less tested points can minimize the time spending on each case; hence we encourage the application of SWM technique in our leprosy patients to lessen the time in each follow-up period and to improve the follow-up guideline for better services of leprosy patients in Thailand.

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Presentation Time: Tuesday 17/09/2013 at 12:50 – 13:00
Abstract Topic Name: Prevention of Disability
Presentation Screen Number: 4
Presenter: Ashutosh Prabhavalkar

STRENGTHEING REFERRAL SYSTEM BY INVOLVING PRIMARY HEALTH CARE PERSONNEL TO PROMOTE REFERRALS FOR QUALITY LEPROSY SERVICES AT LEPROSY REFERRAL CENTRES THROUGH OUTREACH CAMPS: A PILOT INITIATIVE IN 3 TRIBAL DISTRICTS OF MAHARASHTRA & CHATTISGARH

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Introduction: The Enhanced Global Strategy of WHO emphasizes the need to reduce disease burden due to leprosy from clients' perspective, primarily through prevention of deformity. It warrants access to quality referral services by all eligible leprosy patients having high risk for nerve damage. A periodical nerve function assessment during risk period and timely intervention at onset of NFI reduces risk of nerve damage. ALERT-INDIA has established 116 Leprosy Referral Centres (LRCs) under Leprosy Elimination Action Program (LEAP) at the secondary (Sub-District) level to support the GHC system in providing quality leprosy services. Under utilization of referral services due to poor referrals has deprived substantial number of eligible clients to access referral services. Hence, there is a need to promote referrals from primary level and build effective linkages with GHC system. ALERT-INDIA had initiated a pilot study to operationalise a specially designed program - LRC Out-Reach Camp (LORC) to promote referrals for quality leprosy services concurrently strengthening the capacity of PHC personnel to identify and refer the eligible clients.

Methods: The study was conducted in 3 tribal districts of Maharashtra and Chhattisgarh states in India during 2012. 40 PHCs were identified as having under utilization of referral services that are linked to 8 LRCs established at secondary level of the GHC system. ALERT-INDIA had organized 31 LORCs in these PHCs by trained GHC staff under the supervision of trained leprosy (NLEP) staff. 492 peripheral staff of PHCs had mobilized leprosy patients needing specialized services for complications and disabilities for the camp by home visits. This includes leprosy patients with disabilities living in PHC areas and not availed quality leprosy services at LRCs as well as leprosy patients with risk factor for developing new nerve function impairment (among new cases detected in the past 5 years).

Results: 1368 leprosy patients were assessed and managed by 160 trained PHC staff during the camps. 84 new cases were diagnosed among 171 suspects referred to the camps. 662 leprosy cases with 'risk' factor were assessed for nerve function impairment. 80 leprosy patients with lepra reactions were assessed and managed. 484 cases with disabilities (Grade 1 & 2) were assessed and provided appropriate services. 703 leprosy patients were linked to respective LRCs for sustained referral services. Following successful outcome of the camps at the PHC level referral action plans were prepared for sustaining referral link between client and health facility at the secondary level.

Conclusion: Capacity building of peripheral health staff and preparation of time bound referral action plan were the core elements of outreach camps to ensure an effective & result oriented referral system.
This study demonstrated increased participation of PHC staff in promoting referrals for sustaining leprosy services. Primarily it provided access to the clients for timely and quality services for leprosy related complications. It also optimized the opportunity for the PHC staff to learn and attend to the needs of clients and refer only those who need services at the secondary level.
In effect, this study has enabled the persons affected by leprosy with necessary information and clarity on the specific services offered at the primary and secondary levels of the GHC system. LRC Out-Reach Camp (LORC) does help to develop time bound, result oriented action plan for an effectiveviable referral system.

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Presentation Time: Tuesday 17/09/2013 at 13:00 – 13:10
Abstract Topic Name: Prevention of Disability
Presentation Screen Number: 4
Presenter: Artur Gosling

PHYSICAL DISABILITY AND SOCIAL PARTICIPATION IN PLEOPLE AFFECTED BY LEPROSY AFTER MULTIDRUG THERAPY

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Introduction: Leprosy is considered one of the most disabling diseases nowadays. It is estimated that 3 million people have physical disabilities around the world. Deformities cause functional limitations, social exclusion and stigma with psychological and social impact. Multidrug therapy was the main control measure for leprosy in the past 3 decades and allowed patients the discharge of treatment, but without consider deformities, reaction episodes and sensorial-motor impairments. The aim of this investigation was to describe the level of social participation and disability in people affected by leprosy after world heath organization multidrug therapy.

Methods: Cross-sectional, observational, clinic-epidemiological study in Nova Iguaçú County in Rio de Janeiro with treated patients that receive the diagnosis of leprosy between the years of 1997 to 2006. The initial sample was 2179 cases that receive leprosy diagnosis during this period and 1080 cases met in inclusion criteria for discharge after multidrug therapy and disability grade. The final sample was 225 individuals that were assessed using disability grade of eye, hand and foot score from world health organization and social participation scale.

Results: The individuals have 16 and 101 years old, mean age of 56.12 (SD: 17,34 years), 55.6% (125) were female, 39.9% (91) had less the 8 years of school learning and 66 (28.9%) was white. 55.3% (125) had multibacillary classification and 44.4% (100) paucibacillary with predominant borderline form in 40.4% (91). The disabilities in accordance with disability grade of eye, hand and foot score from world health organization were 60.9% (48.0% grade 1 and 12.9% grade 2) and social restriction was observed in 24.9% using social participation scale

Conclusion: The level of disability in this sample was elevated and the variables age, scholar education level, leprosy classification and multibacillar treatment were relevant for disability grade. The level of social participation was medium to elevate with crucial relevance for clinical form and multibacillary treatment. Physical disability was associated with social participation.

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Presentation Time: Tuesday 17/09/2013 at 13:10 – 13:20
Abstract Topic Name: Prevention of Disability
Presentation Screen Number: 4
Presenter: Dr G Pitchaimani

A POPULATION BASED REGISTRY– A POSSIBLE STRATEGY FOR LEPROSY IN URBAN AREAS?

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Introduction: India accounts for 55.5% of global leprosy, amounting to a total of 0.83 lakh cases recorded in the country, as on 1st April 2012. In West Bengal, the Prevalence Rate (PR) was 1.30/10,000 in 2010, reduced to 0.92/10,000 in 2011, but increased to 1.08/10,000 in 2012 which is of great concern as it is higher than the national PR of 0.68/10,000.
Urban leprosy is acknowledged as a difficult problem due to various reasons– large migrant populations living in unhygienic conditions, lack of proper health infrastructure, multiplicity of health service providers with little coordination etc... Kolkata, the third largest metropolis in India is classified as a moderately endemic zone with prevalence rate of >1 per 10,000.
The aim of the study is to describe the profile of leprosy in a selected urban area to help in assessing the magnitude of leprosy and designing effective strategies for leprosy control.

Methods: Kolkata in West Bengal, India has a population of 44, 86,679 divided into 15 boroughs and 141 wards. This study was conducted in 9 wards from 4 boroughs selected by stratified random sampling to include geographically and socio economically different populations.
All the health service providers in the study area, including hospitals, clinics and private practitioners were identified and visited to find out whether they treated leprosy. Those which did were requested to share their information regarding leprosy cases during the period April 2011 to December 2012.
A predesigned format for Population Based Leprosy Registry (PBLR) was given to all the participating centers. All patients visiting for the first time were included and care was taken to avoid duplication of patients. Information about Patient name & address, type, and WHO Disability, was collected. The data was collected weekly, compiled and analysed on SPSS.

Results: The health service providers treating leprosy in the study area included 2 government medical college hospitals, 1 government hospital, 1 ward clinic, 1 referral hospital and 134 private practitioners. During the period under consideration 2436 cases were registered for leprosy treatment, 1793 in TLM, 605 in the government hospitals, 38 in the ward clinic, and 98 cases with private practitioners.
The majority of the patients registered were adult males 1865(77%); while adult females were 476 (20%), male children 58(2%) and female children 37(1%). 2198 (90%) cases were Multi Bacillary leprosy while only 238(10%) were Pauci Bacillary. The WHO Disability Grade 0, I, II were 1087(45%), 173(7%), 1176(48%) respectively. 1121 (46%) patients were living in Kolkata, 1202(49%) outside Kolkata and 113(5%) came from other states for treatment.

Conclusion: The disability figures in the results emphasize the need for urgent action to encourage early reporting and early treatment in urban populations. Moreover, maintaining a Population Based Leprosy Register in an urban setting is very challenging. Unlike rural areas, the administrative divisions in an urban situation are not clear and as well demarcated, so most patients cut across ward and borough boundaries for treatment and more often than not change providers due to the extended course of treatment in leprosy. Also private practitioners are under no obligation to provide necessary details about patients. The study indicates the need of different and effective strategies for leprosy control in urban areas such as Kolkata.

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Presentation Time: Tuesday 17/09/2013 at 13:20 – 13:30
Abstract Topic Name: Prevention of Disability
Presentation Screen Number: 4
Presenter: Prof Liangbin Yan

ANALYSIS OF DISABLED HANDS AMONG 5627 PEOPLE AFFECTED BY LEPROSY

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Introduction: To understand the situation of disabilities in hands of leprosy patients in order to provide information for developing the strategies of disability prevention.

Methods: A total of 14137 active and cured patients with leprosy from 11 cities or counties in Jiangsu Province were investigated for visible disabilities in hands, including protective feeling, movement function, joint activity and wounds, and the needs of patients for rehabilitation. Associations of disabilities in hands and patients' sex, leprosy t ype, disease duration, outcomes, and reactions were analysed.

Results: The proportion of disability in these patients was 39.8%. The proportion of disability in single hands (28.58%) was higher than that in double hands (11.22%); the rate among active patients (53.9%) was higher than that in cured patients (39.23%); and the rate in MB people affected by leprosy (PLAs) (65.02%) was higher than that in PB PALs (35.73%). Among the patients with disease duration of less than 5 years, the disability rate in PB PALs (71.16%) was higher than that in MB PALs (40.58%); and the rate was significantly high among those patients with leprosy reactions (78.25%). The common clinical manifestations of disabilities were claw fingers followed by thumb paralysis, wrist drop. About 2/3 of patients had obstacle in protective feeling and joint stiffness. 1951 hands with disabilities could be corrected by surgical operations but less than 60% (1152) were willing to receive the operations.

Conclusion: It can be concluded that there is a high proportion of hand disabilities, particularly in single hands, among active and cured leprosy patients. The prevalence is significantly different among patients with differences in delay of diagnosis and treatment, occurrence in leprosy reactions and leprosy types. 73% of these PALs have not indications for surgical operations and 80% of those PALs who need the rehabilitation have no confidence to wards rehabilitation.

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Presentation Time: Tuesday 17/09/2013 at 13:30 – 13:40
Abstract Topic Name: Prevention of Disability
Presentation Screen Number: 4
Presenter: Jurema Brandão

PREVENTION OF DISABILITY IN LEPROSY: EVOLUTION OF THE DEGREE OF PHYSICAL DISABILITY IN COHORT PAUCIBALICAR AND MULTIBACILLARY, 2010 AND 2011

J. G. Brandão [1,*], R. C. F. R. Soares [1], V. L. P. Junior [2], S. A. S. Neto [1], E. F. Morelo [1]

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Introduction: Leprosy is a *cronic* infectious physical high degree incapacity disease. The contributions of the incapacities in leprosy is the main point for maintaining the disease's stigma and interferes psyco and socially in people's lives and also in family and society.

Objective: Characterize the magnitude of leprosy physical incapacities in Brazil by studying the evolution of physical incapacities degree.

Methods: descriptive study with SINAN data. New and cured *diagnosed* cases were selected among *paucibacilar* leprosy cases (16.482 cases in 2009 and 2010) and multibacilar leprosy cases (21.563 cases in 2008 and 2009) and evaluating in both moments. Notifications that presented inconsistences between the clinical shape and the operational classification were excluded. Data was analysed by descriptive statisc.

Results: In the PB cases that presented incapacity degree in the admission and on the high xxxxx, we could observe that 96% (13.763 cases) of the patients that had degree 0 in the first evaluation, remained with degree 0. 3,7% (534 cases) and 0,3% (42 cases) progressed to degrees 1 and 2 respectively. In the patients that had degree 1 in the diagnostic, 62,4% (1.177 cases) remained with degree 1. 35,5% (669 cases) and 2,1% (39 cases) progressed to degrees 0 and 2 respectively. In the patients that had degree 1 in the diagnostic, 51,4% (3.497 cases), remained with degree 1. 43,3% (2.947 cases) and 5,2% (357 cases), progressed to degrees 0 and 2 respectively. And finally, in the patients that had degree 2 in the first evaluation, 51,8% (1.293 cases) remained with degree 2. 25,6% (639 cases) and 22,6% (563 cases) progressed to degrees 0 and 1 respectively.

Conclusion: The results demonstrated that 3,73% of PB patients had a descendent evolution in the GIF whereas in MB *cases this result* was 7,86%, *showing that* it is necessary a special attention to the incapacities preventing actions conducted by health services in accordance to the full attention service in leprosy.

P-238

Presentation Time: Tuesday 17/09/2013 at 13:40 – 13:50
Abstract Topic Name: Prevention of Disability
Presentation Screen Number: 4
Presenter: Vivek Pai

ASSESSMENT OF DISABILITY CARE SERVICES AND ITS IMPACT – A FIELD BASED STUDY IN RURAL AREAS OF THANE DISTRICT, MAHARASHTRA STATE, INDIA

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Introduction: Bombay Leprosy Project (BLP) has adopted few talukas in rural areas of Thane district for identifying the magnitude of patients with disability and providing services. We present our experience in BLP pertaining to field based disability care in one of the taluka with rural population of 1,51,825 (4 Primary Health Centre) out of total population of 2,93,058 comprising

mainly of rural villages and terrains adjoining Mumbai in Thane district of Maharashtra and to ascertain the impact of services during the period from 2008 to 2012.

Methods: The Prevention of deformity and care programme (POD) was strengthened in the rural areas of Thane district. Though basic health delivery structures are in place in the district specialized disability care service for leprosy patients with deformity is often lacking. In this background, BLP is offering services through its supervisory mobile units and by engaging local community volunteers. Field campaigns undertaken to identify the existing disabled patients (treatment completed and under follow up) in these villages with emphasis on grade II disability (PR of deformity patients 25 / 10,000) and the assessment of deformity status was undertaken. Special records of disability assessment of individual patients are maintained. Village wise maps to indicate location of patients distributed is maintained for planning delivery of services and follow up. Disability care services like splints, MCR footwear, dressing kits, goggles, foot drop splints have been provided depending on the type of deformity. Wax baths have been provided in these extension units for facilitating wax therapy. Clinical impact of services was carried out to ascertain status of deformity in patients with only grade II deformity receiving services using a simplified proforma.

Results: It was observed that in hand maximum improvement was found in17 (31%) patients with abduction deformity and in 25 (46%) patients with mobile claw hand and in foot in 84 (57%) patients the ulcers healed well while in 26patients with foot drop no change observed. Plantar ulcers need further follow up care while recurrence of plantar ulcers was seen in 9% of the patients. Follow up of the patients is under process and identification of new patients in other PHCs of the taluka will be undertaken depending on availability of resources.

Conclusion: We believe that ascertaining the disability burden and distribution is a must to plan field based services to practice POD care and services in the community and reasonable justice can be done to patients provided disability is identified early and services offered with regular follow up for compliance to improve the quality of life of patients.

P-240

Presentation Time: **Tuesday 17/09/2013 at 13:50 – 14:00**
Abstract Topic Name: **Prevention of Disability**
Presentation Screen Number: **4**
Presenter: Felipe Reis

QUALITY OF LIFE AND ITS DOMAINS IN LEPROSY PATIENTS AFTER NEUROLYSIS

F. Reis [1,*], K. Gomes [2], A. Ledo [2] and Interdisciplinary Prevention and Rehabilitation Programme of Leprosy Patients at Federal University of Rio de Janeiro

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Introduction: Progressive damage to peripheral nerves are the most important consequences of leprosy leading to physical impairments, deformities, limitation of physical activities, social exclusion and low quality of life. In practice, corticosteroids, are used to prevent or to treat nerve damage in leprosy. Surgical nerve decompression is reserved for nerve abscess and unresponsive or contraindications to corticosteroids. The present study aimed to describe quality of life of leprosy patients submitted to neurolysis.

Methods: This is a descriptive, cross-sectional study which was carried out in a referral hospital in Rio de Janeiro, Brazil. The population of the study was composed by patients who had completed multidrug therapy (MDT) and were submitted to neurolysis surgery in the last five years. The data related to quality of life were collected using the WHOQOL-bref, tested and validated to Portuguese. For the comparison of the domains'scores and the overall of QoL and health with the variables the Mann-Whitney test or the Kruskall-Wallis test was used. For the correlation among the domains' scores and overall QoL and the continuous variables the Spearman correlation coefficient was used.

Results: In the last five years, 33 patients were submitted to neurolysis with a total of 61 nerves operated. The results showed that most patients were male (69.7%), with elementary schooling (51.5%), with income lower or equal one minimum wage (70.0%), multibacillary (87.9%) with WHO-DG 1 (51.5%) and with one nerve operated (48.5%). In respect to the domains of the WHOQOL-bref, the worse quality of life was observed on physical domain (11.0±3.56) followed by environment (11.47±2.11), psychological (13.29±2.79) and social relations (15.03 ±3.66). In regards to the facets of physical domain, dependence on medicinal substances and medical aids, work capacity and activities of daily living were the most affected. In environment domain, financial resources transport, participation in and opportunities for recreation were the most committed aspects. The lower score in psychological domain was in the facet about thinking, learning, memory and concentration. A great dissatisfaction among participants was observed in sexual life facet of the social relation domain.

Conclusion: The surgical nerve decompression in leprosy is not capable to restore important components of patients' lives. Measures of QoL should become part of the standard battery of tools used to assess a people's health and well-being, and to identify aspects of life, physical, psychological, or social, that could be improved with intervention. QoL assessments that are easily administered and which do not impose a great burden on the respondent are needed for use in large epidemiological surveys, clinical settings and clinical trials.

P-042

Presentation Time: **Tuesday 17/09/2013 at 12:30-12:40**
Abstract Topic Name: **Leprosy Control – Urban and Special Populations**
Presentation Screen Number: **5**
Presenter: Shivakumar Mugudalabetta

LEPROSY CONTROL IN TRIBAL POPULATION: HOW TO OVERCOME THE HIDDEN CHALLENGES?

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Introduction: Tribal population in India generally suffers from lack of access to health services and is not a part of the mainstream developmental activities. Their health indicators are worse than the general population. In 2011 about 15.83% of new leprosy cases were reportedin India belongs to Scheduled Tribe (ST) population. The aim of this case study is to report how different stakeholders worked together to identify a large cluster of leprosy cases in a tribal population in Tamil Nadu one of the southern states of India.

Methods: Retrospective construction of events and efforts involved in identifying the leprosy cases in a tribal population living in hard to reach mountainous area.

Results: Anjetty is a tribal area with 15000 population spread in nine mountains. Initially seven new leprosy cases self reported to the nearest Primary Health Centre in 2011. The Medical Officer and the health supervisor of the health centre reported to the district leprosy programme officer. The district team conducted a week long campaign with a team of doctors, health staff and local volunteers financially supported by a local corporate.

The team identified 21 new leprosy cases during the campaign. The major challenge was monthly follow up. The district team took support of local NGO involved in leprosy control programme for monthly follow up and supply of MDT for patients under treatment. The team identified eleven new leprosy cases during follow up visits and most of these new cases were self reported to the team during IEC. The programme officer and the NGO were very keen to organize one more campaign with the help of health staff, women self help groups, local volunteers and students from a social science college. They were divided into five groups to cover five mountains over one week. The team identified eighteen new leprosy cases in second campaign. It was not the end for reporting new cases, a few more new leprosy cases were identified during the follow up visits. A total of 72 new leprosy cases were identified, among them 28 were Multi-bacillary leprosy cases and three of them had deformity at the time of diagnosis.

Conclusion: The case study illustrates how different stakeholders can work together to reach the underserved population and overcome the hidden challenges in leprosy.

P-045

Presentation Time: **Tuesday 17/09/2013 at 12:40-12:50**
Abstract Topic Name: **Leprosy Control – Urban and Special Populations**
Presentation Screen Number: **5**
Presenter: Abdul Samid Al-Kubati

LEPROSY AMONG INTERNALLY DISPLACED YEMENIS IN URBAN AREA OF YEMEN

A. S. A. Al-Kubati [1,*], A. R. Al-Samie [1], Y. Al-Qubati [1]

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Introduction: In Yemen the political unrest and military conflicts in Abyan governorate resulted in internally displaced people (IDP) of around 100,000 citizens in the year 2011 to Aden and lahj governorates. The IDPs gathered in schools used as temporary camps, the medical provider in these camps were unable to detect leprosy cases. This study aimed primary to detect and treat early leprosy cases among skin diseases cases in IDPs.

Methods: We conducted a rapid skin survey for IDPs in their camps in May 2012. A team of leprosy medical supervisor and 2 leprosy coordinators had visited 84 IDPs schools during 3 weeks period. Announcements in the camps were done to encourage inhabitants of the IDPs camps with any skin disease and any other symptoms relevance to neuritis to report and met the team in the camp for examinations and treatment. Detected cases were registered and treated, data were analyzed.

Results: 1259 IDPs in 84 camps were examined. Among them 19 new leprosy cases were detected and treated with MDT (21% MB, 79% PB, 5% DG2, 32% F, 42% children), 27 old leprosy cases were evaluated among them 2 MB cases were retrieved with MDT. Tinea (corporis et capitis) represent 17% of examined skin cases while scabies was the second common skin disease with 16% of all reported cases.

Conclusion: This leprosy case detection is high (19) comparing with the annual case detection of 2 per 100,000 population in Yemen, indicate that active case detection is still too important in special groups like IDPs, neglected groups ...etc.

P-046

Presentation Time: Tuesday 17/09/2013 at 12:50-13:00
Abstract Topic Name: Leprosy Control – Urban and Special Populations
Presentation Screen Number: 5
Presenter: Dr Diana Lockwood

DIAGNOSIS AND TREATMENT OF LEPROSY REACTIONS IN INTEGRATED SERVICES - THE PATIENTS' PERSPECTIVE IN NEPAL.

D. N. Lockwood [1, 1,*], S. Raffe [1], M. Thapa [2], S. Khadge [2], K. Tamang [3], D. Hagge [2]

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Introduction: Leprosy care has been integrated with peripheral health services, away from vertical programmes. This includes the diagnosis and management of leprosy reactions, which cause significant morbidity. We surveyed patients with leprosy reactions at two leprosy hospitals in Nepal to assess their experience of leprosy reaction management following integration to identify any gaps in service delivery.

Methods: Direct and referral patients with leprosy reactions were interviewed in two of Nepal's leprosy hospitals. We also collected quantitative and qualitative data from clinical examination and case-note review to document the patient pathway.

Results: Seventy-five patients were interviewed. On development of reaction symptoms 39% presented directly to specialist services, 23% to a private doctor,17% to a district hospital, 10% to a traditional healer, 7% to a health post and 4% elsewhere. Those who presented directly to specialist services were 6.6 times more likely to start appropriate treatment than those presenting elsewhere (95% CI: 3.01 to 14.45). The average delay between symptom onset to commencing corticosteroids was 2.9 months (range 0 - 24 months). Obstacles to early presentation and treatment included diagnostic challenge, patient lack of knowledge and the patients' view of health as a low priority. Forty percent received corticosteroids for longer than 12 weeks and 72% required an inpatient stay. Treatment follow-up was conducted at locations ranging from health posts to specialist hospitals. Inconsistency in the availability of corticosteroids peripherally was identified and 41% of patients treated for leprosy and a reaction on an outpatient basis attended multiple sites for follow-up treatment.

Conclusion: This study demonstrates that specialist services are necessary and still provide significant critical support within an integrated health system approach towards the diagnosis and management of leprosy reactions.

P-047

Presentation Time: Tuesday 17/09/2013 at 13:00 – 13:10
Abstract Topic Name: Leprosy Control – Urban and Special Populations
Presentation Screen Number: 5
Presenter: Sudhakar Bandyopadhyay

LEPROSY ELIMINATION IN A TRIBAL AREA: NGO-GO PARTNERSHIP

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Introduction: Leprosy control activities in a hilly, tribal and inaccessible area with scattered population and underdeveloped communication facilities are a complicated task. The variation of cultural and behavioral pattern towards disease and its remedy of tribal population invite specially-designed interventions. Gandhi Memorial Leprosy Foundation (GMLF), Balarampur Unit (a German Leprosy & TB Relief Association supported project) covers a population of around 400,000 in 341 villages in the rural and tribal belt of Balarampur, Baghmundi and Barabazar blocks in Purulia district of West Bengal (India) under NLEP.There are several languages/dialects, cultural and behavioral pattern towards Leprosy, health and disease is diversified. Health services facilities are inadequatewith communication problems. Leprosy services are delivered through 68 Sub-Health Centers, 11 Primary Healthcare Centers run by the Government and a Hospital/ Lab/Physio by GMLF.

Methods: GMLF Balarampur has been conducting anti-Leprosy activities in the area since 1977. For variant cultural aspects, it conducts community awareness program employing cultural inputs, folk media, local-dialects and undertakes family counseling, motivation and follow-up program involving local Health Care staff of the Government system, local self Government and community leadership. Referral of cases for confirmation and treatment to the Health Centers, motivation for treatment regularity, DPMR activities with Reconstructive Surgery facilitation, contact survey, Technical support in sub-centre level.The Government System supported with partial finance, limited supply of MCR shoes, Reconstructive surgery and the NGO complementing and compensating the total anti Leprosy activities with higher motivation in case management, incorporation of socio-cultural inputs in field & awareness programs and committed program management. Plan of action is prepared/modified according to outcome of review meetings.

Results: The coordinative activities for 10 years (2003 – 2012) have resulted into substantial new case detection (Average case detection 259/year), including Child cases (Average 14.4%/ year), Women cases (Average 43.1%/ year), MB cases (Average 35.8%/year), PB cases (Average 64.2%/year), Deformed cases (Average 2.6%/year), reduction of defaulter rate to 0.5%/year and treatment compliance rate is 99.5% as per WHO/GoI guidelines. Involvement of local self Government, community leadership ensured Vocational Training, income generation & livelihood and social security. Regular meeting with health care staff and NGO functionaries was useful for exchange of idea and greater coordination.

Conclusion: For effective coverage of tribal and inaccessible area under NLEP, the collaboration and partnership of the Government system with the capable NGOs and development of strategy with cultural inputs and behavioral change communication are suggested. This partnership is observed to be result oriented and meet up the satisfaction level of the individual cases and the affected families ultimately contributing to the National Program.

P-050

Presentation Time: Tuesday 17/09/2013 at 13:10 – 13:20
Abstract Topic Name: Leprosy Control – Urban and Special Populations
Presentation Screen Number: 5
Presenter: Dr Eugene Balybin

HYPOPHYSIS-THYROID AXIS AND AGING OF LEPROSY PATIENTS

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Introduction: Length of life of treated leprosy patients in Russia is higher as compared with general population (Duiko V.V., 2011). Mechanism of such a phenomenon is not clear hitherto. The aim of our investigation was to study functional state of one of the most important regulatory system of human organism, namely: hypophysis-thyroid axis, in the process of aging of patients with leprosy. 157 patients with lepromatous leprosy at different stages of the disease process were under investigation. All the patients were divided into 3 groups: I – 96 patients aging up to 59 years, inclusively; II – 23 patients aging from 60 to 74 years (elderly age); III – 11 patients aging from 75 years and more (senile age). 47 donors at the age of up to 60 years served as controls.

Methods: With using radioimmunological methods levels of such hormones as thyroid stimulating hormone (TSH), triiodothyronine (T3) and thyroxin (T4) were determined in blood plasma. Radiometric method of the whole body (Lyass F.M., Kalantarov K.D., Palinkashi D.G., Varentsov Yu.M., 1968) was used to study the contents of organic iodine-131 in extravascular tissues (in the body). The data obtained were statistically processed according to Excel program ("Microsoft", USA).

Results: Independently from age a significant decrease of the contents of organic iodine -131 in the body (2,0±0,2; 1,6±0,1; 1,4±0.1 %% correspondingly in age groups I, II and III) was found out in leprosy patients as compared with donors (2,6±0,2%). Average level of TSH in the age group I (56,9±4,2 pmol/l) was significantly higher as compared with donors (29,0±3,3 pmol/l). Since the contents of organic iodine-131 in the body reflects a concentration of thyroid hormones in it the detected increase seems to be a homeostatic response of hypothalamic-hypophysial system towards a deficit of these hormones. TSH level in the age groups II and III of the patients did not significantly differ from such in donors. This fact suggests some inadequate reaction of hypophysis in patients older than 60 years and goes into a concept by V.Dilman and W.Dean (1992), who connected aging with progressive loss of sensitivity of receptors of hypothalamus-hypophysis axis to signals from "peripheral" hormones, i.e., the disturbance of food back connection. Average levels of T3 in the age groups I and II was significantly higher (1,9±0,1 and 1,7±0,1 nmol/l correspondingly), as compared with donors (1,4±0,1 nmol/l). It seems that in leprosy there is some additional factor (extra hypophysis), which increases thyroid function. Decrease in intensity of the oxidation-reduction processes, described in leprosy patients earlier (Ryzhova N.Y., 1978), probably serves as such padding factor. It is known (Aleshin B.V., 1976), that decrease in intensity of metabolic processes, irrespectively of its causes, results in increase of function of thyroid (a direct stimulation through substrate). In the age group III of the patients T3 level did not increase. Possibly in senile age thyreocytes response towards reduced activity of metabolic processes in human organism is also decreased. T4 level did not significantly differ in all comparable groups.

Conclusion: We found deviations in thyroid status in leprosy patients. These deviations seem to inhibit aging process of organism tissues since thyroid hormones, according to O.I. Urazova. and others (2008), modulate intensity of free radical oxidation.

P-051

Presentation Time: Tuesday 17/09/2013 at 13:20 – 13:30
Abstract Topic Name: Leprosy Control – Urban and Special Populations
Presentation Screen Number: 5
Presenter: Priya Diwaker

CHILDHOOD LEPROSY: FACTS REVEALED

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Introduction: Leprosy, a disease as old as mankind, has been a public health problem in many developing countries and among children; it reflects the disease transmission and general health status of the community.

Methods: a total of 30 cases were selected from patients attending Bapuji and Chigetari Hospital, JJM Medical College in Davangere in South India. The upper age limit was kept to be 14 yrs and the total span of study was from January 2012 to January 2013. The diagnosis of leprosy was made on the basis of clinical examination, slit skin smear and skin biopsy after taking informed consent from the parents and after excluding pityriasis versicolar, pityriasis alba, vitiligo and polymorphic light eruption.

Results: The total incidence of childhood leprosy in our study was found to be 12.19%. The ratio of boys and girls was 2:1. The children were in the age group of 0-14 yrs. The highest incidence was seen in the age group 11-14 yrs which was 66.66%. The youngest were 2 patients, of 4yr old each, one with BT Hansens and the other with BL Hansens. A positive contact/family history was obtained in 5 cases (16.66%). 26 patients were pursuing their education while 4 were school dropouts. Most of the cases belonged to low socio economic status and came from a rural background. According to the Ridley Jopling Classification, 70% cases were of BT spectrum, 13.33% cases of BL spectrum, 6.66% cases of LL spectrum and 3.33% of TT spectrum. In addition there were 2 cases of pure neuritic Hansens. Most of the patients presented with hypopigmented patches and the common sites involved were upper limb in 46.66% followed by lower limb in 23.33% cases. Type I reaction was seen in 4 patients (13.33%) and Type II reaction in 5 patients (16.66%). Deformity was seen in 4 patients (13.33%). Commonest nerve involved was ulnar nerve (52%) followed by radial nerve (46.66%). One case was of an HIV positive boy with retropositive parents who developed BL Hansens. Out of 30, 26 patients were on MDT, 2 had completed MDT and 2 were defaulters. Compliance to treatment was found to be over all better in children.

Conclusion: Childhood leprosy has always been a challenge to the doctors. There is a need for early diagnosis and prompt management as response to treatment is comparatively better in children than adults thus preventing the development of deformities. In a resource poor setup better understanding of the clinical presentation of Hansens in children is of utmost importance. Our study helps to know the incidence, spectral distribution and correlates the impact of positive contacts. All these factors in turn help in reducing the mental, emotional and physical burden to the family and society.

P-054

Presentation Time: Tuesday 17/09/2013 at 13:30 – 13:40
Abstract Topic Name: Leprosy Control – Urban and Special Populations
Presentation Screen Number: 5
Presenter: Dr Zhong Lui

THE ANALYSIS OF LEPROSY CONTROL FOR SIXTY YEARS IN WUHAN

D. Liu [1,*], Y. ZHAO [1], J. GAO [1], C. YUE [1], Y. PENG [1]

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Introduction: To discuss the leprosy epidemic trend for nearly sixty years and the condition of the disabled patients who were still alive in Wuhan

Methods: To collect the patient's data from the archive in Wuhan Institution for Prevention and Treatment of Skin Diseases. The data came from the questionnaire about the living standard of disabled patients in 2004, the questionnaire about leprosy survivors in Hubei province in 2009, the survey forms of the rehabilitation demands of cured and active leprosy patients in the Hubei province. Using a statistical method to analyzing these data.

Results: There were 3441 leprosy cases who were confirmed to have leprosy in clinic from 1952-2012 in Wuhan, 596 cured patients were alive until now, it included 138 in-patients lived in leprosy villages, 458 were at home and 14 patients were currently receiving treatment. The incidence of leprosy was 8.493/1000,000,000. The prevalence rate in the peak time was 0.3049/1000 in 1960, and the leprosy incidence of 0.022/100000 and prevalence of 0.00188/1000 in the last five years; There were 295 cure patients had disability grade 1 or 2 among cure patients who were still alive with a rate of 49.5%; In 2001, leprosy rehabilitation program had been implemented, and 152 cure leprosy patients had been carried out leprosy rehabilitation operation with a rate of 52.2% among all cure patients. The multidrug treatment was put into effect since 1987. There were 295 patients who had received treatment. among them, 211 were multibacillary leprosy cases, 84 paucibacillary cases. At present, there were 281 cured patients, 3 relapsed and 4 cases with drug allergy, 2 patients with DDS hypersensitivity. Wuhan Medical Institution for leprosy control had been set up in 1952, it has 5 leprosy hospitals which were found from 1952 to 1971, one was in urban area, the others were in suburban areas with a total beds of 600. In 2009, the hospital in urban area was extended to 250 beds which hospitalized 138 cured patients come from the suburban hospitals. there were other 458 patients who received help and medical care at home provided by Institution of Leprosy Control. Before 2009, the government provided the living cost and medical care (public health services accounted for 25.83% of all cure patients and rural cooperative medical services accounted for 32.69% of all cure patients). Now all the cured patients had received the living cost and basic medical care from local government

Conclusion: It has reached to the leprosy elimination goal in Wuhan. The wards and medical conditiona in leprosy hospitals have been improved. All cured patients had received the living cost and basical medical care provided by the government

P-053

Presentation Time: Tuesday 17/09/2013 at 13:40 – 13:50
Abstract Topic Name: Leprosy Control – Urban and Special Populations
Presentation Screen Number: 5
Presenter: Dr Abraham Selvasakar

ROLE OF PRIVATE MEDICAL PRACTITIONER IN PROVIDING LEPROSY SERVICES IN AN URBAN METROPOLIS IN INDIA

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Introduction: Health service providers in the private sector contribute nearly 80% of medical services of the urban population. These Private Medical Practitioners (PMPs) can be classified into allopathic and Indian System of Medicine (ISM) ie. AYUSH (Ayurvedia Unani Siddha Homeopathy) apart from these there are numerous Registered Medical Practitioners, and traditional healers. These PMPs are often the first people a person in need of medical care consults. Especially among communities in urban slums who are socio-economically disadvantaged, these practitioners are usually not only the first but also the most frequently consulted medical practitioner. The accessibility and familiarity with the local people and low cost are probably the main factors contributing to this preference. In view of the facts cited above it was decided to assess these practitioners regarding their knowledge about the signs, symptoms and management of leprosy, and see if they could be approached to contribute more actively to the leprosy control programme in the selected area which has a considerably high case load.

Methods: All the (non allopathic) practitioners in the study area of North east district were identified and repeated visits were made by the team to their clinics to build rapport and gain their confidence. A predesigned questionnaire on basic knowledge on signs symptoms and management of leprosy was prepared and was filled by the PMPs who were agreeable to participate in the study. The answers to the questions were analysed to assess the knowledge regarding leprosy. There were also questions asking about their interest in participating in short orientation courses in leprosy to facilitate early detection by accurate diagnosis. Then booklet with basic leprosy information was distributed and a flow chart regarding diagnosis of leprosy was shown and explained. No post intervention questionnaire was filled as the practitioners were not willing to participate in that.

Results: The total number of PMPs identified in the North east district of Delhi was 427 which is endemic for leprosy; of which 157 are Allopathy, 182 are AYUSH and 88 are Registered Medical Practitioners respectively. Further for the initial knowledge assessment exercise on leprosy among PMPs was carried out restricting to only 2 wards (Dilshad Garden & Seemapuri). Total PMPs in 2 wards were 212 (100%); of which 106 (55%) were Allopathy and remaining 96 (45%) were of AYUSH practitioners. Out of 212 PMPs, 150 (71%) responded and remaining 62 (29%) failed to respond. A subsets of 70 (66%) of 106 Allopathy and 80 (83%) of 96 AYUSH practitioners were actually consented, shown interest and participated in answering the questionnaire. Among the 62 (29%) non responders of both categories were further analysed to determine the reason. Sixteen of them bluntly refused to fill the form, 30 were not available after repeated visits, and 16 returned the forms blank. Busy schedule is the main reason for failure to participate. The average score secured by Allopathy were 51% and AYUSH were 24% respectively.

Conclusion: The participation of private practitioners in early case detection activities is necessary for adequate coverage of the population as most people avail the services of private practitioners rather than visiting municipal clinics. There is plenty of opportunity under National Leprosy Eradication Programme to conduct 'Orientation-Training' among PMPs (AYUSH/RMP and allopathic practitioners) so that PMPs can play an effective role in suspecting cases and refer for confirmation.

P-055

Presentation Time: Tuesday 17/09/2013 at 13:50 – 14:00
Abstract Topic Name: Leprosy Control – Urban and Special Populations
Presentation Screen Number: 5
Presenter: Dr Abraham Selvasakar

USE OF A TOLL FREE NUMBER AS AN INNOVATIVE METHOD TO SPREAD AWARENESS REGARDING HANSEN'S DISEASE

P. Peter [1,*], S. Muthupillai [1], A. K. Tiwari [1], L. Gorai [1], S. Levi [1], S. Abraham [1]

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Introduction: The telecommunication Industry in India is very advanced and has grown over twenty times in the last 10 years, from under 37 million subscribers in 2001 to over 846 million 2011. Now India has the world's second-largest mobile phone user base with over 929.37 million users as of May 2012. Leprosy also is a major concern in India, so it follows that this new technology should be tried to spread awareness on different issues regarding leprosy. So the staff from The Leprosy Mission Hospital in the urban metropoilis of Delhi decided to try establishing a free "Leprosy Awareness Helpline" to raise awareness and provide an easy way to provide assistance to the general population who has questions regarding leprosy, without having to visit a health care centre. This is especially significant in India, where there are many misconceptions and stigma regarding Leprosy. Through the introduction of 'Toll Free Number' people can be informed regarding Leprosy without compromising with their anonymity and privacy.

Methods: For this initiative, first the local telecommunication authority, Mahanagar Telephone Nigam Limited (MTNL), Delhi, was approached, and a Toll Free Number was allotted to the Project. The number was then inaugurated by the State Leprosy Officer of Delhi. The number and its purpose was advertised all over the north east district of Delhi, through distribution of pamphlets, stickers on vehicles, display of slides in cinema halls before and at the interval during the show, announcement on mosque-loudspeaker, bulk texting to subscribers of mobile phones, distributing calendar-cards carrying information regarding Leprosy along with this Toll Free Number. The staffs that were to respond to calls on this number were already experienced in leprosy; they were given additional orientation on how to respond to queries.

Results: The results of this initiative are encouraging since the launch of this toll free service in December 2012. People are utilizing this facility by calling to ask about issues like self care, information regarding early signs of leprosy, MDT, ulcer management and the nearest health care facility which can help them to start their treatment. So far, in the month of January 2013, 14 people have used the help line.

Conclusion: The use of a Toll Free Number to educate and help people to recognize and deal with leprosy related problems can prove to be a useful tool in leprosy control efforts. The salient feature of this toll free services are: it improves accessibility (with respect to time, places, persons); ensures privacy; and affordable because it is free of service. It would certainly improve the program activities as well in the following means streamlining MDT supply, strengthening referral system, sharing information and communication etc.

P-375

Presentation Time: Tuesday 17/09/2013 at 12.30 – 12.40
Abstract Topic Name: Detection and Treatment of Reactions
Presentation Screen Number: 6
Presenter: Thaverit Sittiwakin

TYPE 1 LEPROSY REVERSAL REACTION TREATED WITH TOPICAL TACROLIMUS AS AN ADJUNCTIVE THERAPY.

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Introduction: Type 1 reversal reaction is characterized by the development of acute inflammation in skin lesions or nerve or both. Borderline leprosy is a strong risk factor for occurrence of type 1 reaction. Type1 reaction is delayed hypersensitivity reaction. It appears to be mediated via Th1 lymphocytes and cells from reactional lesions express the pro-inflammatory cytokines interferon gamma (IFN γ) interleukin 12 (IL-12). Immunohistochemistry shows greater tumor necrosis factors (TNF) staining in the skin and nerve during type 1 reaction. It is triggered by the interaction of CD4-positive T-helper lymphocytes with antigens released by *M.leprae*. It is postulated that lysis of mycobacteria as a result of anti-leprosy therapy causes the release of antigens that promote an immune response. Reversal reaction is associated with inflammation of skin lesions and nerves by interferon gamma and tumor necrosis factors resulting in edema and painful inflammation. Cytokine production by peripheral blood lymphocytes is also increased during reversal reaction. Corticosteroids are the drugs of choice for the treatment of type 1 reaction. Type 1 reaction is frequently recurrent and can lead to further nerve damage and side effects of corticosteroids. The patients with high cytokine responses are more likely to relapse after withdrawal of corticosteroid therapy.

Tacrolimus ointment has been used to treat a variety of imflammatory dermatoses. Tacrolimus binds to a specific cytoplasmic immunophilin (FKBP12). Tacrolimus inhibits calcium-dependent signal transduction pathways in T-cells, thereby preventing the transcription and synthesis of IL-2, IL-3, IL-4, IL-5 and other cytokines such as granulocyte-monocyte colony stimulating factor (GM-CSF), TNF α and IFN γ. Tacrolimus has also been shown to inhibit the release of inflammatory mediators from skin mast cells, basophils and eosinophils.

Methods: A case report of a 81 year-old Thai woman with Borderline Tuberculoid Leprosy and reversal reaction on right cheek without nerve involvement. She was treated with Rifampicin, Dapsone and was started on Prednisolone 30 mg/day. After tapering dose of Prednisolone, the reversal reaction flared up again. The patient was given a therapeutic trial with 0.1% topical Tacrolimus ointment twice a day application along with Prednisolone 30 mg/d.

Results: The result was an improvement of reversal reaction. The patient's condition was maintained by topical tacrolimus therapy and Prednisolone was tapered to zero over a period of 12 weeks without a flare-up of the reversal reaction.

Conclusion: Tacrolimus is an immunomodulatory and immunosuppressant agent that inhibits T-cell activation by blocking the action of calcineurin. This results in inhibition of the transcription of several cytokine genes which decrease in the production of interleukin IL-2, IL-3, IL-5, GM-CSF, TNF α and IFN γ. The inhibition of the transcription and release of cytokines can explain the beneficial effect of Tacrolimus ointment. Tacrolimus may be used along with corticosteroid to prevent recurrent of Type 1 reaction.
This is the report of the use of topical Tacrolimus as an adjunctive therapy in the treatment of Type 1 leprosy reversal reaction.

P-118

Presentation Time: Tuesday 17/09/2013 at 13:00 – 13:10
Abstract Topic Name: Leprosy and NTDs
Presentation Screen Number: 6
Presenter: Dr Isabela M. B. Goulart

PREVALENCE OF INFECTIOUS COMORBIDITIES IN DIAGNOSIS OF PATIENTS WITH LEPROSY

J. C. C. Soares [1, 2], E. C. Ribeiro [1, 2], C. C. Gonzaga [1, 2], I. M. Bernardes Goulart [1, 2, 3], M. A. Gonçalves [1], S. Araújo [2, 3,*]

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Introduction: Early identification of infectious comorbidities in patients with leprosy can prevent further adverse effects, both of multidrug therapy (MDT) and associated diseases, improving the quality of treatment and preventing it from occurring interactions between drugs used and the diseases.

Methods: To demonstrate the prevalence of infectious comorbidities in leprosy patients before treatment MDT, infected by HIV virus and Hepatitis B and C virus, to evaluate the quality of treatment of patients affected with not only leprosy, but with other diseases that can interfere with treatment. Also examine the effect of comorbidity in patients and what interferes during treatment.

Results: Inside the 792 patient charts reviewed, 59.17% (468) were male and 65.87% (521) were multibacillary (MB). Clinical forms, according to the classification of Ridley & Jopling: 16.67% (132) lepromatous-lepromatous (LL), 14.01% (111) borderline-lepromatous (BL), 16.28% (129) borderline-borderline (BB), 37.12% (294) borderline-tuberculoid (BT), 9.21 & (73) tuberculoid-tuberculoid (TT) and 1.51% (12) indeterminate (I). Of the 792 charts reviewed, 56 patients were considered to be included in the group risk or risk behavior and, therefore, performed the serology tests. Insiste this group risk, 8,92% (5/56) are positive HIV serology test, 16,07% (9/56) are positive for Hepatitis B and 8,92% (5/56) are positive for Hepatitis C. Inside the patients group positive to Hepatitis, 14,28% (2/14) show high results for alkaline phosphatasis (ALP). Furthermore, alanine transaminase (ALT) levels are high than normal in 14,28% (2/14) of the cases.

Conclusion: Since the MDT (especially rifampicin) and anti-reactive treatments can cause collateral effects that may be exacerbated with concomitant infections, serology to HIV, Hepatitis B and C virus is essential to demonstrate the prevalence of comorbidities in patients with leprosy. Use of rifampicin in patients with HIV is able to promote important pharmacological interactions with the hepatic s and intestinal system, as well as most antiretrovirals. This fact may decrease effectiveness and increase the risk of development of resistance of HIV regimen of antiretroviral drugs used, necessitating the use of alternative schemes without the presence of rifampicin. Further, there is a high risk of worsening of hepatitis in patients with comorbidity. This is partly because of rifampicin be a potentially hepatotoxic drug. Likewise, a certain percentage of patients on the drug have elevated liver enzymes between three and five times, also presenting increased levels of ALT and high levels of ALP, which indicates an impairment of liver function. Such damages associated with hepatitis, aggravates the situation of the individual. Thus, it is important to perform serology of patients to the appropriate treatment is deployed and reduce the risk of side effects and organ damage affected by infections.

P-119

Presentation Time: Tuesday 17/09/2013 at 13:10 – 13:20
Abstract Topic Name: Leprosy and NTDs
Presentation Screen Number: 6
Presenter: Dr Abraham Selvasekar

CO-INFECTION OF HANSEN'S DISEASE AND HIV: ANALYSING REPORTS OF AN INTEGRATED COUNSELLING AND TESTING CENTRE (ICTC) FUNCTIONING FROM AN ERSTWHILE LEPROSY REFERRAL HOSPITAL IN DELHI METROPOLIS.

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Introduction: Since 30yrs of HIV pandemic, neither an increased prevalence of HIV among leprosy cases nor severe progression of leprosy among HIV infected has been observed. Despite the fact that both leprosy and tuberculosis originates from same genus of *Mycobacterium* unlike later there in no strong association established yet between the former and the HIV infection. The National Capital Territory of Delhi being the fastest growing metropolis in the world with population of 17 million (2011 census) attracts huge migrant population practising high risk behaviour; seeking livelihood options from the nearby states such as Bihar, UP, Jharkhand etc, which are endemic for leprosy. TLM community hospital established in 1984; situated in the midst of densely populated urban slums of North East District of Delhi. It is a recognised Leprosy referral centre attracting huge number of general and dermatological cases. The Integrated Counselling and Testing Centre (ICTC) was established in 2010 as an 'add on service'. This was launched in collaboration with Delhi State AIDS Control Society (DSACS) under the private public partnership initiative of NACO (National AIDS control Organization).

Methods: The retrospective days between 2010 and 2012 from the ICTC is analysed. The total number of new patients visited the outpatient department during the period were 55,477(100%); the reasons for consultations found to be 4% for leprosy, 11% for general medical and 85% for skin aliments respectively. A subset of 1035 (2%) cases presented with either immunosuppressive finding and / or found practicing some form of high risk behaviours were subjected to HIV Testing. First the counsellor explained the steps involved about testing in a sequential order. The clients were first subjected to pre-test counselling. The blood sample was collected after obtaining consent. The results were disclosed to the client by the physician after post test counselling maintaining confidentiality. The clients those who are tested sero-positive were referred to ART centre attached to nearby teaching Institution. The partner/s and children of sero-reactive client's were encouraged to report voluntarily for testing.
Since Delhi is less endemic for HIV infection this ICTC unit is categorised under Strategy 2A as sentinel surveillance. Hence HIV sero-positivity is confirmed by performing two rapid tests either with different test principle involved or different antigens used. The interpretation of test was done as per the guidelines recommended by DSACS. This ICTC participates in External Quality Assurance Service program periodically showing a high concordance of reports of both positive and negative samples tested. The counsellor, lab technician, nurses and doctors are well trained by the DSACS.

Results: A Total of 1035 (2%) cases presented either with immune suppression and / or High Risk Behaviour over 3yrs (2010-12). Of which 28(3%) [18 males, 4 females & 4 transgenders] were tested positive for HIV. But only 1 woman was found to have concomitant Hansen's disease and HIV infection, also she was exhibiting with ENL reaction; thus proving that co-infection of HIV and HANSEN's diseases exist but uncommon.

Conclusion: Leprosy and HIV co-infection still continues to remain rarer, published only in the form of single cases / multiple cases reports. The finding suggests that there is no strong correlation exists between Leprosy and HIV infection; however it emphasizes the need for further study.

P-278

Presentation Time: Tuesday 17/09/2013 at 13:20 – 13:30
Abstract Topic Name: New Diagnostic Tools
Presentation Screen Number: 6
Presenter: Kidist Bobosha Aboma

IDENTIFICATION OF POTENTIAL ANTIGENS AND BIOMARKERS DETECTING M. LEPRAE EXPOSURE

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Introduction: Leprosy is still a challenging disease as the available diagnostic techniques and tools are not sufficient to detect disease at an early stage. The accessibility of whole genome sequence of *M. leprae* has provided new opportunities for leprosy diagnostic research and development.

Methods: Various *M. leprae* specific recombinant proteins and synthetic peptides have been tested for their immunogenicity at multiple endemic sites representing different genetic background via detection of multiple cytokines and chemokines in assays using peripheral blood mononuclear cells (PBMC) or whole blood from leprosy patients, house hold contacts (HHC) and endemic controls (EC).

Results: Some of the tested proteins including ML1601, ML2478 and ML0840 were highly immunogenic in leprosy patients although a considerable number of endemic controls (EC) also responded to these proteins. However, five ML1601 peptides induced higher IFN-γ responses in patients and HHC compared with EC. Two highly immunogenic ML1601 peptides and *M. leprae* virulence-associated peptides (derived from group IV.A and identified through advanced bioinformatics programs) were analyzed in EC from Ethiopian areas with relatively high and low leprosy endemicity. The results revealed that analytes other than IFN-γ such as, IP-10, MIP-1β, MCP-1, TNF-α, IL-1β and IL-6 were able to discriminate EC based on their level of *M. leprae* exposure.

Conclusion: Further longitudinal studies based on new biomarkers are warranted to assess the risk of developing leprosy among highly exposed individuals.

P-279

Presentation Time: Tuesday 17/09/2013 at 13:30 – 13:40
Abstract Topic Name: New Diagnostic Tools
Presentation Screen Number: 6
Presenter: Ms Yumiko Tsukamoto

EVALUATION OF MAJOR MEMBRANE PROTEIN-I FOR THE SERODIAGNOSIS OF LEPROSY

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Introduction: Serodiagnosis is a reasonable method to diagnose leprosy. Although phenolic glycolipid-I (PGL-I)-based serodiagnosis is currently accepted as the standard method to detect leprosy, it is not sensitive enough for detection of PB leprosy. Previous study has shown that major membrane protein-II (MMP-II), one of the most immunodominant antigens (Ags) from the membrane fraction of *M. leprae*, can be used as the target Ag for the serodiagnosis of leprosy. The detection rate of both PB and MB leprosy by MMP-II-based serodiagnosis is significantly higher than PGL-I. However, it is desirable to improve the sensitivity of the diagnostic tool. We focused on major membrane protein-I (MMP-I), another immunodominant Ag from the membrane fraction of *M. leprae*. In this study, we evaluated the usefulness of MMP-I in the detection of both PB and MB leprosy patients.

Methods: Sera were obtained from healthy volunteers (n = 78), PB (n = 78), and MB (n = 72) leprosy patients in Japan. ELISA plates were coated with recombinant MMP-I and/or MMP-II Ags, and anti-MMP-I antibody (Ab) titers and anti-MMP-II Ab titers in sample sera were measured by ELISA. The cut-off levels were calculated by a receiver operator characteristics (ROC) curve, and the detection rate of leprosy by the serodiagnosis was determined.

Results: (1) Serodiagnosis using MMP-I Ag alone
When serodiagnosis using MMP-I Ag alone was executed, the detection rate of MB leprosy was 86.1 %, and that of PB leprosy was 25.6 %. Those results were not significantly higher than the detection rate of MMP-II-based serodiagnosis.
(2) Serodiagnosis using the mixture of MMP-I and MMP-II Ags
When the mixture of MMP-I and MMP-II Ags were applied to the serodiagnosis, the detection rate of MB leprosy was 94.4 %, and that of PB leprosy was 39.7 %. The sensitivity of the serodiagnosis was significantly higher than that using MMP-II Ag alone for MB leprosy, but not for PB leprosy.
(3) Serodiagnosis of MMP-II-negative PB leprosy patients using MMP-I Ag
There was little correlation between the Ab titers against MMP-I and MMP-II in the population of leprosy patients. We observed 21.7 % of MMP-II-negative PB leprosy patients (n = 46) had positive anti-MMP-I antibody titers. When MMP-II-based serodiagnosis was followed by MMP-I-based analysis, we found that 53.8 % of PB leprosy patients (n = 78) were Ab positive.

Conclusion: From those observations we concluded that serodiagnosis using MMP-I Ag may complement MMP-II-based serodiagnosis, and using MMP-I Ag may improve the serodiagnosis of leprosy.

P-280

Presentation Time: Tuesday 17/09/2013 at 13:40 – 13:50
Abstract Topic Name: New Diagnostic Tools
Presentation Screen Number: 6
Presenter: Eliane Silva

EVALUATION AND MONITORING OF HOUSEHOLD CONTACTS OF LEPROSY PATIENTS: CLINICAL EXAMINATION, INTRADERMAL MITSUDA REACTION, SEROLOGY FOR DETECTION OF ANTI-PGL-1 ANTIBODIES AND MULTI-EPITOPES OF RECOMBINANT MYCOBACTERIUM LEPRAE PROTEINS

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Introduction: Leprosy remains a public health problem in some countries and the elimination strategy is based on community awareness, early detection of the disease and the effectiveness of multidrugtherapy treatment, which alone does not eliminate the transmission of leprosy in the household environment. In this context, serological tests have been developed aiming at early diagnosis of the disease. This study will allow estimating the new case leprosy detection rate among household contacts in the municipality of Rondonópolis MT, Brazil, by evaluation of at least four household contacts per patient diagnosed, in a five year follow-up period, starting at the time of diagnosis of the index case.

Methods: In a previous cohort study between 2009 and 2010, dermato-neurological examination, intradermal Mitsuda's reaction and serology for anti-PGL1 were carried out in all contacts of patients with confirmed diagnosis of leprosy. In the present prospective study, the same contacts will be reevaluated twice, in 2012-13, and then two years later (2014-15), completing five years of monitoring. Each evaluation will consist of clinical examination and blood sampling to obtain serum to be used for serological tests. If any of the contacts presents clinical signs or symptoms of leprosy, they will be subjected to confirmatory laboratory tests (skin smear and biopsy of skin lesion).

Results: Between 2009 and 2010 serology anti PGL1 was carried out in 449 contacts, among then 48 were contacts of indeterminate patients, 99 of tuberculoid (TT), 153 of borderline-tuberculoid (BT), 75 of borderline-borderline (BB), 50 of borderline-lepromatous (BL) and 24 of lepromatous (LL). There were 23 (5,12%) seropositive contacts, and leprosy diagnosis was confirmed in 03 (13,04%) individuals (01 BT and 02 LL). Among PGL-1 negative individuals 09 (2,11%) had the disease. The reevaluation of the household contacts was initiated in 2012, and during this period four previously PGL-1 negative individuals were currently diagnosed as new leprosy cases. Therefore, until now 16/449 (3,56%) cases were diagnosed with leprosy amongst contacts, being four of them diagnosed during reevaluation. The anti recombinant protein test is being standardized. As for the Mitsuda's test, so far 357 individuals were evaluated, 81 were Mitsuda negative, constituting a group at risk of developing multibacillary disease, and therefore, they should be closely monitored.

Conclusion: This diagnostic interventional study will contribute to identify individuals at greater or lesser risk of developing leprosy within an endemic area of Brazil, besides enabling early diagnosis of the disease.

P-281

Presentation Time: Tuesday 17/09/2013 at 13:50 – 14:00
Abstract Topic Name: New Diagnostic Tools
Presentation Screen Number: 6
Presenter: Alsa Rada

CHILD HANSEN`S DISEASE IN VENEZUELA

E. M. Rada [1,*], M. Contreras [2], M. S. Duthie [3], N. Aranzazu [2], R. Borges [4], J. Convit [5]

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Introduction: Hansen's disease in children allows us to better understand the natural history of the disease, its incubation period, and the contagion source.

Methods: A descriptive, retrospective study analyzing 101 Hansen`s disease (PB/MB) patients under 15 years of age registered during the 1980-2010 period.

Results: 49.5% were females and 50.5% males; mean age was 10.24 ± 3.12 years. The most frequent initial lesions were macules (38.61%), followed by plaques (13.86%); most lesions occurred in exposed zones with predilection for upper limbs (22.68%), lower limbs (18.56%), and face (18.49%). BTL was the predominant clinical form. The mean clinical-histopathologic concordance degree was 65.98%, and it was over 70% in the IL (88.9%), BTL (80.0%) and BLL (70.6%) forms. Determination of the Bacillary Index (BI) showed that 39.0% of Lepromatous forms had BIs higher than 1+ while 37.9% of the tuberculoid forms had BIs lower than 1+. Type 1 reactional phenomena occurred only in Borderline patients, while Type 2 occurred in MB forms. Only 50 children had a history of Hansen's disease within household contacts; there was a predominance of LL (50.0%) in the 27 cases where the index case clinical form was reported. The BL and LL clinical forms had higher PGL-I positivity, Mitsuda Test positivity was higher in BTL, TTL and IL, and PPD and soluble antigen positivity was higher in BTL and TTL. Reactivity towards ML0405, ML2331 recombinant proteins and LID-1 fusion protein was evaluated in 30 sera. The mean absorbance values of sera from MB patients with BI 4+ or higher (66.7%) were 0.528 ± 0.44, 0.590 ± 0.5, and 0.540 ± 0.500, respectively. In the clinical forms with BI ≤1+, values were under 0.2, showing a highly significant difference between these presentations (p=0.00035).

Conclusion: The characterization of clinical, epidemiologic, bacteriologic, histopathologic and immunologic parameters of children with Hansen's disease facilitates the establishment of identification criteria for this type of pathology in Venezuela, helping to an early diagnosis and minimizing active transmission.

P-126

Presentation Time: Tuesday 17/09/2013 at 12:30 – 12:40
Abstract Topic Name: History of Leprosy
Presentation Screen Number: 7
Presenter: Prof Charlotte Roberts

MYTHS ABOUT LEPROSY: RESULTS OF A SURVEY OF PERCEPTIONS ABOUT THE INFECTION

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Introduction: In writing a book about leprosy past and present, the author increasingly became aware, anecdotally, of the dearth of knowledge about leprosy in a wide range of people from academics to the public. This presentation summarises the results of a survey that was undertaken to establish knowledge of leprosy, from its clinical aspects to its history, the hypothesis being that the majority of people are not familiar with this infectious disease.

Methods: A questionnaire was developed with 10 questions about leprosy: what is it, what pathological organism causes it, what part of the world is it most seen today, how does a person 'catch' leprosy, what predisposes people to contracting it, is leprosy described in the Bible, what parts of the body are affected, do the fingers and toes 'drop off', can leprosy be cured today, and how were people with leprosy in the past 'treated'. Additionally, up to five keywords were requested from participants that to them described the word 'leper'. A range of groups in the UK were targeted, including museum visitors, new students (on entry) taking masters courses in Museum Studies and in Palaeopathology, 1st year undergraduates (on entry) taking a BA Archaeology, and various groups made up of the public. The aim was to select groups who had not been exposed to knowledge of the past and present of leprosy.

Results: Over 200 questionnaires were completed. The lack of knowledge about leprosy was very apparent and did not vary between the groups. Most notable were incorrect answers for the causative pathological organism, the method of transmission, predisposing factors, its description in the Bible, and how they were treated. Keywords for 'leper' were wide ranging but could be described as depressing, and negative.

Conclusion: The data collected and analysed suggest that people's perceptions of leprosy are generally misinformed and need to be changed, both through action on the part of those working with leprosy and those with leprosy, and also medical historians and bioarchaeologists. It is further concluded that it is likely that media perceptions of leprosy via TV, radio, newspapers, and film are a major contributory factor to this situation, and also authors of popular fiction. Once perceptions start to be changed, it is likely that funding for research and donations to leprosy charities may increase.

P-128

Presentation Time: Tuesday 17/09/2013 at 12:40 – 12:50
Abstract Topic Name: History of Leprosy
Presentation Screen Number: 7
Presenter: Dr Jose Terencio de las Aguas

LEPROSY IN ARS HISTORY OF LEPROSY

J. Terencio De Las Aguas [1,*]

[1]Jose Terencio de las Aguas, DENIA, Spain

Introduction: Since long time ago, Leprosy has appeared in paintings, draws and sculptures, not being very much conserved and maintained in the ancient times, such as the « Alexandria's Facies», Leprosy´s king of Camboya and some Palestine's ceramic, but in the Middle Ages there are many inspired in the Old and New Testament and it was considered a divine punishment, Jesus miracles, appearing lepers wearing an ample hat with a dark frock, mutilations, beggars

with a rattle in his hand to announce their presence to healthy population, and being obliged to be kept in Leprosy colonies.
From that time, there are several art works in Germany, Holland, France and Italy where scenes with sick persons next to Jesus were very frequent, Saint Lazaro, Fray Antonio, Elizabeth from Hungary, painted by the most popular artists such as; Jeronimo Bosch, Vicent de Beauvioi, Durero, Rembrandt, Raphael, Van Horley, Deutsch, Holbein the Old, BoticelliBreughl and more...

Methods: Also, in America Saint Pedro Claver´s sculpture in Cartagena de Indias, a picture in Cayena and in Rio de Janeiro in a stained-glass window of Fray Antonio´s Hospital and the father Damien sculpture in the colony of santa Isabel of Brazil.
In the XIX century stands out father's Damien sculpture in Homnolulu, Washingtoncapitol and also in Belgiumlocated in Lovaina and Tremelo.
In Spain, the Pamplonás cathedral steeples, Saint Lazaro´s sculpture in Betanzos and the pictures of the Valencia and Barcelona´s museums and the Ferris Priest and San Francisco de Borja in Fontilles.
The art throughout centuries, has helped to spread the medieval concept of Leprosy.

Results: The art throughout centuries, has helped to spread the medieval concept of Leprosy.

Conclusion: That's why I encourage the artist to be away from the biblical concept of Leprosy and insist on the low contagion and the cure without later effects and the clear decrease of the pathology, stimulating the social reinstatement which will contribute to, in a not very distant future, to win the battle against Leprosy to obtain a world without it.
That's why I encourage the artist to be away from the biblical concept of Leprosy and insist on the low contagion and the cure without later effects and the clear decrease of the pathology, stimulating the social reinstatement which will contribute to, in a not very distant future, to win the battle against Leprosy to obtain a world without it.

P-130

Presentation Time: **Tuesday 17/09/2013 at 12:50 – 13:00**
Abstract Topic Name: **History of Leprosy**
Presentation Screen Number: **7**
Presenter: Richard Nisbett

LEPROSY IN LIBERIA: A BRIEF HISTORICAL REVIEW OF PREVALENCE AND DISTRIBUTION, WITH A SURVEILLANCE UPDATE

R. A. Nisbett [1,*]

[1]Division of Research and Sponsored Programs, WVS Tubman University, Harper City, Liberia

Introduction: Systematic clinical studies of leprosy began in the 1930s. In this paper, I review the archived data and interpolate current surveillance data in an attempt to explore the prevalence and distribution in Liberia.

Methods: This investigation is a desk study which analyses journal articles, archived records extant after the 14-year Liberian Civil War, and current surveillance data.

Results: Historically, leprosy appears to have occurred at higher prevelance in earlier decades as the data from the 1930s, 1940s and 1950s suggest a higher prevalence than the present. Current surveillance data record 585 cases in 2012, with the vast majority being among adults and slightly more multibacillary cases than paucibacillary cases. While the distribution is assumed to be countrywide, both historically and presently, the preponderance of the cases have occurred in the interior, or hinterland, counties rather than the coastal counties where population density has always been much higher. The northeastern, eastern and southeastern counties have the highest number of cases. In 2012, 157 cases of multibacillary leprosy were detected and 151 cases of paucibacillary leprosy detected.

Conclusion: The distribution patterns reflected in the historical and present data are remarkable consistent with regard to distribution. Both historically and in recent years the bulk of the cases have come from Nimba County along the border with with Guinea and Cote d'Ivoire. This observation may be an artifact due to case finding or relatively more active versus relatively more passive surveillance. However, the prevalence is considerably less in recent decades. The national leprosy control program has been vigilant and effective in case detection and the administration of multidrug therapy (MDT) using blister packs.

P-131

Presentation Time: **Tuesday 17/09/2013 at 13:00 – 13:10**
Abstract Topic Name: **History of Leprosy**
Presentation Screen Number: **7**
Presenter: Fàtima Moll Cervera

ROLE OF THE SANATORIUM OF FONTILLES FROM ITS INAUGURATION IN 1909 UP TO THE USE OF THE FIRST EFFECTIVE DRUG AGAINST LEPROSY (PROMIN, 1945)

F. Moll Cervera [1,*], J. R. Gómez [1], P. Torres [1]

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Introduction: Leprosy was endemic on the Spanish Mediterranean coast at the end of the XIX century and the need of a leprosy sanatorium to attend the individuals affected was proposed and accepted.
During its first years, the majority of the patients attended at the sanatorium were from the surrounding villages where the socio-economic conditions were poor. Since at the time there was no effective treatment for the disease the presence of the lesions and deformity of the patients provoked stigma and their social exclusion.
The epidemiological characteristics, clinical and social conditions of the patients, how living in the sanatorium improved their health and living standards and causes of death are described.

Methods: 1246 medical files of patients attended between 1909 and 1945 at the Sanatorium have been reviewed. Several parameters have been evaluated: origin, gender, profession, clinical type of disease, illiteracy, cause of death.

Results: Only 853/ 1246 of the medical files described the clinical type of the disease which was in 96% of the cases MB. 65.65% of the patients admitted were men and 62.36% where from the Community of Valencia where the sanatorium is located.
388 cases include the age the first symptoms of the disease were detected: 39 patients at 10 years old; 11-20 years, 126 patients; 21-30 years, 110 patients, 41 -50 years, 22 patients; 51-60 years, 19 patients; 61-70, 9 patients and over 71 years, 2 cases.
The main cause of death was kidney failure due to the clinical complications of the leprosy reactions. The patients were from rural settings and presented a high rate of illiteracy.

Conclusion: Improving the living conditions of individuals affected by a contagious disease with no effective treatment is essential to improve their quality of life.

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Presentation Time: **Tuesday 17/09/2013 at 13:10 – 13:20**
Abstract Topic Name: **History of Leprosy**
Presentation Screen Number: **7**
Presenter: Fàtima Moll Cervera

CONTROL OF LEPROSY IN THE VILLAGES SURROUNDING THE SANATORIUM OF FONTILLES WITH NO EFFECTIVE TREATMENT AVAILABLE.

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Introduction: The geographic area surrounding the Sanatorium of Fontilles at the end of the XIX century was very endemic for leprosy. The patients with no effective treatment available presented persistent and continuous deformities which provoked their social exclusion and forced them to rely on charity for a living.
Since the Public Health Institutions were not presenting any initiatives to solve the problem, two benefactors Father Ferris and Joaquin Ballester decided to intervene and built a leprosy sanatorium with the aim of improving the living conditions of the patients.
The isolation of the individuals affected in the pre sulphone era, contributed to the reduction of the local endemic situation.

Methods: The medical files of all patients accepted at the sanatorium between 1909-1939 were reviewed and the origin of the patients taken into account. The number of cases accepted as residents in the sanatorium decreased in the area surrounding the sanatorium during the following years after isolation had been introduced.

Results: Of the total of 1042 patients accepted since 1909 to 1939, 245 clinical histories of the patients from the districts of Marina Alta and Marina Baja, both territories near the location of the sanatorium, are evaluated.
With this study, we can see how the cases hospitalized in the Sanatorium coming from the villages in Marina Alta, where the Sanatorium is located, were getting down (96, 64 and 28 cases) throughout the three decades. In case of the district of Marina Baja, a little farther from Fontilles, there were a smaller numeber of cases hospitalized during the first decade, as the sanatorium was not having sufficient space (5 cases in 11 years). The isolation of the cases of these villages during the second decade of existence of the Sanatorium (36 cases), had his influence in the decrease of cases in these villages, as it can be confirmed with the number of new cases accepted in the Sanatorium during the third decade of our study (16 cases).

Conclusion: The isolation of patients affected by a contagious condition with no effective treatment available improved the control of the disease in a very endemic area.

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Presentation Time: **Tuesday 17/09/2013 at 13:20 – 13:30**
Abstract Topic Name: **History of Leprosy**
Presentation Screen Number: **7**
Presenter: Dr Annamma John

ORGANIZATIONAL RELEVANCE THROUGH RESPONSIVENESS TO THE CHANGING NEEDS OF PEOPLE AFFECTED BY LEPROSY - 138 YEARS OF THE LEPROSY MISSION IN INDIA

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Introduction: This paper documents through words and pictures how TLM has evolved over 138 years responding to the changing needs of those affected by leprosy.

Methods: This paper was prepared by searching for material and photographs in the archives at different Leprosy Mission Centres

Results: Many Leper Homes were started by European and American missionaries who took in those outcast because of leprosy and gave them shelter. In time these Homes were handed over to the then "Mission to Lepers" now, The Leprosy Mission.
Here people with leprosy had hope for the first time as treatment with Chaulmoogra oil became widespread. In the 1950s Dapsone began to be widely used and TLM hospitals started providing tertiary care. When MDT replaced DDS monotherapy the emphasis on Prevention of Disability started in 1990. And 2000 ushered in the post elimination phase of leprosy.
Schools and hostels started primarily to cater to children of inmates of the Homes during the early 1900s.They were often denied education in their home towns because of stigma. TLM had 5 schools at Champa, Faizabad, Purulia, Vadathorasalur and Kothara. As MDT became available and schools started accepting leprosy affected children, TLM schools were no longer relevant and were closed.
TLM Leprosy Control work was started in the 1960s and the work increased as programmes reached people in their own homes through the Survey Education and Treatment programmes. TLM was one of the earliest partners of the Government in the NLEP and contributed greatly to bringing down the leprosy prevalence in India.
To meet the need of sustainable livelihood for leprosy affected and disabled youth, TLM started its Vocational Training Centres (VTCs) in 1980. They have been instrumental in imparting vocational education to ensure that marginalised youth have increased employment opportunities.
As the medical issues of leprosy were being at least partially addressed the need for Community Based Rehabilitation was recognised and TLM started its CBR programme with the objective of rehabilitating physically and socially handicapped leprosy patients.
Since the integration of Leprosy with General Health Care, the need to provide technical support to leprosy programme and establish sustainable quality leprosy services in the government general health care system was felt. TLMTI, along with other ILEP partners volunteered to provide technical support to NLEP activities in various states of India.
To meet the need for continuing leprosy expertise TLM started 5 training units at Dayapuram, Miraj, Purulia, Salur and Naini which trained many batches of government and NGO doctors and paramedical staff.
Research as a way of solving problems to improve the quality of Life for people affected by Leprosy is part of TLM's work. TLM is currently involved in clinical trials, social science research to overcome stigma and epidemiological and laboratory research.
Advocacy, which is now recognised as the way forward to fight stigma and discrimination is part of leprosy missions agenda through various projects and empowering people to stand up for their rights.

Conclusion: Today TLMTI is the largest NGO in the country working in the field of leprosy touching the lives of people affected by leprosy through Health care, Community development, sustainable livelihoods, Public health, Research, training and Advocacy, still responsive and therefore still relevant to the changing needs of leprosy affected through a holistic approach.

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Presentation Time: **Tuesday 17/09/2013 at 13:30 – 13:40**
Abstract Topic Name: **History of Leprosy**
Presentation Screen Number: **7**
Presenter: Vitor Matos

SOME REFLECTIONS CONSIDERING THE PALEOPATHOLOGICAL DIAGNOSIS OF LEPROMATOUS AND TUBERCULOID LEPROSY ON HUMAN SKELETAL REMAINS

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Introduction: Historical sources reveal that leprosy was a common and widespread disease during medieval times in Europe. However, there is a scarcity of archeological human skeletal remains presenting evidence of this disease. Additionally, since the pioneer works of the Danish medical doctor V. Møller-Christensen, between the 1940's and 1970's, the paleopathological diagnostic criteria of leprosy are confined to the lepromatous cases. Thus, additional investigation is necessary concerning the viability of the distinction between lepromatous (LL) and tuberculoid (LT) leprosy in past human skeletons. The present research aimed to contribute to the debate gravitating around the retrospective diagnosis of leprosy based on the correlation of both clinical and paleopathological data.

Methods: Two samples were analyzed: (a) 300 clinical files, 150 from each type of leprosy – LL and LT – and 150 from each sex, collected from the medical archives of the leprosarium Hospital-Colónia Rovisco Pais (HCRP), Tocha, Portugal, from patients screened between 1947 and 1985, and presenting age ranges from 4 to 93 years old; (b) 191 skeletons, 148 adults and 43 non adults, from both sexes, exhumed from the medieval leprosarium (13th-16th/17th centuries) of St. Jørgen's, Odense, Denmark.

Results: The main results from the HCRP archives, revealed nasal destruction in 1.7% (5/295) and bone destruction of hand and feet bones in 10.4% (31/299) and 3.4% (10/296) respectively. The overall prevalence of osseous lesions was 13.0% (39/300) and the odds of developing bone changes in LT patients was 6.8 times higher (OR=6.77; IC95%=2.60-18.67) when compared with LL cases. In the Odense sample rhinomaxillary bony changes were found in 72.8% (139/191) of the skeletons. The appendicular destructive lesions compatible with leprosy were recorded in the hand bones of 6.9% (11/159) of the individuals, whereas a higher percentage (26.1% [35/134]) exhibited feet lesions. The minimum prevalence of leprosy was 32.5% (62/191), applying the criteria proposed by Andersen and Manchester (1992) and Ortner (2003), and 42.9% (82/191) was the maximum prevalence when the criteria established by Møller-Christensen (1967) were used. The paleopathological identification of LT is discussed, as well as the corresponding differential diagnosis, considering ten skeletons presenting lesions on the hand and foot bones combined with the absence of rhinomaxillary changes.

Conclusion: After a cautious and exhaustive exercise of differential diagnosis, the paleopathological identification of LT should be considered when an adult skeleton without rhinomaxillary lesions presents acroosteolysis and destructive remodeling of hand and/or feet bones. Further investigations are necessary concerning the retrospective diagnosis of leprosy based on archaeological human remains. This will bring new challenges to the understanding of leprosy evolution and history.

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Presentation Time: **Tuesday 17/09/2013 at 13:40 – 13:50**
Abstract Topic Name: **History of Leprosy**
Presentation Screen Number: **7**
Presenter: Dr Richard De Soldenhoff

THE JOURNEY OF A MEDIEVAL EPIDEMIC IN BRITAIN

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Introduction: This paper describes the history of the origins of leprosy, especially its arrival, rise and fall in Britain, with special reference to Scotland. Despite its eradication from the UK (except for sporadic imported cases), the disease is still found throughout the developing world and remains a problem.

Methods: In addition to an internet search, a search was made in several libraries, including that of the Royal College of Physicians of Edinburgh, The Royal Commission on the Ancient and Historical Monuments of Scotland and the City of Edinburgh Central Library. A field visit was made to the medieval hospital site at Soutra Hill, the Calton Hill area and to see leprosy related murals in churches in Turkey, Spain and Ethiopia.

Results: These are presented in the Conclusions.

Conclusion: Leprosy affected all of Europe in the Middle Ages. It was recognized in the ancient civilizations of Egypt, India and China. The earliest evidence of leprosy in Europe comes from Greece, brought by soldiers returning from India about 327 BC. The first leprosy institution appears to have been founded in Rome in the 4th Century AD. It has commonly been thought that returning Crusaders brought leprosy to Britain. Certainly, after the first crusade, there was an increase in almshouses and hospices for leprosy patients, endowed by royalty and the aristocracy. London's first leprosy house was founded in Holborn in 1118 by Queen Matilda, an expatriate Scot and the highly devout wife of King Henry I. In Scotland, leprosy houses also proliferated between the 12th and 14th centuries. Robert the Bruce, whose skull possibly supports a diagnosis of leprosy, endowed a foundation for leprosy before 1329. Aldenestun in Lauderdale was possibly the first Scottish leprosy house, founded before 1177. Details about Edinburgh leprosy houses are sparse. It is likely that the Augustinian friary complex at Soutra, founded in 1164 by Malcolm IV, treated leprosy patients. Leprosy was declining in England by 1350 when many English lazar houses were reporting no leprosy patients, and the last autochthonous case in Britain was a young Shetland Islander, John Berns, who died in Edinburgh in 1798. The mid and late medieval period is associated with war, famine, disease, especially repeated epidemics of plague, in particular the Black Death of 1350. Throughout Europe 30-60% of the population was killed; those with other

ailments were particularly at risk but also subject to further persecution. This general decline in leprosy may also have been contributed to by the cross-immunity associated with the increase in a similar infection, tuberculosis. In Bergen in 1839 Danielssen concluded that leprosy was an inherited metabolic disorder and he and Boeck produced the first atlas on leprosy in 1847. Dr. G. H. Armauer Hansen demonstrated rod-shaped bodies in unstained preparations from the nodules of leprosy patients in 1873. With the help of Albert Neisser, reliable staining was established in 1879 and the modern study of leprosy began. Over the next 70 years an increasing amount of attention was paid to the search for effective treatment. The first was Promin in 1941 and by the early 1950s, Dapsone was in use throughout the world. This was followed by combined chemotherapy, using 2 fixed duration treatment regimens from 1982. For the first time, there was some hope that this awful disease could be vanquished. There are, however many challenges which still face us in the long battle against leprosy – a battle which will undoubtedly continue for many decades to come.

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Presentation Time: **Tuesday 17/09/2013 at 13:50 – 14:00**
Abstract Topic Name: **History of Leprosy**
Presentation Screen Number: **7**
Presenter: Mr Michaelsamy Rajenderen

MILESTONES IN LEPROSY

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Introduction: First historical evidence of leprosy dates its origin back in New Testament and in Old Testament Bible, until the end of 1873 the origin of the disease was not fully known. Several names for leprosy like **Kushta, Mafung, Rabio, Prokasa** indicates that this disease is predominantly of skin. G.Armour Hansen discovered the causative germ *mycobacterium leprae* but the successful multiplication of *m.leprae* outside the human body was achieved only 85 years after the discovery of *m.leprae* (Sheppard, 1960). For many decades Chaulmoogra oil was the only choice for treatment of the disease.

Methods: Leprosy was seen in Norway for many years. Due to improved life style leprosy was eradicated in many European Countries. Practice of compulsory isolation of the leprosy affected person was in use for several decades upon introduction of Dapsone monotherapy the chemotherapeutic approach was started by Lowe in1947 in Nigeria. Monotherapy was found to be resistant in many leprosy patients, hence WHO organized a working group on the chemotherapy of leprosy in 1950. Introduction of multi drug therapy has galvanized the treatment methods and the global prevalence of leprosy situation has gone down drastically by 2001.With the passage of time, Dr.Brennan introduced new approaches using molecular biology as tool led to the mapping of the *m.leprae* genome. Prevention of disabilities and reconstructive surgery for deformity leprosy patient was initiated by WHO by Dr. Paul Brand. Today the leprosy is not common in several endemic countries but the incidence of disease is still worrying (Vijayaraghavan, 2005). Klaster states that universal travel has increased in recent years can be correlated with the new case detection.Dr.NJ Diana Lockwood pointed out that new cases with relapse and reaction in leprosy continue to appear.

Results: Knowledge of the history of leprosy since 1873 and the developments will enlighten us to provide insight to in depth research. So that we can develop novel new molecules for new therapeutic approaches. Hence we should strongly recommend the initiating global archives for leprosy.

Conclusion: The detailed scientific discoveries, inventions and events in leprosy from 1873 to till date will be presented and discussed.

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Presentation Time: **Tuesday 17/09/2013 at 12:30 – 12:40**
Abstract Topic Name: **Microbiology**
Presentation Screen Number: **8**
Presenter: Dr Mikhail Yushin

AN ATTEMPT TO CULTIVATE MYCOBACTERIA ISOLATED FROM LEPROSY LESIONS ON MINIMAL NUTRIENT MEDIA

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Introduction: Cultivation of *M.leprae* is a difficult task remaining unsolved hitherto. Considering leprosy as a saprozoonosis and, hence, not excluding the possibility of existence of leprosy mycobacteria in the environment, in particular in soil, we proposed minimal nutrient media for cultivation of *M.leprae*.
The aim of the present work was to carry out a comparative study of the growth of *M.leprae* isolated from leprosy lesions cultivated on known nutrient media and media developed by the authors.

Methods: *M.leprae* isolated directly from infected tissues of leprosy patient (2 specimens) and from foot pads of CBA mice infected by Shepard (1960) with *M.leprae* (1·10 passages) originally isolated from leprosy patients (10 specimens) served as the material for investigation. Thus, 12 strains of *M.leprae* from 7 patients with leprosy were used.

Results: Isolated strains of mycobacteria possessed of the following properties. The growth on nutrient media visualized at the terms from 2 weeks up to 2·3 months and more after their incubation at 30°C. The growth of different strains on liquid media was detected in the form of sediment. In the same terms on solid nutrient medium the growth appeared as finest non-pigmented colonies of R-form. Some of them turned pinky-brown as turning old (approximately after 6·8 months without passage). Three out of isolated strains being repeatedly passed gave the growth of pigmented colonies of R-form on Lowenstein-Jensen medium, the remaining went on growing on the authors' media only. In smears stained by Ziehl-Neelsen acid-fast short rods and granules were discovered. Auramin and rodamin staining gave characteristic fluorescence in U-V-rays.

Conclusion: Thus, nutrient media proposed by us permit to attain multiplication of mycobacteria when material taken from infected tissues of leprosy patients and animals with experimental leprosy infection was sown on nutrient media, with high harvests.

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Presentation Time: **Tuesday 17/09/2013 at 12:40 – 12:50**
Abstract Topic Name: **Microbiology**
Presentation Screen Number: **8**
Presenter: Aparna Srikantam

MOLECULAR TESTING FOR DRUG RESISTANCE ON SLIT SKIN SAMPLES OF NEW LEPROSY PATIENTS-A COMMUNITY BASED STUDY FROM ODISHA, INDIA

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Introduction: During the year 2011-12, about 8000 leprosy cases were registered in the state of Odisha, India (NLEP data). Though the state has achieved almost elimination status, it is surprising to note that Odisha has recorded increased number of new cases in 2011-2012 than the previous year, contrary to the national picture of decreased ANCDR. This occurrence of new cases indicates an ongoing transmission, possibly from the existing relapses and/or poorly responding cases, which justifies for drug resistance surveillance studies. Although there is not much evidence available for wide presence of primary drug resistance in leprosy, it is essential to know such information in regions like Odisha, with increased incidence of new cases. With this background present study proposes to record the clinical profile of new leprosy cases and occurrence of *M. leprae* drug resistance. Patients were enrolled at field clinics of LEPRA India-Odisha, specimens were transported and tested at Blue Peter Public Health and Research Center, Andhra Pradesh, the referral laboratory with molecular testing facility, located more than 1000 km away from the field.

Methods: The study is a prospective cohort study which included newly diagnosed leprosy patients(n=79) registered for treatment, under three PHCs each of Sonepur and Koraput districts of Odisha, India, between June and December, 2012. Annualised new case detection rate (ANCDR)/100000 for 2011-12, was 68 in Sonepur and 32 in Koraput, which is quiet high as compared to the national (10) and state average (20). All the patients were enrolled using a standard study proforma to record demographic and clinical information. Slit skin samples were collected for all the cases and subjected for smear microscopy and PCR-sequencing for mutations in *folP* (dapsone), *rpoB* (rifampicin) and *gyrA* (oflaxocin) genes of *M.leprae*.

Results: A total of 79 patients are registered for treatment. Out of 79, 47 (59%) were male and 32(41%) were female. Six percent of the 79 cases were children less than 14yrs; 48 (60%) patients presented with multibacillary leprosy. 25 (58%) MB cases were positive for BI ranging from 1+ to 5+ and MI ranging from 0.5-3%. Fifteen percent of the total cases presented with reactions (11% T1R and 4% T2R). Deformities were present in 24% (G1, 14%; G2, 10%) of the 79 new leprosy patients. Fifty Out of 79 specimens completed PCR for all the three genes; sequencing completed for 5 specimens so far (at the time of abstract submission), none of which showed mutations in any of the drugs tested. PCR and Sequencing of rest of the specimens is in progress.

Conclusion: The study covered one of the tribal and rural communities in India with a very high ANCDR. More than half of the cases presented with multibacillary leprosy. Molecular testing could be carried out by utilizing the existing facility of community and laboratory referral network. No drug resistance observed among the new leprosy patients studied till date.

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Presentation Time: Tuesday 17/09/2013 at 12:50 – 13:00
Abstract Topic Name: Microbiology
Presentation Screen Number: 8
Presenter: Flavio Lara

ANALYSIS OF PERSISTENCE OF MYCOBACTERIUM LEPRAE IN AMBLYOMMA CAJENNENSE AND RHODNIUS PROLIXUS AFTER INFECTION BY ARTIFICIAL FEEDING

J. S. Ferreira [1], A. S. Neumann [1], C. C. D. Uzedo [2], C. P. Rangel [2], M. C. V. Pessolani [1], J. R. D. S. Mallet [3], P. S. Rosa [4], A. P. F. T. Garlet [4], C. F. D. P. D. C. Britto [3], P. L. Oliveira [5], A. H. D. Fonseca [2], M. O. Moraes [1], F. A. Lara [1,*]

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Introduction: Currently is believed that the only source of leprosy infection are untreated patients. Brazil has the most unfavorable situation in America, since the incidence rate of the disease in Brazil is still considered high. However, the epidemiology of leprosy remains with numerous questions, and several studies have suggested the existence of other epidemiological factors involved in the spread of the disease, including the ingestion of contaminated water and transmission by vectors. This study aimed to analyze by real-time PCR the persistence of *M. leprae* in the digestive tract of two tropical vectors, the tick *Amblyomma cajennense* and the *triatomine Rhodnius prolixus*, in order to assess the viability of bacilli throughout digestion.

Methods: The experiments consisted of feeding females from both species with blood containing a bacterial load of 10^7 alive nu/nu balbC *M. leprae* per ml. Subsequently, levels of 16S rRNA and DNA of *M. leprae* in intestinal tissues and eggs were determined by real-time PCR, tissues were fixed and *M. leprae* LAM immunolocalized. The viability of *M. leprae* in *R. prolixus* feces was also measuered in Sheppard balbC infection model.

Results: The analyses of intestinal tissues suggest the persistence of *M. leprae* in the intestine of *A. cajennense* and *R. prolixus* 15 and 20 days after infection, respectively. Immunolocalization of LAM on tissues demonstrates that *M. leprae* stay in the lumen of *R. prolixus* midgut and inside digestive cells of the tick *A. cajennense*. *M. leprae* resilience in *Aedes aegypti* and *Culex quinquefasciatus* midguts was about 3 and 5 days respectively. The inoculation of feces from *in vitro* infected triatomines into the foot-pad of 6 BalbC mice (Sheppard Model) confirm the presence of infective bacilli in the material after six months. Among 169 triatomines, nine individuals of the species *Rhodinius pictipes* and four *Rhodnius robustus* from peridomestic areas of the State of Pará (northern Brazil) were PCR positive for the 16S ribosomal gene of *M. leprae*.

Conclusion: The findings suggest that ticks and triatomines are capable of becoming infected and maintaining *M. leprae* viable in digestive tract, indicating its possible role as a reservoir and vector of the disease. These data are being deeply studied, and once confirmed they will enhance the role that arthropod vectors assume in the transmission of several pathogens, beyond resulting in changes in the epidemiology of leprosy, as well as the reformulation of control and eradication strategies.

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Presentation Time: Tuesday 17/09/2013 at 13:00 – 13:10
Abstract Topic Name: Microbiology
Presentation Screen Number: 8
Presenter: Ida Maria Dias baptista

DETERMINATION OF MYCOBACTERIUM LEPRAE VIABILITY USING 16S RRNA.

B. G. C. Sartori [1], A. J. Finardi [1], P. S. Rosa [1], S. Madeira-Diório [1], D. C. Nascimento [1], M. Moraes [2], I. M. F. Dias-Baptista [1,*]

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Introduction: The impossibility of cultivating *Mycobacterium leprae* in axenic culture media has hampered *in vitro* studies and the development of clinical trials due to the slow multiplication of the bacillus. The present study aims at assessing the viability of bacilli through the detection of 16S rRNA specific for *M. leprae* with the normalization of the total quantities of mycobacteria from the quantification of total *M. leprae* DNA using the RLEP repetitive sequence.

Methods: A total of 17 skin biopsy specimens were obtained for leprosy patients diagnosed and classified according to the Ridley & Jopling criteria. TaqMan real-time PCR assays for detection of *M. leprae* RNA and DNA were compared with inoculation into mice footpads (Shepard's technique).

Results: The initial assessments were on therapeutic efficacy to analyze viability of bacilli in clinical samples after 0 to 12 months of MDT. A preliminary experiment was performed to detect *M. leprae* viability from skin biopsy MB and PB leprosy patients. The 16S rRNA/RLEP results were positive for all analyzed biopsy samples (Ct ranging from 21.9 to 36.1) including paucibacillary. The inoculation into mice footpads were positive but with Ct ranging from 29.8 to 36.9. The samples after treatment have not yet been processed.

Conclusion: The differentiation between the viable and nonviable *M. leprae* is very important for correct prognoses of leprosy in patients on treatment, determination of drug resistance or identification of relapse. Thus, the 16S rRNA assay is an additional molecular tool for leprosy diagnosis and determination of the viability of the leprosy bacillus. Funding: FAPESP (2010/03693-9)

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Presentation Time: Tuesday 17/09/2013 at 13:10 – 13:20
Abstract Topic Name: Microbiology
Presentation Screen Number: 8
Presenter: Xiang-Yang Han

OLD DISEASE NEW INSIGHT: THE DISCOVERY, PHYLOGENY, AND SIGNIFICANCE OF THE SECOND LEPROSY AGENT MYCOBACTERIUM LEPROMATOSIS

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Introduction: Leprosy is a chronic indolent infectious disease of the skin and nerves. Human leprosy can be traced back to at least 100,000 years ago. The etiologic agent of leprosy has long been ascribed solely to *Mycobacterium leprae* until 2008 when we discovered a new mycobacterium species, named *Mycobacterium lepromatosis*, from two patients of Mexico origin who died of diffuse lepromatous leprosy (DLL). This finding has been of considerable interest as well as some skepticism to the leprosy community.

Methods: In this review, I try to use plain language to tell a perplexing medical detective story, taking a fortuitous near-miss discovery to a breakthrough in leprosy research. Questions are asked and answered to entertain readers and to convince skeptics about the science and art on how to name a new bacterial species, to draw cause-disease conclusion, and to guard against contamination in DNA amplification and genetic analysis. Ample examples and reasoning are given. Along with the history of human leprosy, DLL, and some aspects of *M. leprae*, I examine mainly our five papers on *M. lepromatosis* that involve 126 patients with leprosy in four clinicopathologic studies and one basic science study on analysis of 20 genes and pseudogenes. Two single case reports from others are also included as independent corroborations of our findings. Finally, I outline some thoughts on further research in terms of basic microbiologic aspects of the organism, epidemiologic investigations, and clinical tests and follow-up studies.

Results: The main conclusions from these studies are: *M. lepromatosis* and *M. leprae* are most closely related but distinct species that diverged ~10 million years ago from a last common ancestor; *M. lepromatosis* is the specific cause of DLL, an old disease in Mexico and Costa Rica; *M. lepromatosis* also causes lepromatous leprosy and other forms; *M. lepromatosis* is probably more prevalent than *M. leprae* in Mexico; both bacilli may coexist in endemic areas and dually infect a patient; *M. lepromatosis* is found so far beyond Mexico in natives of Singapore and Canada; *M. lepromatosis* contributes to the well known clinical and geographic variations of leprosy as the second elusive leprosy agent, and *M. lepromatosis* may cause severe leprosy reactions.

Conclusion: *M. lepromatosis* is the long-elusive second cause of leprosy.

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Presentation Time: Tuesday 17/09/2013 at 13:20 – 13:30
Abstract Topic Name: Microbiology
Presentation Screen Number: 8
Presenter: Rosana Ferreira

METABOLIC AND IMMUNOLOGICAL PROFILES OF AIRWAY RESPIRATORY EPITHELIAL CELLS DURING INTERACTIONS WITH MYCOBACTERIUM LEPRAE.

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Introduction: The main route of entry of *Mycobacterium leprae*, the causative agent of leprosy, in humans is the respiratory tract, where it interacts with the upper respiratory epithelium. Despite its importance for establishment of disease, the interactions between *M. leprae* and respiratory epithelial cells have been poorly studied. Recently, our group has been able to explore a model of this interaction using nasal and alveolar epithelial cell lines. We were able to show that *M. leprae* can enter and survive in these cells for at least 10 days, causing increased cytokine production. In other studies, we have detected changes in the metabolic profile of the sera of leprosy patients with high and low bacillary counts, as well as before and after multidrug treatment. We also used the same techniques to detect metabolites changes in skin biopsies of these patients, which revealed a drastic differential expression of metabolites between paucibacillary and multibacillary patients.

Methods: In the present study, we used Direct Infusion Fourier Transform Ion Ciclotron Resonance Mass Spectrometry (DI-FT-ICR-MS) to investigate changes in the metabolic profiles of the airway

epithelial cells during *M. leprae* interactions. We also analyze a large number of cytokines and chemokines expressed in response to this interaction using multiplex cytokine immunoassays. These interactions were analyzed before and after the initial interaction with the epithelial cells and after an extended period of *in vitro* infection.

Results: Several changes in the metabolic expression profiles were detected during these different time-points of infection, showing that *M. leprae* affects the activity of important metabolic pathways on these cells. Production of cytokines was also altered in response to the different stages of infection.

Conclusion: This work sheds light on the mechanisms of invasion and survival of *M. leprae* in the respiratory tract, which is an important step of the initial stages of infection and transmission of the disease, therefore increasing our knowledge of the establishment of leprosy. Future studies will focus on the potential role of the metabolites found as therapeutical agents, based on their ability to inhibit *M. leprae* invasion and/or survival in these cells.

P-144

Presentation Time: **Tuesday 17/09/2013 at 13:30 – 13:40**
Abstract Topic Name: **Microbiology**
Presentation Screen Number: **8**
Presenter: Junichiro En

SCHWANN CELLS ARE DAMAGED BY MYCOLACTONE PRODUCED BY MYCOBACTERIUM ULCERANS - MECHANISM OF PAINLESSNESS IN BURULI ULCER

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Introduction: Painless nature of the lesion is one major character of Buruli ulcer. We have revealed that local nerves are damaged by the inoculation of *M. ulcerans* or by the injection of mycolactone in mouse models. In both models, intraneural Schwann cells showed vacuolar degeneration.
In order to further elucidate the mechanism of nerve damage, we tested the cytotoxic effect of mycolatone on the cultured Schwann cells in comparison with cultured fibroblasts. Cell counting, apoptosis staining (TUNEL assay) and expression of apoptosis-related substances were evaluated in this study.

Methods: [Quantitative analysis of Schwann cell cytotoxicity using synthetic mycolactone A/B] SW10 mouse Schwann cells (ATCC CRL 2766) were cultured with synthetic mycolactone A/B (supplied from Prof. Yoshito Kishi, Harvard University, U.S.A.). For the comparison, L929 mouse fibroblast cells (ATCC CCL1) were used. Counting of dead cells after trypan blue staining and TUNEL assay using Chemicon ApopTag Peroxidase In Situ Apoptosis Detection Kit were done.
[Detection of apoptosis by Western blotting] SW10 and L929 were cultured with synthetic mycolactone A/B. Cleaved caspase-3 and phospho-histone H2A.X (H2A.X) were detected by Western blotting. For the internal control, tubulin was used.
[Detection of apoptosis by fluorescence microscopy] SW10 and L929 were cultured in the slide chambers. After fixation and Triton-X treatment, by fluorescent dyes, cleaved caspase-3 was stained in red, nuclear DNA in blue, intracellular actin in green and the cells were examined under a confocal fluorescent microscope.

Results: [Quantitative analysis of Schwann cell cytotoxicity using synthetic mycolactone A/B] Schwann cell showed cell death 24 hours after the addition of mycolactone 300 ng/ml, and 30 ng/ml of mycolactone showed partial detachment, but 3 ng/ml did not show morphological changes. Cell death evaluated by trypan blue staining shows that Schwann cells are more sensitive to mycolactone than fibroblasts. TUNEL assay also showed that Schwann cells are more sensitive to mycolactone than fibroblasts.
[Detection of apoptosis by Western blotting] In L929 fibroblasts, cleaved caspase-3, PARP and H2A.X were not observed. Tubulin was expressed normally. In SW10 Schwann cells, cleaved caspase-3 was expressed after 12 and 24 hours. H2A.X was not observed. After 48 and 72 hours of 30 ng/ml mycolactone treatment, tubulin expression was not observed.
[Detection of apoptosis by fluorescence microscopy] We compared the expression of cleaved caspase-3 after 12 and 24 hours after administration of mycolactone. Only in 12 hours after mycolactone 30 ng/ml, expression was observed in the cytoplasm of some SW10 Schwann cells, but not in L929 fibroblasts.

Conclusion: Quantitative study of cell death and apoptosis showed that Schwann cells are relatively sensitive to mycolactone than fibroblasts after exposure to mycolactone A/B. Western blotting and immunofluorescence demonstrated that only SW10 Schwann cells at the distinct time point showed the expression of cleaved caspase-3. Caspase-3 is a key agent in apoptosis. Painless nature of Buruli ulcer is supported by the cytotoxicity of mycolactone A/B to cultured Schwann cells.

P-153

Presentation Time: **Tuesday 17/09/2013 at 13:40 – 13:50**
Abstract Topic Name: **Microbiology**
Presentation Screen Number: **8**
Presenter: Ms Luciana Fachin

CELL POPULATION IN THE SPECTRUM OF LEPROSY AND REACTIONAL FORMS: EXPRESSION OF M1 AND M2 MACROPHAGES.

L. R. V. Fachin [1,*], A. F. F. Belone [1], P. S. Rosa [1], A. P. F. Trombone [1], C. T. Soares [1], M. F. Franco [2]

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Introduction: Monocytes and macrophages play an important role in the regulation of the inflammatory response. Based on their functional properties, at least two subpopulations (M1 and M2) of mononuclear phagocytes, which differ in their pro- and anti-inflammatory potential, have been described. The cells of the M1 subpopulation secrete predominantly pro-inflammatory mediators which trigger and amplify the inflammatory response. The M2 subpopulation produces mainly anti-inflammatory mediators which take part in the suppression of the inflammatory responses. The aim of this study was to characterize the CD68+ (M1 and M2) and CD163+ (M2) macrophage populations in skin lesions of leprosy patients across the spectrum and during reactional states of the disease using immunohistochemistry.

Methods: The clinical formsof leprosy and reactional states were classified based on Ridley & Jopling's criteria. According to this classification, 70 biopsies of skin lesions were selected and evaluated: 10 tuberculoid, 10 borderline tuberculoid, 10 borderline borderline, 10 borderlinelepromatous, 10 lepromatous, 10 type «1» reaction (RR), 10 type «2» reaction (ENL) and 10 healthy controls. Most biopsies were collected at diagnosis; therefore, all patients had not been treated, except patients with reactional episodes. Histological sections were stained with hematoxylin-eosin (H&E) and Fite-Faraco for classification. In addition, macrophage subpopulations were histologically immuno-phenotyped using CD68 (the ubiquitous macrophage marker) and CD163, a specific M2 macrophage marker. Immunostaining was compared with the corresponding H&E stained section. Slides were examined by two independent investigators. The distribution and percentage of cells expressing $CD68^+$ $CD163^-$ (M1 macrophages) and $CD68^+$ $CD163^+$ (M2 macrophages) were recordedin relation to the extension of the granuloma.

Results: The macrophages that constitute the center of the tuberculoid granulomas in TT and BT forms show M1 phenotype ($CD68^+$ and $CD163^-$). They are surrounded by small number of M2 macrophages ($CD163^+$) distributed in the periphery of the granulomas among lymphocytes. In the BB and BL borderline forms, the granulomas are composed by a mixed population of macrophages (M1 and M2), with predominance of the M2 phenotype. In the lepromatous form, the granulomas are composed almost exclusively by M2 phenotype macrophages and rare scattered M1 phenotype. In the type 1 reational cases, granulomas are constituted by a mixed M1 and M2 macrophage population, with predominance of M1. In the type 2 reactional cases, macrophages envolving or permeating neutrophils, show M1 phenotype while those that represent the primary lesions on BL and LL forms show M2 phenotype.

Conclusion: It is likely that M2 macrophages, in patients on the lepromatous spectrum of leprosy (BB, BL and LL), have an immunosupressor role on the phagocytosis of the *Mycobacterium leprae* bacilli, resulting in their intracellular accumulation. While M1 macrophages are capable of phagocyting the bacilli and directing the immune response to a microbicidal activity, the few M2 macrophages in lesions of patients on the tuberculoid side of leprosy spectrum (TT and BT) have an immunomodulatory role, thus, they suppress the inflammatory process. Newly recruited macrophages present in the reactional process lesions (RR and ENH) are predominantly of M1 phenotype.

Financial Support: Fundação Paulista Contra Hanseníase.

P-155

Presentation Time: **Tuesday 17/09/2013 at 13:50 – 14:00**
Abstract Topic Name: **Microbiology**
Presentation Screen Number: **8**
Presenter: Dr Cleverson Soares

ANGIOGENESIS AND LYMPHANGIOGENESIS IN THE SPECTRUM OF LEPROSY AND ITS REACTIONAL FORMS

C. T. Soares [1,*], P. S. Rosa [2], A. P. F. Trombone [1], L. R. V. Fachin [1], C. C. Ghidella [3], S. Ura [4], J. A. Barreto [4], A. F. F. Belone [1]

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Introduction: Angiogenesis and lymphangiogenesis are the processes of neovascularization that evolve from preexisting blood and lymphatic vessels. There are few studies on angiogenesis and none on lymphangiogenesis in leprosy. Thus, the role of neovascularization in the

pathophysiological mechanisms of the disease was studied across the spectrum of leprosy, its reactional states and its residual lesions.

Methods: Seventy-six biopsies of leprosy skin lesions and seven healthy controls were selected. Seventy-eight serum samples were used for the detection of CD105 by ELISA. Histological sections were stained with antibodies against CD31 (blood and lymphatic vessels), D2-40/podoplanin (lymphatic vessels), and CD105/endoglin (neovessels). Microvessels were counted in 100 high-power fields (400x) and the number of vessels was evaluated in relation to the extension of the inflammatory infiltrate (0-3), to the bacillary index (0-6) and to the clinical forms.

Results: Angiogenesis, as marked by CD31 and CD105, was observed across the leprosy spectrum, compared with the controls. Additionally, there was a positive correlation between these markers with extension of the infiltrate ($p < 0.0001$). For D2/40, lymphangiogenesis was observed in the tuberculoid form ($p < 0.0001$). There was no statistical significance for values of CD105 detected in plasma by ELISA.

Conclusion: Angiogenesis is present across the spectrum of leprosy and in its reactional forms. The increase in the number of vessels, as detected by CD31 and CD105 staining, is related to the extension of the inflammatory infiltrate. Samples from reactional lesions have a higher number of CD31+ and CD105+ stained vessels, which indicates their involvements in the pathophysiological mechanisms of the reactional states. The regression of lesions is accompanied by the regression of neovascularization. Drugs inhibiting angiogenesis may be relevant in the treatment of leprosy, in addition to multidrugtherapy, and in the prevention of the development of reactions.Supported by grants from FAPESP (2010/19286-3).

P-033

Presentation Time: Tuesday 17/09/2013 at 12:30 – 12:40
Abstract Topic Name: Molecular Biology
Presentation Screen Number: 9
Presenter: Dr Ming LI

STUDY ON GENOTYPING OF MYCOBACTERIUM LEPRAE IN GUANGDONG PROVINCE CHINA

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Introduction: Leprosy continues to be detected at near stable rates in China even with established control programs, necessitating new knowledge and alternative methods to interrupt transmission. A molecular epidemiology investigation of 24 patients was undertaken to define Mycobacterium leprae strain types and discern genetic relationships and clusters in Guangdong province.
To understand the genotypes of *M.Leprae* collected from Guangdong Province, China and to analyze the leprosy transmission roads inside and outside of Guangdong, as well as the impact of the emigrants patients to the endemicity in Guangdong.

Methods: Strain typing with VNTR and SNP were performed on the local cases and emigrant cases based on skin biopsy.

Results: Most isolates from local patients belong to SNP type 1 and SNP type 3 isolates were found in a small part of local isolates. However, the all emigrants belong to SNP type 3. Within the SNP type 1 strain from Guangdong, the alleles at the 18-8, 12-5, ML-1, (TA)10 and (GGT)5 differ from SNP 3 strains collected from other areas in China. However, whether SNP type 1 or SNP type 3 from Guangdong local isolates, their VNTR profiles are close and the main differences are in the alleles at ML-1, (TA)10 and (GGT)5.

Conclusion: The transmission of strain with SNP type 1 is associated with Silk Road on the Sea. It is required to monitor and to confirm whether the transmission of patients with SNP type 3 in Guangdong are from the second transmission of the emigrant patients, and to further study the historic spread and phylogenetic relationships between SNP type 1 and novel SNP type 3 in Guangdong.

P-034

Presentation Time: Tuesday 17/09/2013 at 12:40 – 12:50
Abstract Topic Name: Molecular Biology
Presentation Screen Number: 9
Presenter: Yan Wen

EVALUATION OF REAL-TIME PCR TARGETING RLEP FOR DETECTION OF M. LEPRAE DNA IN PARAFFIN-EMBEDDED SKIN BIOPSY SPECIMENS FOR CLEAR AND DEFINITE DIAGNOSIS OF LEPROSY

Yan Wen[1], Yan Xing[1], Lian Chao Yuan[1], Liu Jian[1],Yang Rong De[2], Tan Fu Yue[2],Ying Zhang[3], Huan Ying Li[1]

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Introduction: While the conventional histopathology examination and acid-fast bacillus (AFB) smear are important for diagnosing advanced multibacillary (MB) leprosy, they have poor sensitivity and low specificity for diagnosing paucibacillary leprosy (PB). The AFB staining is usually negative for PB patients. In this study, a TaqMan real-time quantitative PCR assay for detection of *M. leprae* DNA from paraffin-embedded skin biopsy specimens was developed and was compared with a nested-PCR test for the diagnosis of PB patients and also AFB and histopathology for diagnosis of PB cases. Primers and probes were designed based on *M. leprae* repetitive DNA sequence RLEP.

Methods: Primers and probes were designed according to the repetitive sequence of *M. leprae* from GeneBank. The recombinant plasmid pGEMT-101 was constructed and served as a template to prepare the standard curve for a TaqMan real-time PCR. It was evaluated systematically with respect to the standard curve, linear range, sensitivity, and specificity. We collected and detected paraffin-embedded skin biopsy specimens from 51 PB patients (BT: AFB+ 15; AFB–: 24; TT: AFB+1; AFB– 9; I: 2) diagnosed clinically.

Results: The results demonstrated that the real-time PCR test had a good sensitivity (8 fg) as well as good specificity with no cross-reactions with twenty-one other bacteria and the control blood specimens. The real-time PCR detection rates for different types of the 51 specimens were 93.3% (14/15), 70.9% (17/24), 100% (1/1), 55.6%(5/9), and 50%(1/2), for BT AFB-positive, BT AFB-negative, TT AFB-positive, TT AFB-negative, and indeterminate, respectively. In addition, the real-time PCR and nested-PCR are comparable ($p > 0.05$) in diagnosing PB cases.

Conclusion: The TaqMan real-time PCR is a useful tool for a quick, specific, and sensitive detection and quantification of *M. leprae* DNA in paraffin-embedded specimens in which bacilli are undetectable by conventional histological staining. It is also useful in detecting *M. leprae* infections before major clinical manifestations.

P-035

Presentation Time: Tuesday 17/09/2013 at 12:50 – 13:00
Abstract Topic Name: Molecular Biology
Presentation Screen Number: 9
Presenter: Philippe Busso

DRUG RESISTANCE STUDY AND GENOTYPING IN M. LEPRAE STRAINS FROM MALI AND BENIN, WEST AFRICA

P. Busso [1,*], P. Singh [1], M. Kodio [2], A. Fomba [2], R. Chabi [3], O. Tossou [4], R. C. Johnson [4], S. O. Sow [5], S. Cole [1]

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Introduction: Drug resistance will always be a major problem in the fight against infectious diseases elimination. In order to foresee and rate the trend of these resistances, it is essential that different actors of this fight closely cooperate.
A sentinel surveillance network for drug resistance in leprosy is globally settled from years. However, new members are still joining, expanding the global coverage and its efficiency.
Since two years, Mali and Benin joined this sentinel surveillance for drug resistance network and here we are reporting the 1st results of this sentinel surveillance.

Methods: There were 36 samples from Mali and 6 from Benin; among them some were issued from relapse cases.
Samples have been homogenized, freezed and boiled to extract *M. leprae* DNA. PCR amplified DNA has been sequenced with a genetic analyzer using Sanger method in order to check single nucleotide polymorphism (SNP). For anti-leprosy drug resistance, these SNPs are located on *rpoB* (rifampicin), *folP1* (dapsone) and *gyrA* (ofloxacin) genes. Clofazimin resistance has never been showed in leprosy and ofloxacin is used as a second line treatment. For strains genotyping, the standard SNP typing and subtyping classification has been used.

Results: Drug Resistance Study: 2 strains out of 42 got a mutation giving dapsone resistance; one is coming from Mali (Thr53Arg) and the other from Benin (Arg53Ala). No mutation giving rifampicin or ofloxacin resistance is present in these strains but, in one sample from Mali, only a *M. tuberculosis* sequence has been seen in *rpoB* gene.
Samples from the relapse cases are all wild-type at these regions.

Genotyping: The 42 strains are classified in SNP type 4, the most common one in West Africa. 33 of these type 4 strains are subtyped N (78%), 5 are O (12%) and 4 belongs to the P (10%) subtype.

Conclusion: All the 42 strains from West Africa should be sensitive to Multi Drug Therapy (MDT), although 2 of them are certainly resistant to dapsone. The absence of drug resistance mutation in the 7 relapse cases shows that they were whether re-infected or that the first MDT didn't kill all the bacilli.
The presence of SNP subtype 4P, first time discovered in Africa, is an evidence of the underestimation of genetic diversity in Africa.

Thankfully to these new cooperation's between West African countries and the global network, phylogeography of *Mycobacterium leprae* will be sharpened. There is also from now molecular biology data of 35 new cases which will improve the surveillance system about secondary drug resistance if some of these patients relapse.

P-036

Presentation Time: **Tuesday 17/09/2013 at 13:00 – 13:10**
Abstract Topic Name: **Molecular Biology**
Presentation Screen Number: **9**
Presenter: Fabiana Santana

THE ROLE OF HLA IN BORDERLINE LEPROSY PATIENTS FROM SÃO PAULO STATE. PRELIMINARY RESULTS.

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Introduction: The HLA seems to influence the host immune response against *Mycobacterium leprae*. The consensus is HLA-DRB1*02/HLA-DRB1*03 in tuberculoid leprosy and DQB1*01 in lepromatous leprosy. There is not, however, a consensus about the association of HLA and borderline leprosy (B), an immunologically unstable form of the disease. The aim of this study was to verify the association of the HLA class I and II molecules in B patients (including BT, BB and BL), once there is few data available.

Methods: The genomic DNA was extracted from peripheral blood and the HLA-A*, B*, C*, DRB1*and HLA-DQB1* alleles were determined by PCR-SSO (polymerase chain reaction – sequence-specific oligonucleotides) using Luminex® (One-Lambda,CA,USA) in 202 B patients and 478 healthy controls.

Results: The results showed positive association of B leprosy and HLA-B*07 (18.59% vs 12.78%, p=0.05, OR=1.55, 95%CI=0.49-2.43), HLA-B*53 (6.53%vs 2.93%, p= 0.04, OR= 2.31, 95% CI= 1.06 – 5.01), HLA-C*16 (8.04% vs 5.44%, p= 0.02, OR= 2.05, 95% CI= 1.12-3.74), and negative association with HLA-B*49 (1.0% vs 6.07%, p= 0.0022, OR= 0.15, 95% CI=0.03-0.66), HLA-B*50 (2.01% vs 6.28%, p= 0.01, OR= 0.30, 95% CI=0.10-0.87), HLA-C*05 (6.03% vs 14.02%,p=0.002, OR=0.39, 95% CI= 0.21-0.74), HLA-DRB1*07 (16.58% vs 26.77%, p= 0.004, OR=0.54, 95% CI= 0.35-0.83). However, *P*-values were not significant after the Bonferroni´s correction except for HLA-C*05 (pc=0.05) and HLA-DRB1*07(pc=0.03). The presence of the haplotype (HLA-DRB1*02 or HLA-DRB1*03/HLA-DQB1*01 simultaneously) was observed in 67 (33.0%) patients compared to 109 (22.8%) in the control group (p=0.005).

Conclusion: These data confirm the protector effect of HLA-C*05 and HLA-DRB1*07 against borderline leprosy, and the increase of the haplotype (HLA-DRB1*02 or HLA-DRB1*03/HLA-DQB1*01 simultaneously) in B patients, once these HLA alleles are associated with the polar form of the disease, could explain the intermediate immune response characteristic of the B leprosy.

P-037

Presentation Time: **Tuesday 17/09/2013 at 13:10 – 13:20**
Abstract Topic Name: **Molecular Biology**
Presentation Screen Number: **9**
Presenter: Patricia S Rosa

EXTRACTION OF MYCOBACTERIUM LEPRAE DNA FROM SKIN SMEAR STAINED BY THE ZIEHL-NEELSEN METHOD FOR AMPLIFICATION OF GENES ASSOCIATED WITH DRUG RESISTANCE IN LEPROSY

M. C. Tassa [1], P. S. Rosa [2,*], L. R. V. Fachin [3], L. M. Trino [1], A. E. Fusaro [1], A. F. F. Belone [3], A. P. F. Trombone [3], S. M. Diorio [1]

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Introduction: The emergence of drug resistance can influence the control/elimination of leprosy, however, data on resistance are scarce in endemic countries. Reports of resistance *M. leprae* to drugs of the multidrugtherapy became more frequent after the gene sequencing methods were standardized. Skin lesion biopsies are widely used for this purpose, but it may cause discomfort to the patient. Alternatively, the DNA obtained from slit skin smears (SSS) stained by Ziehl-Neelsen (ZN) has been successfully used in some protocols for molecular analysis. The aim of this study was to investigate the feasibility of using slit skin smears for detection of drug resistance by molecular methods, using different protocols for DNA extraction of the bacillus.

Methods: For standardization of the methods, diluted suspensions of bacilli obtained from nude mice previously inoculated stained by cold ZN staining were used. For patient's material we selected SSS from multibacillary patients, diagnosed between 2009/2012, with bacillary index (BI) from 0 to 5 +. Of the total of 36 patients, 29 had two slides, 6 one slide and one 3 slides (n = 67). DNA extraction was performed with 5% Chelex100 (CH) (n = 17) and 10% (n = 17), also the DNaesy Qiagen ® kit (DN) (n = 33). The excess immersion oil was removed with blotting paper, then 90µl of ultrapure water added, smears removed with a scalpel blade and pipetted into a microtube. For CH, 100ul were added to the samples, the 5% CH was incubated at 97°C/10min and then centrifuged at 13000rpm/2min. The 10% CH was incubated at 97°C/30 min and then centrifuged at 13000rpm/10min. After overnight incubation/4°C, samples were centrifuged and the supernatant (DNA) transferred to another microtube. The extraction by the DN (n=33) was performed according to the manufacturer's instructions. All DNA samples were quantified and concentrations ranged from 3.7 to 33.8 ng/uL. DNA was amplified by nested PCR for genes *folP1*, *rpo*β and *gyrA* gene and the RLEP technique for Real Time PCR (qPCR) with the SYBRGreen chemistry. After PCR the samples were visualized on 1.5% agarose gel.

Results: Using the CH 5% or 10%, 50% (17/34) of samples amplified to at least one of the genes evaluated and 38.2% (13/34) for the three genes. The *gyrA* had the highest rate of amplification with 50% followed by 41.2% for *rpoB* and 38.2% for *folP1*. Using 5% CH, 41.2% (7/17) amplified for at least one gene and for 10% CH percentage of amplification of one gene was 58.8% (9/17). With DN, 21.2% (7/33) of samples amplified to at least one of the genes and only 6% (2/33) for the three genes. *rpoB* was most frequently amplified (21.2%), followed by 18.2% *gyrA* and 6.1% *folP1*. Comparing the two methods of extraction, the CH showed better amplification (50%) compared to DN (21.2%). Regarding the qPCR results, 64.7% of samples extracted with CH amplified the RLEP gene (n=34) and 68.2% of these amplified to at least one drug resistance associated gene. For DN (n=33), 75.7% amplified for RLEP and 28% of them amplified to at least one drug resistance associated gene. Regarding IB, the average BI of the CH samples that amplified by qPCR was 3.9 and of the DN it was 4.1. Regarding those that did not amplify (CH and DN) the mean BI was 1.4.

Conclusion: DN was best for extraction of DNA of the leprosy bacillus, but the CH showed higher rate of positivity for amplification of drug resistance associated genes. Samples with BI≥3 are more likely to amplify, regardless of the method of extraction.

P-495

Presentation Time: **Tuesday 17/09/2013 at 13:20 - 13:30**
Abstract Topic Name: **Molecular Biology**
Presentation Screen Number: **9**
Presenter: Thomas Gillis

SEQUENCE COMPARISON AND QUANTITATIVE EXPRESSION OF GENES INVOLVED IN LIPID AND CARBOHYDRATE METABOLISM IN MYCOBACTERIUM LEPRAE

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Introduction: *In vitro* cultivation of *Mycobacterium leprae*, the causative agent of leprosy, remains elusive. Growth is achievable in nude mice footpads (MFP), but provides a very limited supply of *M. leprae* and is impractical as a propagation system for genetic manipulation. Therefore, developing a host-free cultivation system for *M. leprae* remains a subject of intense research. Glucose & lipids are valuable carbon sources in *M. leprae* metabolism. To begin to understand carbon & lipid utilization in *M. leprae*, we developed qRT-PCR assays to determine the expression of selected genes in carbohydrate & fatty acid (FA) catabolism, and compared sequences of β-oxidation enzyme groups. Defining carbon source utilization in the MFP could identify potential nutritional deficiencies.

Methods: *M. leprae* from nu/nu mouse (Hsd:Athymic Nude-Foxn1^{nu}) footpads infected with 3×10^7 viable *M. leprae* (Thai53 strain) were harvested 6 months post-infection. Bacterial viability was assessed by radiorespirometry & BacLight® bacterial viability assay. Total RNA was extracted from *M. leprae* using the FASTPREP® 24 method & DNase treatment. Reverse transcriptase-PCR TaqMan® assays were developed for 17 metabolic genes. Transcripts from glycolytic enzymes (phosphofructokinase [pfkA], pyruvate kinase [pykA], phosphoenolpyruvate [PEP] carboxykinase [pckA], PEP carboxylase [ppc] & representative FA catabolizing enzymes (fatty acid CoA synthetase [fadD], acyl CoA dehydrogenase [fadE], enoyl-CoA hydratase [echA], hydroxyl acyl CoA dehydrogenase [fadB], acyl CoA thiolase [fadA] & propionyl CoA carboxylase [accD]) were further analyzed from *M. leprae* held in NHDP media (which supports short-term metabolism) up to 72 h. All gene transcripts were normalized to RNA Polymerase sigma factor *sigA*. Metabolic pathway overlay was in KEGG (www.genome.jp/kegg). Paralogues & pseudogenes were identified and analyzed by Mycobrowser (http://mycobrowser.epfl.ch/) & ClustalW (www.genome.jp/tools/clustalw).

Results: Mycobrowser identified (paralogues; pseudogenes): fadE (4; 21); 12 probable fadD (12;14); fadA (3; 3); echA (7; 13) fadB (2; 2); accD (4; 4). It also shows *M. leprae* does not encode methyl malonyl CoA epimerase and the methylcitrate cycle enzymes but with lipid transfer protein [*ltp1*] as a pseudogene. Transcripts for all metabolic genes tested were detected in MFP-derived *M. leprae* with the enzymes *pckA*, *ppc* & *pfkA* signals significantly higher than other enzymes in the glycolytic pathway. Transcripts signals for fadD28, fadD29, fadE5, fadE25, fadB, fadA, fadA4 & fadB expression were higher than the rest in the FA catabolizing enzymes panel.

Conclusion: Glucose & lipid catabolism pathway genes are transcriptionally active in *M. leprae*, strongly suggesting that they are major energy producing pathways in this organism. *M. leprae*

seem to be committed to using *pckA* & *ppc* for maintaining the pool of oxaloacetate which appears to be a major pathway for energy production from sugar substrates as pyruvate dehydrogenase complex seems to be non-functional in *M. leprae*. *M. leprae* ltp1 may have a possible substitute in fadA2. Lack of functional propionyl CoA pathway & a methylcitrate cycle in *M. leprae*, supports the hypothesis that β-oxidation is a major functional FA catabolizing pathway in *M. leprae*, producing acetyl CoA for the TCA cycle towards energy production. The preponderance of β-oxidation enzymes as pseudogenes possibly exerts a functional overload on present enzymes, contributing to slow metabolism & growth in *M. leprae*. These studies are currently being expanded to study these & other key metabolic processes.

P-496

Presentation Time: **Tuesday 17/09/2013 at 13:30 - 13:40**
Abstract Topic Name: **Molecular Biology**
Presentation Screen Number: **9**
Presenter: Thomas Gillis

MOLECULAR-BASED RT-PCR ASSAYS FOR DETERMINING MYCOBACTERIUM LEPRAE VIABILITY IN TISSUES OF EXPERIMENTALLY INFECTED MICE

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Introduction: The inability of *Mycobacterium leprae* to grow in axenic media has necessitated specialized techniques which can be difficult, expensive, and time-consuming in order to ascertain viability of this organism. The goal of the current study was to determine if monitoring transcription of specific genes by RT-PCR would provide a simple and sensitive assay for determining *M. leprae* viability directly in infected tissues.

Methods: A high dose of 3 x 10^7 viable *M. leprae* was inoculated into both hind footpads (FP) of athymic *nu/nu* mice, which allow unhindered growth of the bacilli, and into FP of immunocompetent BALB/c mice, in which this dose will induce an adaptive immune response that will kill the bacilli. *M. leprae* multiplication and viability were monitored monthly. Non-molecular enumeration (microscopic counting of acid fast bacilli) and viability assays (radiorespirometry and viability staining) utilized bacilli freshly harvested from the FP. Molecular enumeration (RLEP PCR) and viability determinations (RT-PCR of 16S rRNA and mRNA transcripts for *esxA, hsp18, sodA, gapdh*, and ML2138C) were performed via Taqman methodology on nucleic acids purified from ethanol-fixed FP tissues. Bacterial killing was also monitored in drug studies in which rifampin and rifapentine were compared for anti-*M. leprae* activity in 3 different regimens (10mg/kg each for 1, 5, or 20 daily doses) in the multibacillary *nu/nu* FP model.

Results: *esxA, hsp18* and 16S were the most sensitive molecular indicators of *M. leprae* viability. Both molecular and non-molecular assays demonstrated growth and high viability of *M. leprae* in the *nu/nu* FP. In contrast, viability was markedly decreased by 4 weeks post infection in immunocompetent mice. In the *nu/nu* FP model, rifapentine significantly reduced bacterial viability after 5 treatments, whereas rifampin required up to 20 treatments for the same efficacy. It is noteworthy that neither drug had an effect after a single treatment.

Conclusion: There was a strong correlation between molecular and non-molecular methods for determining *M. leprae* viability. Molecular assays, however, allowed quantification and viability assessment on fixed tissue samples without the need for bacterial isolation or immediate processing, making these assays promising for clinical and field applications. Molecular-based assays are simple, rapid, and reliable indicators for *M. leprae* viability in tissues.

P-499

Presentation Time: **Tuesday 17/09/2013 at 13:40 - 13:50**
Abstract Topic Name: **Molecular Biology**
Presentation Screen Number: **9**
Presenter: Deanna Hagge

MYCOBACTERIUM LEPRAE STRAIN TYPES IN NEPAL

P. Thapa [1], S. Khadge [1], W. Li [2], R. Jensen [2], J. Vander-Heiden [2], K. Neupane [1], D. A. Hagge [1], V. Vissa [2,*]

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Introduction: Nepal is one of the top ten endemic countries for leprosy with more than 4000 new cases detected in 2009. To better understand the sources and transmission of leprosy, alternative information such as strain types of *Mycobacterium leprae* could be useful.

Methods: A molecular epidemiology investigation of 220 patients diagnosed at Anandaban Leprosy Hospital during the period 2001-2010 was undertaken to define *M. leprae* strain types and discern genetic relationships and clusters. Patient residence (village development committee VDC, District and zone) were noted. Clinical history and individual factors such as age and gender were taken from medical records. Caste and ethnic group was inferred from surnames. Aliquots of homogenized skin biopsy samples stored frozen in a sample bank were taken. DNA was extracted using Qiagen DNeasy kit. *M. leprae*were strain typed using established multi-locus variable number of tandem repeat analysis (MLVA) methods for all patient samples. A total of 22 VNTR loci including loci with short (TA) arrays were added along with few novel minisatellites. A 96 well plate system was implemented for a streamlined assembly of four multiplex PCRs for each sample tested (22 test samples, one no template negative control and one positive reference DNA). After PCR, the samples were easily transferred to different 96 well plates for dilution and addition of sizing standards and formamide for automated fragment length analyses by capillary electrophoresis (Genetic Analyzer, Applied Biosystems). Data could be ontained within a 24 hour cycle. The chromatograms were read by atleast two readers. A recently developed non-DNA sequence based, real time PCR high resolution melt analysis technique was used for rapid SNP typing (as 1, 2, 3 or 4) methods for more than half the samples. The population structure of samples having complete data was explored using principal component analysis using the complete panel of VNTR loci.

Results: In Nepal, the major SNP types were 1 and 2. VNTR strain types with novel allele combinations not seen elsewhere were identified. The VNTR strain types were highly resolved, although three major subgroups could be detected. Several loci, in particular (GGT)5 and 21-3 had characteristic alleles associated with the SNP type 1 or 2 type.
There was no apparent association between the proportion of SNP type 1 or 2 with caste or location or gender or clinical type. Of the SNP type 1 or type 2 strains, except for one known multicase family in which VNTR strain types were highly similar, there were no other known epidemiological data to link the remainder VNTR types according to VDC or district or zone, caste or ethnic group, indicating that there are no historic or socio-economic or cultural barriers to the transmission of leprosy across Nepal and between members of various ethnicities.

Conclusion: There are distinct allele combinations associated with SNP type 1 and 2 strains, which allow for easy classfication of strains. Nepal is highly endemic for leprosy. The patient address information at the time of diagnosis is not a reliable indicator of where the patient resided at the time of infection. Migration and lack of stable homes due to occupation is common. The plains bordering India are a passage way for leprosy to be transmitted across the countries. Prospective studies in specific communities and distantly separated locations should be pursued to locate the hub for type 2 strains in Nepal and to find recent transmission links. Further SNP subtyping by HRM can improve the clustering of strains in larger groups.

P-498

Presentation Time: **Tuesday 17/09/2013 at 13:50 - 14:00**
Abstract Topic Name: **Molecular Epidemiology**
Presentation Screen Number: **9**
Presenter: Dr Marivic Balagon

LEPROSY IN CEBU, PHILIPPINES: INSIGHTS FROM MOLECULAR EPIDEMIOLOGY APPROACHES ON GEOGRAPHIC DISTRIBUTION, DRUG RESISTANCE AND TRANSMISSION DURING 2002-2010

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Introduction: Cebu, Philippines, remains endemic for leprosy, even though multidrug therapy has been available for two decades. Active case finding is not in practice. To gain insight into this persisting problem, a descriptive molecular epidemiology program was established in late 2002.

Methods: From 2002 to 2010, 540 leprosy patients diagnosed at Cebu Skin Clinic (CSC) have been studied. A questionnaire was used to collect clinical, leprosy contact, demographic, occupational and residential histories (n=440). Thirty patients were from the 1980s. Residence was mapped at the street level on published maps and GoogleMaps.
Skin DNA was used for strain typing of *M. leprae* by variable number of tandem repeats (VNTRs) (n=540 samples) and SNPs (n=104 samples) by published methods. VNTR types were analyzed by principal component analysis, Structure-neighbor and maximum parsimony. Drug resistance to dapsone, rifampicin and fluoroquinolone was assessed by amplification of regions in *folP1* (n=212 samples), *rpoB* (n= 202 samples) and *gyrA* (n= 115 samples) genes followed by DNA sequence analysis. Novel real time PCR high resolution melt (HRM) assays run on CFX96 PCR system (Bio-Rad, USA) using Precision Melt Analysis (PMA) Supermix were developed to identify sequence variations in drug target amplicons using PMA software.

Results: The majority of patients (n=370) were from the Metro Cebu City region; Cebu (n=196), Mandaue (n=77), Lapu-lapu (n=61) and Talisay (n=36). Eight villages had 10-16 patients. Nearly 90% of Cebu City patients and >50% from the other three cities consult at CSC. Thus, the dataset represents a significant portion of the leprosy in Metro Cebu. Rest of the patients came from the other parts of the island; a few were from other provinces.
When considering only Metro Cebu, different methods identified at least 5 major VNTR genetic clusters. SNP type 1 is prominent; SNP 3 is also found. Allele combinations at two or more loci separate the clusters and SNP types. At the village level (not street level), no significant ($p<=0.05$) similarity was found of any genetic and spatial distance, at any clustering level (major clusters, predominant VNTR genotypes and individual genotypes) using Mantel tests. However, multiple

patient pairs with similar VNTR types were linked by location and community contact. Of fifteen multicase families, VNTR types within 12 families indicated a common source of infection.
Primary drug resistance was limited to dapsone and was detected in four of five neighbors carrying matching VNTR types; each with a family history of leprosy and living within a leprosarium. Real time PCR-HRM was found to be sensitive, rapid and affordable for screening of drug targets. Age at diagnosis and age at onset were highly positively correlated, implying a consistent delay in diagnosis. Bacteriological index and symptom duration were slightly positively correlated; implying delay in diagnosis. Age at diagnosis and symptom duration are slightly negatively correlated; younger patients trend slightly toward longer delay in diagnosis. Symptom duration and age at onset are moderately negatively correlated; the older patients may be less likely to delay treatment.

Conclusion: Molecular epidemiology in Cebu uncovered the strain types, distribution and frequencies. Pockets of endemicity and dapsone drug resistance were found. VNTR strain typing identified small transmission clusters with known family or community links. In the urban crowded endemic setting, the strains are distributed beyond neighborhoods implicating extra- domiciliary transmission (occupational or other) also exists.

P-084

Presentation Time: **Tuesday 17/09/2013 at 12:30 – 12:40**
Abstract Topic Name: **Chemotherapy**
Presentation Screen Number: **10**
Presenter: Mannam Ebenezer

COMPARISON OF PROFILE OF PATIENTS WHO WERE RESTARTED ON MDT AND THOSE WHO WERE STARTED ON MDT FOR THE FIRST TIME

M. David Prakash Kumar [1,*], M. Ebenezer [2], J. Beryl [3], J. Richard [4]

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Introduction: The lack of compliance to AntiLeprosy treatment has been a major issue in many hospitals. There are some patients who discontinue the treatment and then reappear again when the symptoms worsen. They are usually restarted again on the MDT. Each year, the number of people who are restarted on MDT is very high and is similar to the numbers who are started on MDT for the first time.

Methods: This is a retrospective study of the number of patients who were restarted on MDT during the year 2011 and a comparison of their profile with that of those who were started on MDT for the first time in 2011. The demographic data and other important data relating to the patients who were restarted on MDT were collected. This data was compared to the data of the patients who were started on MDT for the first time.

Results: The number of patients who were started on MDT for the first time was 142, out of which there were 81 males and 61 females. 129 of them were treated with MB and the remaining 13 were treated with PB. 57 of these patients were smear positive. 40 had Grade I disability and 17 had Grade II disability. In this group, the number of patients who had reactions at diagnosis was 11 of the total 38 who had reactions during MDT.
The number of patients who were restarted on MDT was 112, out of which there were 80 males and only 32 females. 102 of them were treated with MB and the remaining 10 were treated with PB. 30 of these patients were smear positive. 30 had Grade I disability and 31 had Grade II disability. Of the patients who were restarted on MDT, 21 were suffering from reactions when these patients reported to the hospital and the remaining 22 suffered from reactions during the course of the treatment.

Conclusion: The number of males who reported for the restarting of MDT was significantly higher (71.43%) when compared to the females (28.57%). In the group who were started on MDT for the first time, the number of males was only 57.04%, whereas the number of females was 42.96%. The percentage of patients who had disability grade more than 0 in the group started on MDT for first time was 40.14%, whereas in the group restarted on MDT, this was 54.46%. This leads us to the conclusion that more people who default on the treatment and still suffer from the disability finally come back to try and get the complete treatment.
The other important fact is that only 26.76% suffered from reactions when they were on the initial MDT treatment. Of those who defaulted and were restarted on MDT, 38.39% suffered from reactions. This could possibly be because of the fact that defaulting causes them to suffer from more severe problems like reactions.

P-085

Presentation Time: **Tuesday 17/09/2013 at 12:40 – 12:50**
Abstract Topic Name: **Chemotherapy**
Presentation Screen Number: **10**
Presenter: Prof Dr Heitor Gonçalves

BRAZILIAN CLINICAL TRIAL OF UNIFORM MULTIDRUG THERAPY FOR LEPROSY PATIENTS (U-MDT/CT-BR - THE CORRELATION BETWEEN CLINICAL DISEASE TYPES AND ADVERSE EFFECTS

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Introduction: An independent Brazilian study, the Brazilian U-MDT Clinical Trial (U-MDT/CT-Br), was initiated in 2007; in the study, dapsone, rifampicin and clofazimine were administered over six months to all leprosy patients (LPs). Here, we present the results of an investigation that was performed in the context of the U-MDT/CT-Br project with respect to comparing the incidence of adverse effects in two situations: (i) PB and MB patients who were treated with the same regimen (U-MDT) and (ii) PB patients who were treated with either the PB (R-MDT) or the MB (U-MDT) regimen.

Methods: The targeted patients were those with diagnosed leprosy who were treated in the U-MDT/CT-Br study. Out these patients, we selected 60 patients who presented with tuberculoid, borderline lepromatous (BL), or lepromatous leprosy (LL) types, based on unambiguous, rigorous, clinical, bacteriological and histopathological criteria according to the Ridley and Jopling (1966) classification. These 60 patients were distributed into three groups. Forty PB patients were divided into two sub-groups: (i) 20 patients were treated with MDT-PB treatment and (ii) 20 with the MDT-MB for six months. The 20 MB remaining patients (14 LL and 6 BL leprosy) were treated with MDT-MB for six months. None of the patients were removed from the study. The following adverse effects were monitored in the three groups: decreases in red blood cells (RBCs), haematocrit, haemoglobin, leucocytes and platelets, increases in the medium corpuscular volume, reticulocytes, C reactive protein (CRP), bilirubin, leukocytes and serum activities of lactate dehydrogenase, serum glutamic oxaloacetic transaminase, serum glutamic pyruvic transaminase and alkaline phosphatase and the presence of jaundice, haepatomegaly, epigastric pain, nausea, anorexia, vomiting, abdominal pain, diarrhoea, dizziness, fatigue, headache, methemoglobinaemia, cyanosis, dyspnoea, psychosis, peripheral neuropathy, sulphone syndrome, agranulocytosis, acne, renal failure, flu-like syndrome, cutaneous pigmentation, xeroderma, constipation, acute abdominal pain, weight loss, lower limb oedema and drug-induced skin disorders. The statistical analysis of the association between the variables (adverse effects of drugs used in the MDT for leprosy) and the study groups (PB MDT-PB, PB MDT-MB and MB MDT-MB) was performed using the non-parametric chi-squared test and the probability ratio. The adverse effects were grouped according to the most likely causative drug.

Results: Haemolytic anaemia was the most frequent adverse effect, particularly in the groups treated with MDT-MB. Of the PB patients under MDT-MB, 30% presented with a haemoglobin index of < 10 g%, while none of the patients under MDT-PB presented with a haemoglobin index of < 10 g%. Accordingly, we observed a statistically significant difference ($p < 0.05$) between the PB groups on MDT-PB and MDT-MB in the distribution of the haematological alterations of the RBC index. No other statistically significant difference was observed between the groups.

Conclusion: Although PB and MB Leprosy patients presented bacteriological, immunological, histopathological, clinical and genetic differences, no differences in the incidence of adverse effects were observed in this study.

P-086

Presentation Time: **Tuesday 17/09/2013 at 12:50 – 13:00**
Abstract Topic Name: **Chemotherapy**
Presentation Screen Number: **10**
Presenter: Bruna Gouveia

GENETIC POLYMORPHISMS OF NAT2, CYP2E1 AND ADVERSE EFFECTS ON DAPSONE THERAPY IN LEPROSY PATIENTS

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Introduction: It is well known that dapsone is a drug with most prominent adverse effects on the current multidrugtherapy for leprosy. The influence of genetic polymorphisms within N-acetyltransferase 2 (*NAT2*) and *CYP2E1* in N-acetylation and oxidation of dapsone was evaluated. A total of 11 leprosy patients presenting different kind of blood and liver abnormalities

related to dapsone therapy for leprosy were reported focusing in two of them, genetically characterized as slow acetylators and presenting the wild type allele of *CYP2E1* (*A1/A1*) genotype.

Methods: Cases features:1- S.S, male, 42, black, diagnosed as BL leprosy presenting type I and type 2 reactions since his diagnosis 7 years ago.
By the 4º monthly dose of MDT/MB therapy, the patient presented jaundice and skin rash, which imposed immediate dapsone withdraw.
At diagnosis, the laboratory features was: Ht: 46,5 and Hb: 14, TGO: 12,; TGP:52, CGT:60 (blood and liver parameters of interest) and at adverse effects diagnosis was: Ht: 35,0 and Hb: 10, TGO: 56, TGP:362, CGT:404.
During this patient follow up at outpatient clinic, severe intercurrences were faced: severe type I and II reactions, ulcers and venous thrombosis, with four hospitalizations in a university hospital.
2- MCS, woman, 52, white diagnosed as TT leprosy and submitted to MDT/PB. One week after her first monthy dose, she returned to the outpatient clinic presenting jaundice and dapsone was withdrawn.
At diagnosis the laboratory features was: Ht: 42 and Hb: 14. At adverse effects diagnosis it was: Ht: 39 and Hb; 13; No liver functions were measured.
The patient was submitted to MDT/PB with clofazimine to replace dapsone and no other intercurrence was observed.

Results: Treatment with dapsone has been reported to cause hemotoxic and hepatotoxic reactions. Dapsone-hydroxylamine generated by a CYP-family mediated oxidation reaction and monoacetyl dapsone hydroxylamine, a product of an oxidation of diacetyl dapsone are the toxic metabolites. The slow acetylation profile is usually involved with hepatic ADRs and the rapid hydroxylation profile, characterized by polymorphisms in genes from *NAT2* and CYP-family, respectively, were predominant in both cases. Usually dapsone-mediated ADRs are observed in the first month of treatment. In the first case its occurrence in the fourth month could be explained by the simultaneous intake of corticosteroids for reaction in MDT onset. In de second case the dapsone withdraw after one week of treatment starting, prevented the patient worsening of dapsone adverse-effects.

Conclusion: Clinical manifestations of the cases presented here were the opposite. The first, a MB patient with several clinic complications and the second, a PB patient with no clinic intercurrence, in spite of presenting the same phenotypes for the genes under study suggest the strict correlation of the *NAT2* slow acetylation phenotype and *CYP2E1* wild type allele (*A1/A1*) with drug metabolism. However, this hypothesis should be better investigated.

P-087

Presentation Time: **Tuesday 17/09/2013 at 13:00 – 13:10**
Abstract Topic Name: **Chemotherapy**
Presentation Screen Number: **10**
Presenter: Anna Maria Sales

EVALUATION OF MULTIBACILLARY PATIENTS ADMINISTERED ALTERNATIVE MULTIDRUG THERAPY

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Introduction: The aim of leprosy treatment is to increase patient well-being and impede further transmission and permanent disabilities via bacteriological and clinical cure. Effective treatment is the basis of the control and elimination of the disease as a public health care issue. However, medications may sometimes cause unexpected side effects and complications leading to an unfavorable clinical outcome, which, in turn, could contribute to abandonment of treatment. The alternative treatment is indicated for patients who for one reason or another cannot take the standard multidrug therapy due to the side effects it may provoke or the presence of intercurrent diseases. The objective of the present study was to evaluate the recommended alternative treatment for multibacillary patients, comparing it with standard multidrug therapy (MDT /WHO), and describe the principle adverse events that occurred leading to the substitution of standard MDT with the alternative regimen.

Methods: A retrospective study was conducted with a cohort of 435 multibacillary leprosy patients who were registered and treated at the Leprosy Outpatient Clinic (Leprosy Laboratory) from January 1998 thru December 2009 and who were under surveillance for 1 year after discharge. Patients were divided into 2 groups: Group 1 consisted of 390 patients who received standard multidrug therapy and Group 2 with 45 patients who were treated with the alternative. Clinical outcomes used to assess the 2 regimens were: evolution of bacterial load via bacillary index (BI), evolution of physical disability according to disability grade (DG), and evolution of the occurrence of reactional episodes after treatment discharge. A multivariate analyses was performed to assess the association with the outcomes and the patients variables. The level of statistical significance was 5%.

Results: The study showed that dapsone was the main drug responsible for the adverse side effects presented by patients. At the end of 1 year of treatment, the reduction in the mean BI of Group 1 was almost the same as that of Group 2. Likewise, 1 year after discharge, the alternative multidrug therapy pattern was similar to the standard scheme with respect to evolution of the bacterial load and disabilities. Likewise, multivariate analyses showed no association between type of leprosy treatment and a high bacillary index and with the presence of disabilities after treatment release. With regard to reactional episodes, patients treated with the alternative regimen had a lower chance (OR= 0.44; CI: 0.20-0.98) of reaction within 1 year post-treatment than those administered the standard scheme

Conclusion: The alternative leprosy treatment was similar after discharge to the standard one with regard to bacillary load and disabilities. An interesting result deserving of further attention was the occurrence of reaction after discharge in patients who were administered the alternative regimen.

P-088

Presentation Time: **Tuesday 17/09/2013 at 13:10 – 13:20**
Abstract Topic Name: **Chemotherapy**
Presentation Screen Number: **10**
Presenter: Prof Guzel Genatullina

ANTILEPROTIC ACTIVITY OF SOME PLANTS OF ASTRAKHAN REGION

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Introduction: The antileprotic activity some of plants of Astrakhan region (AR) has been studied in the *in vitro* experiments by their influence on functional activity of peritoneal macrophages (PM) of mice, which were infected by intraperitoneal inoculation of *Mycobacterium* lufu, recommended for antileprotic drug trial.

Methods: AR Plant-sensitivity of M.lufu: Helichrysum arenarium, Achillea micrantha, Robinia pseudoacacia, Sophorae japonicae, Glycyrrhiza glabra was defined by the method of serial cultivation on Shkolnikova's medium within subsequent reseeding to E. Lowenstein medium. PM functional activity was assessed with the help of absorbing capacity test and activity index of myeloperoxidase (MP) system of mice, which were infected by intraperitoneal inoculation of M.lufu. Everyday within 7 days, 0.2 ml/kg of vegetable extracts have been injected through the probe to gullets of pilot group mice. Distilled water was given as a placebo to check mice. PM had been given in standard procedure. Smear staining by the Ziehl-Neelsen's method.

Results: Extracts of Glycyrrhiza glabra have a strongly pronounced antileprotic activity. There was no M.lufu growing in all tubes with culture. The least sensitivity of M.lufu was displayed to Extracts of Helichrysum arenarium. Vegetable extracts to the mice which were infected by intraperitoneal inoculation of *Mycobacterium* lufu invoked reliable growth of PM activity by an absorption index and activity growth one of the base bactericidal systems of phagocytes – MP system.

Conclusion: The extracts of current plants may be recommended for use in complex therapy of leprosy.

P-089

Presentation Time: **Tuesday 17/09/2013 at 13:20 – 13:30**
Abstract Topic Name: **Chemotherapy**
Presentation Screen Number: **10**
Presenter: Dr.Sanjana Shivashankar

ANALYTICAL STUDY OF DEFAULTERS IN LEPROSY AT A TERTIARY LEPROSY CENTER IN SOUTH INDIA

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Introduction: Leprosy is a chronic infectious disease that leads to its physical psychological and social disabilities due to mutilation and rejection effects. Treatment default is an enigma in reduction of prevalence of leprosy cases. Defaulters are leprosy patients under treatment who does not complete the treatment within the specified period of 6 pulse therapies in 9 months by paucibacillary and 12 pulse therapies in 18 months by multibacillary patients.The objective of this study was to assess the pattern and magnitude of defaulting from leprosy treatment.

Methods: A study was conducted from January 2004 to December 2012 in a tertiary leprosy centre in Karnataka, South India to determine the pattern and magnitude of defaulting of leprosy patients from treatment. Records of 330 registered cases in the leprosy center during the nine year period were reviewed.

Results: A total of 330 clinicopathologically confirmed registered cases of leprosy patients were included in the study. There were males (274) and females (56) with the ratio of (4.8:1). The patients were in the age group between 10-70 years. A total of 40 treatment defaulters out of 330 cases were identified accounting to the defaulting rate of 12.12%.The default rate was higher among male adult patients in the age group between 20-30 years. Among defaulters,3 were children (<12years of age) and majority of defaulters belong to multibacillary leprosy (82.5%).

A detailed analysis showed the major reason for default was the change of address (47%), since 30(75%) were migratory labourers.The data also showed 32 defaulters had no knowledge about the disease before and after the start of treatment which accounted to 25% cases for the refusal of treatment during the course of therapy. Also 8 defaulters (20%) were residing in a remote village which was more than 50km from the nearest leprosy treatment center which was the reason for treatment default due to inaccessibility to the center for regular treatment follow up. The highest rate of defaulting was identified between 1st and 6th month after the start of treatment.

Conclusion: Leprosy treatment defaulters remain a potential source of infection. Based on the findings defaulters still remain at higher percentage in the present modern era of leprosy treatment. Hence appropriate health education to the patients about the disease manifestations, severity and its complications is necessary. Regular review of records, systematic registration of patients and tracing of absentees with community involvement are recommended. Providing easy accessability for the patients to the leprosy centre also helps in regular follow up and reduction in number of defaulters. In addition, further studies should be done to assess the effective duration of treatment and other factors associated with individual patient on defaulting from treatment.

P-090

Presentation Time: **Tuesday 17/09/2013 at 13:30 – 13:40**
Abstract Topic Name: **Chemotherapy**
Presentation Screen Number: **10**
Presenter: Attyla Drabik

PLANNING PROJECT MANAGEMENT IN CLINICAL TRIALS: A BRIEF GUIDE OF ESSENTIALS

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Introduction: The successful implementation of clinical study projects requires thorough planning and preparation. Clinical and medical as well as methodological and regulatory aspects must be discussed. The coordination of different areas such as biometrics pharmacovigilance, data management, monitoring, laboratory, pharmacy is one of the particular challenges.

Methods: Compilation and description of work packages to execute project management.

Results: Preparation of study outline (Determination of basic clinical and methodical contents)
Determination of responsibilities (List study team including Investigators)
Preparation of study protocol: logistics protocol versions; coordination of communication (coordinating-investigator, biometrics, data management, pharmacovigilance, monitoring)
Preparation/ national adaptation: patient information and informed consent
Feasibility-check of study sites
Verification of qualifications: e.g. collecting Investigators' CVs
Application for ethics committee' approvals
Application for approval of regulatory authority
Compilation of TMF
Compilation of ISF
Contractual arrangements (contract: study site)
Contractual arrangements (contract: pharmacy/dispensary)
Contractual arrangements (contract with laboratory)
Contractual arangements (contracts with third party : e.g. CROs)
Taking out of insurance for study subjects
Request for EudraCT- number
Study registration
Notification of study sites at federal authority
Notification of study sites at regional authorities of the respective Land
Investigational Product (Settling and arrangement: production, packaging, labeling, logistics)
Settling logistics laboratory and laboratory samples
Request for: table of reference values, laboratories' certificates, Investigator's brochure (IB)
Arrangements regarding expert procedures
Expenses and cost controll
Translation of study documents (e.g. patient information)
Organization of kick-off meeting or initiation monitoring

Conclusion: The implementation of project management in clinical trials consists of various tasks, which generalized in a structured collection are very manageable.

P-091

Presentation Time: **Tuesday 17/09/2013 at 13:40 – 13:50**
Abstract Topic Name: **Chemotherapy**
Presentation Screen Number: **10**
Presenter: Dr Isabela M. B. Goulart

ASSESSMENT OF COMPLETE BLOOD COUNT PROFILE OF LEPROSY PATIENTS BEFORE MULTIDRUG THERAPY

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Introduction: The combined administration of Dapsone, Rifampicin and Clofazimine for the multidrug therapy (MDT) leprosy treatment achieved a considerably reduction in leprosy burden. Despite being highly effective antibiotics, several hematologic and hepatic adverse reactions have been reported. The onset of or previously present abnormalities such as anaemia, thrombocytopenia and leucocytosis, which may even be due to the chronic inflammatory process of the disease, along with the intermittent drug regimens of leprosy treatment can aggravate pre-existing comorbidities and lead to discontinue or inadvertent withdrawal of medication, with negative impact on the health of these patients and in cure success rates. This study proposed to assess the complete blood count (CBC) profile of leprosy patients at diagnosis.

Methods: Retrospective epidemiological study evaluating CBC results before MDT treatment. Data was recovered from medical records of 445 patients diagnosed with leprosy treated at CREDESH/HC/UFU during 2006-2011.

Results: Among the 445 patients, 60.67% (270/445) were male and 98.2% (437/445) presented CBC results. Alterations in the standard values of erythrocytes were observed in: 6.8% (30/437) for values below and 8.9% (39/437) for values above standard. Haemoglobin values below standard were observed in 11.21% (49/437). For leukocytes, 2.7% (12/437) showed leucopoenia and 13.04% (57/437) leucocytosis. Of the 436 patients with eosinophil count, 4.3% (19/436) presented eosinopenia and 10.55% (46/436) eosinophilia. Regarding the red cells distribution width, 96.63% (430/445) were examined and of these, 45.35% (195/430) had values above the desirable.

Conclusion: Consideration of idiosyncratic conditions of each patient is part of good medical practice. Anaemia, leucocytosis and eosinophilia were present in over 10% of the patients with leprosy before treatment with MDT and the standardization of the low cost CBC test before MDT start can identify comorbidities, necessary information to guide the treatment of leprosy and assist clinical management of adverse reactions.

P-500

Presentation Time: **Tuesday 17/09/2013 at 15:40 – 15:50**
Abstract Topic Name: **Molecular Epidemiology**
Presentation Screen Number: **1**
Presenter: Dr Isabela M. B. Goulart

MYCOBACTERIUM LEPRAE DNA IN PERIPHERAL BLOOD OF LEPROSY PATIENTS, HOUSEHOLD CONTACTS AND CONTROLS MAY INDICATE A BACILLI MIGRATION ROUTE AND AN UNUSUAL MODE OF TRANSMISSION

S. Araujo [1,2,*], E. M. Reis [1], J. Lobato [3], A. F. Neves [4], L. R. Goulart [3], I. M. B. Goulart [1] and National Reference Centre for Sanitary Dermatology and Leprosy, Clinic Hospital, Federal University of Uberlandia, Uberlandia, MG, Brazil.

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Introduction: Untreated Multibacillary (MB) leprosy patients are considered the main source of *M. leprae* transmission. However, the number of MB patients is small and cannot represent the sole source of infection. The possibility of bacilli spread can not be restricted to leprosy patients and almost certainly healthy carriers and individuals with subclinical infections play important roles in the disease chain of transmission. Leprosy epidemiologic studies have been restricted to *Mycobacterium leprae* DNA detection in nasal and oral mucosa samples. The presence of *M. leprae* in peripheral blood has not been thoroughly investigated, although some reports have shown an infrequent presence of *M. leprae* in the blood of leprosy patients using both staining techniques and conventional PCR. We present the largest study applying quantitative real-time PCR (qPCR) for the detection of *M. leprae* DNA in peripheral blood samples.

Methods: To detect *M. leprae* DNA a qPCR primer/probe assay targeting a 69 bp DNA fragment from the unique *M. leprae ML0024* genomic region was performed. Samples from 200 leprosy patients, 826 household contacts and 1007 blood donors, were evaluated and results correlated with clinical and laboratory parameters.

Results: PCR positivity among patients was 22% (44/200), ranging from 16% (4/25) in tuberculoid (TT) to 33.3% (11/33) in lepromatous leprosy (LL) patients. Of the 44 patients with positive *ML0024* qPCR, 59% (26/44) were positive for anti-PGL-1 ELISA, and 72% (32/44) had negative or weakly positive Mitsuda response. Among contacts the positivity was 1.2% (10/826) and 0.3% (3/1007) among blood donors. These three blood donors positive samples were further confirmed by a second amplification reaction for the detection of another *M. leprae* specific gene (RLEP3). Contacts were followed up for a period of 7 years. In this period, 3.1% (26/826) developed leprosy, all of them were contacts of MB patients and 61.5% (16/26) were contacts of LL patients. Among the 26 contacts that became ill, *ML0024* qPCR detected DNA from *M. leprae* in 11.5% (3/26), the ELISA test was positive in 57.7% (15/26), and Mitsuda test was negative or weakly positive in 84.6% (22/26). Positive *ML0024* qPCR among contacts represented an impressive 17.22-fold greater chance of developing leprosy ($p < 0.0001$; 95% CI: 4.05 – 73.15), while anti-PGL-1 ELISA positivity increased 7.35-fold the chance of becoming ill ($p < 0.0001$; 95% CI: 3.29 – 16.46); on the other hand, the positive Mitsuda test (> 7 mm) promoted a 4.54-fold chance of protection ($p = 0.0058$; 95% CI: 0.07 – 0.66).

Conclusion: Even though most of the contacts will not get infected or develop leprosy due to the complex relationship among genetic, immunological and environmental factors, they might favour *M. leprae* dissemination to susceptible individuals. The presence of *M. leprae* DNA in blood of contacts and of blood donors, and a greater chance of developing leprosy among positive contacts, suggest that qPCR positive individuals without symptoms may behave as carriers maintaining the bacillary burden in endemic communities and with epidemiological contribution in the disease chain of transmission. Our findings corroborate with the hypothesis that transportation of the bacillus through blood is a cellular event that seems to be required prior to the infection of Schwann's cells and tissue macrophages. Moreover, it is plausible that bacilli can be transmitted through blood, however it's not usual. Our results impose important implications on disease management, and justify chemoprophylaxis for those identified in a high-risk category.

P-501

Presentation Time: **Tuesday 17/09/2013 at 15:50 – 16:00**
Abstract Topic Name: **Molecular Epidemiology**
Presentation Screen Number: **1**
Presenter: Dr Isabela M. B. Goulart

MOLECULAR INVESTIGATION OF THE ROUTE OF INFECTION AND TRANSMISSION OF M. LEPRAE

S. Araujo [1, 2,*], L. O. Freitas [1], L. R. Goulart [3], I. M. B. Goulart [1] and National Reference Centre for Sanitary Dermatology and Leprosy, Clinic Hospital, Federal University of Uberlandia, Uberlandia, MG, Brazil

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Introduction: Leprosy transmission still occurs despite the availability of highly effective treatment. The next step towards successfully eliminating leprosy is interrupting the chain of transmission. *Mycobacterium leprae* mechanism of infection is not completely understood, it is suggested that the upper respiratory tract (oropharyngeal and nasal mucosa) is the main portal for the entry and exit of *M. leprae*, and bacilli spread through aerosol droplets from infected and untreated individuals. The fact that bacilli cannot be cultivated *in vitro* and the long period of incubation, in addition to the existence of Paucibacillary leprosy, impose difficulties in performing experimental investigations. Therefore, epidemiological studies in particular involving molecular and immunological methods more sensitive and specific, may help to elucidate hypotheses about pathways of infection, transmission and disease progression.

Methods: To detect *M. leprae* DNA a quantitative real-time PCR (qPCR) primer/probe assay, targeting a specific *M. leprae* gene fragment (RLEP3), was performed in nasal swab, nasal turbinate biopsy and peripheral blood samples of 164 leprosy patients and 120 household contacts. Descriptive analyses, correlation and Odds Ratio (OR) were conducted. Statistical significance was set at $p<0.05$.

Results: The qPCR positivity observed among patients was: 50% in turbinate biopsies, 33% in nasal swabs samples, both with increasing values towards the lepromatous side of the clinical spectrum; and 27% in peripheral blood regardless of the clinical presentation. Among the contacts, positivity was: 19% in turbinate biopsies, 9% in nasal swabs and 5% in blood samples. Out of 6 contacts with positive blood samples, 2 developed leprosy in a follow-up period of 7 years, rendering an 8-fold greater probability of disease outcome when compared to those without clinical manifestations (OR= 7.94; $CI_{95\%}$= 1.2 to 49.0).

Conclusion: The presence of *M. leprae* DNA in nasal swab samples of household contacts of leprosy patients reflects the presence of bacilli in the nose, which does not mean onset of infection; it only imply carriage. Further investigation revealing positivity in nasal turbinate biopsies, indicates that bacilli have successfully infected the mucosa and at this point, cell-mediated immunity plays an important role against bacillary proliferation and dissemination. Due to the complex relationships among genetic, immunological and environmental factors, most of these contacts will not develop leprosy. However, they may facilitate *M. leprae* propagation to susceptible individuals. Once *M. leprae* is detected in blood samples, it has successfully entered the circulatory system and should be on its way to reach Schwann cell's and tissue macrophages, establishing subclinical infection and in consequence favouring the clinical onset of disease. After infection the heterogeneity of the acquired immune response of each individual will determine whether it spontaneously heals or presents one of the manifestations within leprosy broad clinical spectrum. The observed distribution of positive results among household contacts indicates that they all experience bacillary pressure, that they are susceptible to infection due to continuous interaction with a source of infection and that *M. leprae* is widely present among them. Household contacts comprise a recognizable group of individuals with greater risk of developing disease and the adoption of chemoprophylaxis as a prevention strategy could additionally reduce bacilli burden in endemic communities and assist to interrupt the transmission of leprosy.

P-172

Presentation Time: **Tuesday 17/09/2013 at 15:30 – 15:40**
Abstract Topic Name: **Epidemiological Surveillance**
Presentation Screen Number: **2**
Presenter: Dr Mikhail Yushin

DETECTION OF IMMUNOGLOBULINS G TO DIS-BSA-SPECIFIC SEMI-SYNTHETIC ANTIGEN OF MYCOBACTERIUM LEPRAE IN BLOOD SERA FROM DONORS OF ASTRAKHAN REGION OF RUSSIAN FEDERATION

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Introduction: Studies carried out in different leprosy endemic countries showed that antibody response in leprosy patients significantly changed in dependence with type and form of the disease. Patients with multibacillary forms of leprosy gave positive reactions for anti-*M.leprae* antibodies in 75-100% cases, while in paucibacillary leprosy only 15-40% patients demonstrate antibodies against PGL-1. It should be noted that positive responses for anti-*M.leprae* antibodies in leprosy endemic regions are discovered not only in leprosy contacts but also in general healthy population without known contact with leprosy. Besides, interrelation between morbidity and infectivity could not be always traced. In different world regions rates of detection of specific antibodies against *M.leprae* in healthy population significantly range from 4 up to 32%.
The aim of the present investigation was to detect antibodies against *M.leprae* in sera from healthy blood donors living in Astrakhan region which is leprosy endemic area in Russia.

Methods: In order to solve the task set the authors used a solid-phase enzyme immunoassay based on antigen - disaccharide conjugated with bovine serum albumin (Dis-BSA), which presents a semi-synthetic analogue of *M.leprae* specific phenol glycolipid-1 (WHO Bank). Donor blood sera were diluted 1:3 with PBS+Twin 20.

Results: As a result of the study performed on 88 blood donors antibodies of IgG class towards a specific semi-synthetic *M.leprae* antigen, were detected in 45 persons, that makes 51,1%.

Conclusion: Considering leprosy as saprozoonosis we could not exclude a possibility of existence some extra human part of *M.leprae* population. Already in the end of the XIXth century it was supposed that soil could be an alternative source of infection with *M.leprae*. Nowadays more and more data in favor of the suggestion that a human being could not be a single source of leprosy bacilli continue to be accumulated. Viable *M.leprae* were found out in soil specimens both in regions of inhabitance of leprosy patients and in areas where leprosy patients are never registered. In our opinion, leprosy bacilli could spread from the environment among general population and cause a process of latent immunization. This fact is indirectly confirmed in our investigations by detection of antibodies against *M.leprae* specific antigen in healthy persons (blood donors) in Astrakhan region where only sporadic cases of leprosy have been registered for the last decade.

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Presentation Time: **Tuesday 17/09/2013 at 15:40 – 15:50**
Abstract Topic Name: **Epidemiological Surveillance**
Presentation Screen Number: **2**
Presenter: Magda Levantezi

LEPROSY IN CHILDREN UNDER FIFTEEN YEARS IN BRAZIL, 2011

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Introduction: Leprosy is considered a disease of adults and young-adult, however, there are numerous case reports of this disease in patients younger than fifteen. The fact can be justified by the existence of an increase in the chain of transmission of the bacillus in the community, as well as a deficiency in the surveillance and disease control.

The detection rate of new cases in children under fifteen years is a political priority in leprosy control in the country. Children are most at risk when there is the presence of leprosy in the family or when a case bacillus is close to them. The Ministry of Health shows that in all these Federative Units, the incidence of the disease among children under 15 is well above the national average, especially in the states of Tocantins, Mato Grosso, Pará and Maranhão in 2011 were recorded in 2420 cases under 15 cases totaling a national coefficient of detection of 5.22 cases per 100 thousand inhabitants in this age group.
Leprosy is considered a disease of adults and young-adult, however, there are numerous

Methods: Descriptive epidemiological study that had as population the positive cases of Hansen's disease in minors of 15 years notified in Brazil.Were used as data fount the Agravos System of Notification, for the Hansen's disease cases, and the Brazilian Institute of Geographic Statistics, for population data.

Results: The results shown that 2420 disease cases that happened in minors of 15 years in 2011 were distributed in 5565 cities, and that 692 cities registered the occurrence of 1 to 10 cases of the disease, a total of 1489 cases (61%); 35 cities shown 15 to 25 cases, 544 (22,5%) and 8 cities notified 25 cases or more, totalizing 87 cases (16%), therefore, about one third of the Hansen's disease cases in minors of 15 years in Brazil in the year of 2011 are concentrate in 43 Brazilian cities.

Conclusion: It is expected that the results of this work lead to an upgrading of the methods and strategies of intervention, especially for the poorest population, expanding the access to a quality health service, establishing integration strategies with primary attention, aimed at early diagnosis and the appropriate treatment having as focus the incidence monitoring and the illness risk for Hansen's disease, especially in this vulnerable population, the minors of 15 years.
Another important thing to be considered, the stigmatizing and incapacitating power of the disease that sometimes can lead to irreversible deformities, keeping the children in the «wheel of poverty» compromising their life quality.
The promotion actions aiming the popular education, the training of health professionals for monitoring and evaluation of its services facilitating the adoption of strategies to cope with the disease and the elimination of Hansen's disease as a public health problem, are also expected.

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Presentation Time: Tuesday 17/09/2013 at 15:50 – 16:00
Abstract Topic Name: Epidemiological Surveillance
Presentation Screen Number: 2
Presenter: Azizullo Kosimov

LEPROSY IN TAJIKISTAN

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Introduction: Already in 1939, it was realised (N.F. Pavlov) that Pamir was a "gate" for leprosy from Afghanistan into Tajikistan. The province Gorno-Badakhshan Autonomous Region (Pamir) in the Republic of Tajikistan borders with Afghanistan in the West with more than 1,000 km. There was the Great Silk Road connecting the East with the West in the past. It was common for Afghan leprosy people to come to Gorno-Badakhshan (GBAR). Epidemiologic studies testify that there was a high prevalence of leprosy in the GBAR. Most of the country is located as high as 4.000 metres above sea level.

Methods: Systemetic description of on-site detection.

Results: In the year 1998 there were in Tajikistan120 patients, 60% of them were MB (72 patients). Almost oll of the 120 patients are disabled.
In 1998 they were put on MDT, prior to that they were treated with monotheraphy (Dapsone).

In Tajikistan there is one leprosarium called Hanaka. It is located about 100 km from the capital Dushanbe.
The number of registered leprosy patients has decreased considerably during the last few decades. Currently there are 51 registered patients. 24 of them are in the leprosarium Hanaka.
The situation of leprosy in Tajikistan is extraordinarily specific for the following reasons:

1. 80% of registered patients who now live in the leprosarium Hanaka have come from Pamir. But it is not possible to check up on most of their contact persons because they cannot be reached in the high mountains.
2. In the border territory to Afghanistan the prevalence of leprosy among the Afghans is high. So because of the uncontrolled border, there is a great possibility of infection for the Tajik people.

Conclusion: It is planned to build a leprosy health- centre in the west border region to Afghanistan. Because the border is uncontrolled the leprosy patients from afganistan can stay up to three month in Tajikistan.

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Presentation Time: Tuesday 17/09/2013 at 15:30 – 15:40
Abstract Topic Name: Epidemiological Surveillance
Presentation Screen Number: 3
Presenter: Dr Marivic Balagon

LEPROSY IN CEBU, PHILIPPINES: SEARCH FOR DEMOGRAPHIC, ECONOMIC AND WATER USAGE RISK FACTORS FOR TRANSMISSION

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Introduction: Despite the long history of leprosy with humanity, relatively little is known about the transmission of this debilitating disease. This is due to the long incubation period, making the exact time and mode of transmission difficult to ascertain. *Mycobacterium leprae*, the causative bacterium is uncultivable *in vitro*. This study aims to determine the risk factors and modes of transmission of contacting leprosy, such as where and how transmission is occurring, looking specifically at water sources, employment, gender, and social/ familial interactions.

Methods: The observational case study took place in Cebu, Philippines during 2005 to 2010. A standardized questionnaire was used to collect data for 440 patients entering the Cebu Skin Clinic. These data included, but were not limited to clinical findings (multibacillary, MB or paucibacillary, PB), contact history (if known, whether inside or outside the household), employment status, age, gender, civil status and water sources (deep well, artesian pump, chlorinated, spring or river) for drinking, cooking, bathing and washing for the past 20 years. Each patient sought treatment for leprosy; no cohorts were included. Due to the high density of categorical variables, the Fisher's Exact Test was utilized to check for independence. A chi squared test was not reliable as some tables included cell counts that were too small.

Results: Preliminary analysis indicated non-independence between historical water sources and whether or not the patient knew someone else with leprosy. There was also non-independence occurring between the conditional variable, "known outside contact". This required further investigation. Chlorinated water was found as a low risk source. Chlorinated water users were 1.96x more likely to NOT know someone else with leprosy compared to all other water type users. Chlorinated water users were also on average, 1.87x more likely to NOT know someone outside the household, given that they knew someone else who was infected. Employed individuals were often more infectious (of MB type) than unemployed individuals. Males were also predominantly considered the more infectious individuals than their female counterparts, even when controlling for employment status.

Conclusion: Patients using chlorinated water were less likely to know someone outside the household, than those not using chlorinated water. The source may vary for each patient and remains unclear. Employed subjects were more likely to be MB than the unemployed, likely spreading or being infected at their workplace. Males appear to act as the infectious cases (MB) more commonly than females. In Cebu, males are often the breadwinners, with a much higher proportion being employed than females. However, even when employment status was controlled, within the employed population, gender held no weight. Yet in the unemployed group, males were still more likely to be MB than their female counterparts. Perhaps males are more active outside of the household, have a weaker immune system, or some combination of these factors.
These collective findings lend themselves to further community based investigations to clarify whether the factors identified have a direct or indirect role in transmission of leprosy or if there are other unobserved variables.

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Presentation Time: Tuesday 17/09/2013 at 15:40 – 15:50
Abstract Topic Name: Epidemiological Surveillance
Presentation Screen Number: 3
Presenter: Eliane Ignotti

THE PRESENCE OF M. LEPRAE IN ENVIRONMENT AND RELATION WITH WEATHER VARIABLES: SYSTEMATIC REVIEW

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Introduction: Leprosy is characterized as a public health problem, because the high potential to produce disabilities. It is present in the tropical and subtropical regions of the world.To review the scientific literature about the presence of *M. leprae* in the environment and the relationship withmeteorological variables.

Methods: A systematic review of studies published in databases (SciELO, PubMed, MEDLINE, Lilacs) using descriptors related to presence of *M. leprae* in environment, and measures of temperature and humidity, from the decade of 1980.

Results: Recent studies state that even after years of deployment of MDT, reservoirs of cases not diagnosed remain as a source of infection of the disease. Most epidemiological studies by means of *Polymerase Chain Reaction* (PCR) in collections of soil show that there are no human reservoirs of *M. leprae*, and there are some environments favorable to the survival of the pathogen, as well as other factors conducive to the transmission. The mycobacterium remains viable and maintains sources of infection of the disease, especially in humid places. The humidity and conditions of rain probably help the bacteria to survive longer in the environment. The *M. leprae* could survive outside its main host, by means of protozoa of free life that can run as «macrophages wild», facilitating the survival of bacillus in environment when expel of human host for up to 04 (four) days. It also survives in water that characterizes as an important reservoir of bacilli. It is evident relationship between leprosy incidence with temperature and humidity. *M. leprae* remains viable for up to 36 (thirty six) hours in the environment, or by approximately 09 (nine) days in temperatures of 36.7 °C, and humidity average out 77.6 %. In tropical regions, in the nasal secretions of multibacillary patients remain viable for up to nine (09) days, and in moist soil, environment temperature, for up to 46 (forty six) days. There were two experiences, differences on the effects of drying of the bacillus during dry rainy and seasons. In the first experiment, the material was subjected to drying in the months of March and April, when the atmospheric humidity dropped from 28 to 44 %, these bacilli not survived for more than 14 (fourteen) days. During the rainy season of monsoon in august and September, the atmospheric humidity between 72-80 %, the bacillus survived at least 28 (twenty eight) days.

Conclusion: The main meteorological factors influencing the dynamics of the *M. leprae* are variations in the temperature and pluviosity.There are however, numerous difficulties in the establishment of a standard seasonal «key», maintenance of bacilli in the environment and weather variables.

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Presentation Time: **Tuesday 17/09/2013 at 15:30 – 15:40**
Abstract Topic Name: **Prevention of Disability**
Presentation Screen Number: **4**
Presenter: Dr Annamma John

EARLY DETECTION OF SENSORY NERVE FUNCTION IMPAIRMENTS IN THE FIELD

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Introduction: Nerve Function Impairment (NFI) distinguishes leprosy from other diseases in several ways: it is insidious, often painless, generally neglected by the affected person and his/her family, progressive if not treated, and results in irreversible nerve damage. Motor and sensory nerve function impairment are one of the most challenging complications of leprosy, and if not detected and treated early, lead to serious medical and social consequences for the affected person. Preventing permanent disabilities due to nerve function impairment thus remains a major concern in leprosy control. The decline of nerve function can take place before, during and/or after leprosy treatment. Early detection (within 6 months) and corticosteroid treatment may prevent further deterioration in nerve function. This constrains us to use clinical experience and tools astutely and effectively to promote early detection of nerve function impairment in the field in cost effective ways, without depending on expensive laboratory tests or expensive equipment which are available only in specialized centers. This study focuses on sensory testing for fine touch as a tool for field application to detect NFI early and prevent development of disability.
The aim of the study is to assess the fine sensation of palm and sole to detect NFI before the loss of protective sensation, which is routinely measured in leprosy programmes and to correlate the NFI with specific demographic, clinical and social factors.

Methods: This is a prospective cohort study conducted at seven Leprosy Mission Hospitals located in different states in India. All newly diagnosed leprosy patients, registered between March 2011 and April 2012 for Multi Drug Therapy were included. All patients had detailed history taken along with charting and Voluntary Muscle Testing /Sensory Testing (VMT/ST). The sensation was measured using 0.2 gm Semmes Weinstein filaments for palms and 4gm for soles, first, followed by 2gms. Semmes Weinstein filaments for palms and 10gm for soles. On each hand, four points on the ulnar nerve and six points on the median nerve were tested. On each foot, 10 points in the area of distribution of the posterior tibial nerve were tested. Individual Patient Forms were filled for each patient included in the study and the data was entered in Excel. And the data analyzed in SPSS version 16.

Results: Of the 374 patients included in the study 117 had sensory nerve function impairment, of these 58 had lost both fine and protective sensation, 37 had mixed results and 22 patients had loss of fine touch sensation with protective sensation intact.

Conclusion: These 22 (19%) patients would have been missed in the normal leprosy programme protocol which uses 2gm and 10 gm Semmes Weinstein filaments for testing sensory loss before initiating steroid therapy. Further research is needed to determine whether testing for fine sensation with 0.2 gm and 4 gm. Using Semmes Weinstein filaments for sensory testing in the field, would be a cost effective method to enhance the prevention of disability, by detecting NFI at an earlier stage followed by steroid therapy.

P-241

Presentation Time: **Tuesday 17/09/2013 at 15:40 – 15:50**
Abstract Topic Name: **Prevention of Disability**
Presentation Screen Number: **4**
Presenter: Siramas Rodchan

A SURVEY ON DISABILITY, ECONOMIC, AND SOCIAL PROBLEM OF LEPROSY AFFECTED PERSONS IN LOW PREVALENT AREA: KANCHANABURI PROVINCE, THAILAND

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Introduction: According to information obtained from leprosy related officers, it was found that people affected by leprosy who had been discharged from treatment suffered deteriorating physical disability and socio-economic problems. Apart from leprosy colony, some of them were living in general community. This study was, therefore; conducted in order to survey the physical disability and socio-economic problems of people affected by leprosy who were living in Kanchanaburi province, Thailand.

Methods: Rapid Disability Appraisal toolkit (RDA toolkit) was used in this survey. The RDA toolkit consisted of 7 data collection tools which were related to disability screening, personal information, impairment data, activity limitation, social participation restriction, stigma, and discrimination. After disability screening of 56 people affected by leprosy, 26 of them had primary problem in daily activity. Descriptive statistic was used to describe primary data. Independent – Sample T - Test, One – Way ANOVA, and Pearson's product moment correlation coefficient were used to analyze the association between two variables. Stepwise multiple regression analysis was used to analyze multiple independent variables.

Results: Among 26 people affected by leprosy, there were male more than female. All of them were over 61 years old. Most of them were married living with families of not more than 4 members. Highest education of 65.4% of them was primary school. Most of them were unemployed and living in shelters or small houses. 73.1% of them earned income not more than 5,000 baht per month. 50% of them were in debt with more than 50,000 baht per person in most of them. 80.8% of them used to be diagnosed as having MB leprosy and had been discharged for more than 6 years ago. More than half of them had disability grade 2. Most of them did not have ulcers or wounds, and assistant devices. There were no activity limitation, no participation restriction, and no recently discrimination in most of them. However, more than half of them had perceived stigma. Potential predicting factors of activity limitation were having disability grade2, low economic status. Potential predicting factors of social participation restriction were having severe disability and un-employed.

Conclusion: Although living in low prevalent area that may not have problem in terms of leprosy transmission, people affected by leprosy are still in need of disability survey in order to gather information regarding their living conditions and problems that may be a result from leprosy. It was suggested by the author that appropriate need assessment should be conducted among this group of people affected by leprosy in order to formulate a plan of action aiming to improve their quality of life in the long run.

P-231

Presentation Time: **Tuesday 17/09/2013 at 15:50 – 16:00**
Abstract Topic Name: **Prevention of Disability**
Presentation Screen Number: **4**
Presenter: Osman El Tayeb

HIGH DISABILITY RATE AMONG NEW LEPROSY PATIENTS IN NIGERIA: A 10 YEARS REVIEW STUDY (2001 TO 2011) IN OSUN STATE, NIGERIA

O. El Tayeb [1,*], D. G. Olapade Gbolahan [1], O. Joushua [2], D. Soji [3], S. Fasakin [4], T. Aregbe [5]

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Introduction: Background: Disability in new leprosy patients in terms of severity and magnitude measure indirectly the disease transmission in the community and early case detection activities.
Aim: To determine the prevalence of both grade 1 and 2 disability and identify factors associated with the development of impairment among new leprosy patients registered at Irojo Tuberculosis and Leprosy Clinic in Ilesa West Local Government Area, Osun State in South-Western Nigeria
Methods: A retrospective desk review of all Leprosy patients registered between 2001-2011at Irojo TB & Leprosy Clinic in Ilesa East local Government Osun State, Nigeria was done. Data *from* the one hundred and eleven (111) new Leprosy patients registered at the clinic were analysed to find out the proportion of disability (both grades) and associated factors

Results: The proportion of disability was quite high among the studied population. About 25 (22 5 %) had grade·1 disability while 39 (35.1 %) had grade·2 disability. Males 23 (56.5%) were more affected than Females17 (43.5%). Patients with pure neuritic type of leprosy 10(9%), 39 (37.5%) had multi·bacillary leprosy.
Among the total number of patients, 32 (82%) were manual labourers. Grade 2 disability was higher among patients aged 26 ·55yrs 24 (61.5%) and those who had more than 5 skin patches 33 (29%).
The nerves commonly affected were Ulnar 62 (22%), Common Peroneal 62 (22%) and Posterior Tibia 65 (22%) nerves. The feet were the commonly involved site with nerve function impairment. Sensory nerve function impairment (NFI) was the common cause of disability in both hands (32%) and feet (37%) followed by motor NFI (hands·28.8%, feet·32%).
Both in hands and feet males suffered more than the females in both sensory NFI (hands 40 vs 23.5%; feet 41.6%> vs. 33.3%) and motor NFI (hands 40 vs. 15.6%; feet·21.6 vs 13.7%).
Cracks/wounds (grade·2) were found more in feet than hands (11.7 vs 7.2%). In the eyes 11.7% had lagophthalmos which was more in males 7 (15%) than females 4 (7.8%) There is loss of eyebrow in only one female patient

Conclusion: Disability is common among leprosy patients. The proper identification of Leprosy patients with grade·1 disability and pure neuritic type of leprosy should be the priority focus to prevent disability at the earliest opportunity. Neurological examination of commonly affected peripheral nerves should be mandatory so that pure neuritic leprosy and grade·1 disability are not missed. Information Education and Communication at all levels i.e., individual, community, patients and health personnel for early and timely diagnosis of leprosy, starting MDT and adopting proper preventive measures such as self-care in newly diagnosed leprosy patients should be the focus of the National Tuberculosis and Leprosy Control Program. This will ensure that the country meets the WHO enhanced global strategy target (year 2011·2015) to reduce the number of new leprosy cases with grade·2 disability.

P-052

Presentation Time: **Tuesday 17/09/2013 at 15:30 – 15:40**
Abstract Topic Name: **Leprosy Control – Urban and Special Populations**
Presentation Screen Number: **5**
Presenter: Dr Venkata Ranganadha Rao Pemmaraju

LITERATURE REVIEW - LEPROSY CONTROL IN URBAN SETTINGS

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Introduction: Rapid urbanization bring with it its own challenges like migration, marginalized underserved population especially in slum and per·urban areas, difficulties in accessibility to health services in spite of high density of service providers and lack of coordination.

Methods: The purpose of the review is to identify the issues in urban leprosy control and the interventions and approaches to strengthen Leprosy Services in Urban Localities.
Relevant literature is identified and synthesized. The thematic areas are Case Detection; Case Management including disability care; Stigma; Community involvement and Participation of persons affected by leprosy and Research. Criteria for inclusion and exclusion defined on the basis of relevance, study quality and special innovative features. Twenty two Research Articles from Scientific Journals from 1994 onwards were reviewed.

Results: The review revealed that an integrated health program involving community is needed in urban slums to control leprosy using a variety of resources including medical colleges and Private Practitioners. Studies related to anthropology are best known as a route to understand the complex socio·cultural, historical and political implications of leprosy.
The data on leprosy from the private sector could not be obtained due to the large numbers of registered and unregistered medical practitioners in the area.
Urban Leprosy Clinics draw persons affected with disability for care as they are well known for leprosy management. It indicated strategies for disability care should be developed/ strengthened with community based approaches.
Treatment Completion is an on·going issue as there is no mechanism of follow up in Urban Leprosy Clinics.
Impact of stigma attached to leprosy had more effect on educated women. Highest number of patients reported regarding stigma at work place. Persons affected expressed self·stigma.

Conclusion: There is a need to initiate programmatic strategies and interventions for providing leprosy services in urban localities through the urban health establishments involving community based organizations.
Social awareness need to be enhanced to reduce stigma and to bring the people affected by leprosy into mainstream of society.

P-056

Presentation Time: **Tuesday 17/09/2013 at 15:40 – 15:50**
Abstract Topic Name: **Leprosy Control – Urban and Special Populations**
Presentation Screen Number: **5**
Presenter: Dr Abraham Selvasakar

MEDICAL CAMPS AS A NEW CASE DETECTION STRATEGY IN AN URBAN METROPOLIS IN INDIA

A. K. Tiwari [1,*], L. Gorai [1], S. Muthupillai [1], P. Peter [1], R. Nathan [1], S. Athreya [1], S. Abraham [1]

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Introduction: The National Capital Territory of Delhi is one of the fastest growing metropolises in the world with a population of 17 million (2011 census). The city attracts huge migrant populations seeking livelihood options from the nearby socioeconomically weaker states of Bihar, UP, Jharkhand etc., which are endemic for leprosy. TLM community hospital is a recognised tertiary care referral centre for leprosy established since 1984. The hospital attracts a huge number of cases with general and skin aliments. The disability rates among new cases detected in hospital have been relatively high. The WHO Grade1 & 2 disabilities combined together was 25 % in 2011 and 27 % 2012 respectively, reflecting delayed reporting. In response to this, free medical/skin camps were conducted at urban slums as a new approach to detect leprosy early and increase awareness about the disease.

Methods: The local leaders such as municipal authorities, area councillor, ward member, and informal leaders in the area were consulted and involved in getting permission to conduct the medical camps. Campaigning was done through distribution of pamphlets and announcements on loudspeaker, prior to the medical camp, announcing the camps as well as providing information regarding early signs and symptoms. Five camps were conducted by medical team comprising of a medical officer, laboratory technician, optometrist, counsellor and social worker from The Leprosy Mission Hospital. All the patients who came were examined and treated and provided with medicines free of cost, and all patients were screened for leprosy. The total cost incurred for the 5 camps was INR 7,500/·

Results: A total of 714 (100%) patients were examined and treated for presenting complaints and screened for leprosy during these 5 camps. Of the 714 patients who attended 186(26%) had general medical, 289 (40%) had skin, and 236(33%) had eye aliments respectively. 3(0.5%) leprosy cases were detected; of these 1 was a new untreated case and 2 were former patients Released from Treatment (RFT).

Conclusion: Medical screening camps are cost effective options of taking medical services to the near door step of urban slum dwellers who are less accessible. It would be successful if planned properly and conducted in strategic locations. Generally the intentions of conducting medical camps are for publicity purpose, which obviously fails to satisfy the needs of public. The drawbacks involved are camps are held during working hours when most people are out for earning their living misses the chance. In the elimination stage more MB cases tend to get detected, they seldom report voluntarily; especially those hidden LL cases at times difficult to diagnose having subtle findings which an experienced leprosy worker easily able to diagnose.

P-057

Presentation Time: **Tuesday 17/09/2013 at 15:50 – 16:00**
Abstract Topic Name: **Leprosy Control – Urban and Special Populations**
Presentation Screen Number: **5**
Presenter: Dr Abraham Selvasakar

SCREENING OF POPULATIONS IN NIGHT SHELTERS IN NATIONAL CAPITAL TERRITORY OF NEW DELHI – AN INNOVATIVE NEW CASE DETECTION STRATEGY!

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Introduction: The National Capital Territory (NCT) of Delhi is the fastest growing metropolis in the world with a population of 17 million (2011 census). The city attracts huge migrant populations seeking livelihood options from the nearby socioeconomically weaker states of Bihar, UP, Jharkhand etc., which are endemic for leprosy. In the NCT of Delhi there are 84 temporary and 66 permanent night shelters provided for the bitterly cold winters. Approximately 13,600 people can be accommodated in these shelters and they are usually filled to its fullest capacity. Apart from these there are an estimated 60,000 homeless people sleeping in pavements all over the city. Due to their Low economic status they live in very unhygienic environment and are prone to all infectious and parasitic diseases.

Methods: The total number of night shelters that are operational in the NCT of Delhi was found out and listed. The required permission from the state and municipal authorities was obtained and a schedule prepared for visiting the shelters during the winter. Twenty night shelters were visited over a month by a team comprising paramedical workers and supervisors who were trained

in leprosy. After introducing themselves and explaining the purpose of the activity, a session to raise awareness was carried out using flip charts and public address system. Then screening for cardinal signs was carried out by the staff and health education given as appropriate.

Results: Twenty night shelters were surveyed and the total number of individuals examined was 1069 (83%) out of 1296 enumerated. From those examined 1 new multi-bacillary case was detected and two people who had had leprosy and were Released from treatment. The new case was counselled and educated about the disease and referred to the nearest Municipal Clinic.

Conclusion: This strategy to detect new leprosy cases is cost effective as most of the people who take refuge in night shelters are migrants from states like UP, Bihar, Jharkhand and *Chhattisgarh* where leprosy is more prevalent than other parts of India. Conducting surveys in night shelters could be a helpful tool for early detection of leprosy and the first point of contact and intervention among the temporary / migrant population. Overcrowding and ill ventilation may be a conducive environment for spread of both Leprosy and TB, hence early intervention would arrest the transmission of both the mycobacterial diseases.

P-282

Presentation Time: **Tuesday 17/09/2013 at 15:30 – 15:40**
Abstract Topic Name: **New Diagnostic Tools**
Presentation Screen Number: **6**
Presenter: Prof Liudmila Saroyants

DETECTION OF M.LEPRAE SPECIFIC PSR TESTING OF LEPROSY PATIENTS AND HOUSEHOLDS CONTACTS

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Introduction: Leprosy is a chronic disease caused by infection with *Mycobacterium leprae*. Now early detection of preclinical disease is a very important part of early diagnosis of leprosy. We have applied PCR to identify *M.leprae* from slit skin smears, nose swabs and skin biopsies of human leprosy patients, family members, other contacts and healthy controls. The present work aims at developing PCR technology by using ribosomal RNA genes as a target.

Methods: Samples taken from subjects suspected as having leprosy, leprosy patients, contacts were examined by using two Methods: Ziehl –Neelsen stained samples were examined under a light microscope. Biopsies of the skin were also obtained to further evaluate the location of bacilli in the skin. DNA was extracted from the same samples. The PCR target was the 16S rRNA gene of *M.leprae*.

Results: *M.leprae* DNA was not detected in 4 biopsies collected from the households of leprosy patients. The fact that the test was correctly performed was indicated by the presence of *M.leprae* in 19 skin biopsies from MB patients as well as *M.leprae* obtained histologically from skin biopsies. PCR studies revealed that 2 of 77 patients had *M.leprae* DNA on swabs obtained from the nasal mucosa indicating that both anatomical sites may contribute to transmitting leprosy. Ninety contacts and healthy controls were also tested for exposure to *M.leprae* by analyzing nasal secretions by PCR. All the contacts tested were negative for *M.leprae* DNA. PCR was negative in all microscopy negative smears from 37 treated leprosy patients and 8 households of leprosy patients and in one case PCR was positive of microscopy negative smears.

Conclusion: The detection of new positive contacts carrying *M.leprae* DNA underlines the effectiveness of the PCR assay. Further studies are ongoing to detect *M.leprae* in the environment samples.

P-283

Presentation Time: **Tuesday 17/09/2013 at 15:40 – 15:50**
Abstract Topic Name: **New Diagnostic Tools**
Presentation Screen Number: **6**
Presenter: Philip Suffys

EXPERIENCE ON GENOTYPING FOR DRUG RESISTANCE OF MYCOBACTERIUM LEPRAE IN BRAZIL

A. D. S. Rocha [1], P. S. Rosa [2], L. M. Diniz [3], M. D. G. Cunha [4], C. Salgado [5], J. A. N. Nery [6], E. N. Sarno [6], M. Matsuoka [7], M. L. W. de Oliveira [8], P. N. Suffys [1,*]

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Introduction: Leprosy is a public health problem in Brazil having almost 40.000 new cases each year. Leprosy relapse is defined as the occurrence of signs of clinical activity after cure and no response to corticosteroids. Although this is a relative rare event, when due to resistance to the major drugs dapsone, rifampicin and clofazimine, such cases could complicate disease control. Data on the frequency and evolution of primary and secondary resistance are scarce but isolates of *M. leprae* exhibiting resistance against an (R) or multiple (MDR) have been described in Brazil. The WHO has established a program in 2008 to monitor the emergence of drug resistance in the treatment of leprosy, establishing a sentinel surveillance network and using PCR and sequencing, in Brazil being coordinated by five reference laboratories.

Methods: DNA was extracted at Fiocruz (RJ) from samples of 117 patients with relapsed leprosy, 90 multibacillary and 27 paucibacillary, 85 being skin biopsy and 32 of slit skin smears, from patients residents of different regions of Brazil were subjected to sequence analysis of the *rpoB*, *folP1* and *gyrA* associated with drug resistance to rifampicin, dapsone and ofloxacin, followed by comparative analysis of the tape GenoType LepraeDR kit (Hain, Gmbh), based on reverse hybridization and colorimetric detection. This kit allows the identification of wild-type and some mutant alleles of *M. leprae rpoB*, *folP1* and *gyrA* and was designed for use on processed skin biopsies samples from MB cases.

Results: Single nucleotide polymorphisms (SNPs) in *rpoB*, *folP1* and/or *gyrA* were observed after the sequencing in four of the 117 cases. In *folP1* mutation was CCC to CGC at codon 55 (Pro to Arg) while for *rpoB*, SNPs occurred at codon 531, two cases presenting ATG to TCG (Ser to Met), a TCG to TTC (Ser to Phe) and a TCG to TTG (Ser to Leu). Two cases also presented mutations in *gyrA*, being at codon 91 GTA GCA (Ala to Val). When submitting these samples to the GenoType LepraeDR kit, only good results were obtained when dealing with MB samples and three of the four resistant cases were correctly identified by the kit, the fourth was a PB case and results were inconclusive. We are now analyzing a second bath of samples that were prepared at the Instituto Lauro de Souza Lima (SP) for evaluation of DNA extraction procedure and sequence interpretation on the sensitivity and specificity of the kit.

Conclusion: The result obtained comparing sequence analysis with the commercially available kit GenoType LepraeDR were good in the case of MB samples, both regarding sensitivity and specificity and suggest that this kit could be an additional tool of supporting the surveillance of drug resistance in leprosy endemic regions. However, because all procedures were performed in single lab and our preliminary data from the batch of a second lab call for caution during interpretation of the results and possible differences between the two genotype-based assays

P-284

Presentation Time: **Tuesday 17/09/2013 at 15:50 – 16:00**
Abstract Topic Name: **New Diagnostic Tools**
Presentation Screen Number: **6**
Presenter: Vithal Jadhav

ROLE OF CYTOLOGY IN STUDY OF LEPROSY.

M. V. Jadhav [1], V. H. Jadhav [2,*] on behalf of not applicable

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Introduction: Cytological Evaluation of cellular yield of Leprosy skin lesions is attempted since a decade, though cytological preparations in the form of slit skin smear are in regular usage for evaluation of morphology and number of AFB. Present study was undertaken to eveluate utility of cytological examination by FNAC and slit skin smear in diagnosis and classification of Leprosy.

Methods: 40 newly diagnosed patients of Leprosy were subjected to clinical evaluation and lesional slit skin smear and FNAC by modified technique.The slides were stained by Leishman and modified Zeil Nelson Stain and were evaluated for cytomorphology of cellular yeild. The slides stained with Zeil Nelson stain were also evaluated for AFB number and morphology. Based on this, Leprosy lesions were diagnosed and classified. The same lesions were subjected to biopsy in all cases. The cyto histological correlation was attempted.

Results: The nodular and plaque lesions were easier to aspirate than macular lesions.The slit skin smears were easier to perform than FNAC. Leishman stain brought out cellular details more effectively but with Zeil Nelson stain it was easier to classify the lesions, as the bacterial load and cellular yield could be assessed simultaniously. Slit skin smear proved superior in terms of technical simplicity, sampling adequacy (100 %,90.6%) and diagnostic accuracy (85%,80%).

Conclusion: Cytological examination of Leprosy by slit skin smear holds promise for evaluation of cellular yield of Leprosy skin lesions and therby for diagnosis and classification of Leprosy.

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Presentation Time: **Tuesday 17/09/2013 at 15:30 – 15:40**
Abstract Topic Name: **History of Leprosy**
Presentation Screen Number: **7**
Presenter: Raj kumar Shah

SOCIAL INFLUENCING

R. K. Shah [1,*]

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Introduction: INFLUENCING FACTORS TO EMERGE MISCONCEPTIONS OF LEPROSY AND CAUSING SOCIO ECONOMIC DETERIORATION IN

Methods: Leprosy is a chronic, communicable and oldest disease known to mankind caused by *Mycobacterium leprae*. This disease is distributed worldwide but endemic in developing countries, especially in South Asia which is associated with socio economic aspects. Man will not die with this disease but it causes disability and develop permanent deformity. Nepal government established Leprosy Division to work from 1960 with around 100,000 leprosy cases and started effective combination of three drugs Multi Drug Therapy (MDT) from 1982. This drug cured around 167,000 people from leprosy and currently 2,430 people are under treatment for leprosy disease. More than 3300 cases diagnose as new case per year and 3.47 percent disability grade II and 6 percents are the children under 14 years among the new cases. More than 47,000 people with leprosy affected have permanent disability/deformity and community people easily recognize them.

Results: Existing misconceptions disfigurements and stigma are the main causes the deteriorating socio economic condition of leprosy affected people is a major objective of this study. All this information obtained from different books and literature regarding leprosy disability and Community Based Rehabilitation (CBR) and also sharing the experiences from staff of Anandaban Hospital and the patients who attended for leprosy treatment are the main source of information as the main methodology of this paper. Culture & religious influences and due to these disfigurements,

Conclusion: leprosy affected people get isolation/segregation from the community. There are social, economical, cultural, food habits, legal and other different misconceptions that still exist in our society regarding leprosy affected people. These misconceptions, isolation/segregation and stigma are the main causes deteriorating their economic and social condition from society.

P-154

Presentation Time: **Tuesday 17/09/2013 at 15:30 – 15:40**
Abstract Topic Name: **Microbiology**
Presentation Screen Number: **8**
Presenter: Mrs Am Sales

SINGLE PLAQUE LESION SUSPECTED OF LEPROSY: DO MOLECULAR ASSAYS AID DIAGNOSIS?

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Introduction: In 2010, more than 240,000 new cases of leprosy were registered in the world. Despite declining detection rates in recent years, leprosy remains endemic in tropical regions. The disease diagnosis is based on clinical aspects, on positive bacteriological index in skin smear and on typical histopathological features. In paucibacillary forms, rarely bacilli can be detected and histopathological examination is passive to interpretation by the pathologist, especially when the classical features are not present. In the last years, Polymerase Chain Reaction (PCR) has been proposed as a potential method to improve the diagnosis of leprosy, though its use has not yet been established. In this study, we evaluated patients with suspected single plaque skin lesion, compared the histological analysis obtained by two pathologists and demonstrated the aid that PCR could bring to the diagnosis of paucibacilary leprosy.

Methods: The epidemiological and clinical data were collected from medical records. Two independent pathologists blinded to the patients' clinical details performed histopathological analysis. The following parameters were used, as probability score (Ridley and Jopling,1966): **High Probability (HP)**: inflammatory infiltrate invading cutaneous nerve; **Medium Probabability (MP)**: granulomatous inflammatory infiltrate and unidentified nerve bundles; **Low Probability (LP)**: granulomatous inflammatory infiltrate with preserved cutaneous nerves or non-granulomatous inflammatory infiltrate and an unidentified nerves; **Other Dermatoses (OD)**: histopathological features typical of other dermatological diseases. Disagreeing cases were defined based on the analysis of a third pathologist. The fragments of skin stocked at -80° C were carried out for DNA extraction using Dneasy Kit according to the manufacturers recommendations. The levels of M. Leprae Ag85B and 16S rRNA in skin biopsy specimens were estimated using real-time TaqMan q PCR amplification.

Results: All patients were from the metropolitan region of Rio de Janeiro and 23% had a history of contact with patients diagnosed with leprosy. Their ages range from 12 to 77 years (mean 45.7) and 59.10% were female. The main body segment affected were the limbs, in 85.28% of cases, with the mean size of 5.47 cm. From the 66 cases studied, 51.5% were classified as HP, 12% as MP, 7.5% as LP for the diagnosis of leprosy, and 15% were classified as OD. The PCR was positive in 69.7% of the sample. Among the PCR positive patients, 82.9% were classified as HP and MP of having leprosy.

Conclusion: We show that in the cases previously classified as leprosy (AP and MP), PCR do not changed the therapeutic decision. However in patients classified as BP or OD, the PCR changed the clinical decision in 26% of cases. We propose that molecular assays can become a useful tool for the diagnosis of paucibacillary leprosy, especially regarding inconclusive histopathogical diagnosis.

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Presentation Time: **Tuesday 17/09/2013 at 15:40 – 15:50**
Abstract Topic Name: **Microbiology**
Presentation Screen Number: **8**
Presenter: Dr Cleverson Soares

DERMATOFIBROMA ORIGINATING IN CUTANEOUS LESIONS OF LEPROSY: REPORT OF 18 CASES.

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Introduction: Dermatofibroma (fibrous histiocytoma) is one of the most common soft tissue tumors occurring in the skin. The literature about the dermatofibroma being a reactive or neoplastic lesion is controversial. There are reports of association with insect bites, trauma and vaccination. In general it consists of single lesions occurring on the trunk and limbs, smaller than one cm in diameter, with raised and reddish-brown surface. Several histological variants and eruptive lesions have been described in the context of immunosuppression, associated with HIV-infection and highly active antiretroviral therapy (HAART). In this study, we describe 18 cases of dermatofibroma appearing on previous leprosy lesions.

Methods: We retrospectively reviewed the medical records and 205 biopsy specimens of patients who were diagnosed with dermatofibroma in the Department of Pathology at Lauro de Souza Lima Institute between January, 2003 and December, 2012.

Results: Among the 205 biopsies, 18 samples from 17 patients (seven female and 10 male) developed on previous leprosy lesions. Lesions occurred in the lower limbs (8/18), upper limbs (6/18) and trunk (4/18). All patients were classified according the Ridley-Jopling's criteria in the lepromatous side during or after treatment (10 borderline lepromatous and seven lepromatous). A review of records showed that ten of 17 had reactive episodes (eight erythema nodosum leprosum and two reversal reaction). The dermatofibromas showed classic histologic pattern characterized by proliferation of spindle or stellate mesenchymal cells in the dermis and subcutaneous layers, in storiform arrangement associated with hyperkeratosis, acanthosis and hyperpigmentation of the basal layer of the epidermis. In all cases, the dermatofibromas were located in the center of the lesions and were surrounded by regressive/residual leprosy lesion. The bacillary index showed lower number of bacilli fragmented within dermatofibromas compared to primary leprosy lesions located on the periphery. The immunohistochemistry panel for CD34 (negative or weak), factor XIIIa (positive) and smooth muscle actin (positive) was performed in inconclusive cases.

Conclusion: Dermatofibromas can originate in an environment of leprosy lesions, usually in the lepromatous side lesions and after reactional episodes. The same can be mistaken clinically and histologically with histoid lesions, active hansenomas (relapse) and dermatofibrosarcoma prutuberans. The histological characteristics associated with bacillary index and sometimes immunohistochemical study, are sufficient for defining the diagnosis.

P-157

Presentation Time: **Tuesday 17/09/2013 at 15:50 – 16:00**
Abstract Topic Name: **Microbiology**
Presentation Screen Number: **8**
Presenter: Mallika Lavania

DETERMINATION OF TRANSMISSION PATTERNS OF CIRCULATING MYCOBACTERIUM LEPRAE STRAINS AMONG LEPROSY PATIENTS IN AREAS OF HIGH LEPROSY PREVALENCE IN INDIA USING VNTR AND SNP TYPING

M. Lavania [1,*], R. P. Turankar [2], V. S. Chaitanya [2], U. Sengupta [2], R. S. Jadhav [3,4], S. Abraham [2], L. Das [5], F. Darlong [6]

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Introduction: Leprosy is still a major health problem in India with highest number of cases. Multiple Locus Variable number of tandem repeat (MLVA) analysis and single nucleotide polymorphism (SNP) has been proposed as a tool of strain typing for tracking the transmission of leprosy. However, empirical data for a defined population from scale and duration were lacking for studying the transmission chain of leprosy.
SNP sub typing and MLVA was applied on 10 VNTR loci of *Mycobacterium leprae* isolated from the above samples for strain typing. In addition, phylogenetic analysis was done on variable number of tandem repeats (VNTRs) data sets.

Methods: Seventy slit skin scrapings were collected from Purulia (West Bengal), Miraj (Maharashtra), Shahdara (Delhi) and Naini (UP) hospitals of The Leprosy Mission (TLM) Trust, India. Along with the strain typing, conventional epidemiological investigation was also performed to trace the transmission chain.

Results: Diversity was observed in the cross-sectional survey of isolates obtained from these patients. Similarity in fingerprinting profiles was observed in specimens of cases from same family or neighbourhood locations indicating a possible common source of infection. The data suggest that these VNTRs including subtyping of SNPs can be used to study the sources and transmission chain in leprosy, which could be very important in monitoring of the disease dynamics in high endemic foci.

Conclusion: The present study strongly indicates that multi-case families might constitute epidemic foci and the main source of *M. leprae* transmission in villages, causing the predominant strain or cluster infection leading to the spread of leprosy in the community.

P-068

Presentation Time: **Tuesday 17/09/2013 at 15:30 – 15:40**
Abstract Topic Name: **Training in Leprosy**
Presentation Screen Number: **9**
Presenter: Fàtima Moll Cervera

TRAINING IN LEPROSY AT THE SANATORIUM OF FONTILLES (SPAIN)

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Introduction: The Sanatorium of Fontilles (Spain) was inaugurated in 1909 with the aim of attending the social and economical needs of the leprosy patients.
All its activities were related with the disease and so since the very beginning research was initiated on treatment, diagnostics and the publication of a journal began in 1944 dedicated to leprosy and still the only one of its kind in Spanish. Also, very important was the establishment of annual medical leprosy courses at the sanatorium. This poster collect the experience os the Sanatorium in training from the first year of its courses in 1948.

Methods: The leprosy courses held at the sanatorium for different levels of health staff, number of participants, collaborations with other institutions and the progressive introduction of training on other dermatological diseases are described.

Results: In 1948 the Spanish Social Antileprosy Committee with support from the National School of Health requested Fontilles to start training on leprosy for dermatologists. This initiative was acknowledged by the Ministry of Education and The Pan-American World Health Organization, who granted during those years 34 students scholarships to facilitate their participation.
In 1958 the Sovereign Military Hospitaller Order of St. John of Jerusalem of Rhodes and of Malta and the Spanish government signed an agreement that stated the firm collaboration of the Order in the economical support of these courses and the start of a new annual course for religious personnel and missionaries.
Both courses are held every year at the sanatorium and training on other dermatological tropical disease has been included. This second course has extended participation to nurses, physiotherapists, social workers and laboratory staff.
55 Medical and 49 Paramedical courses have been organized with a total of 1545 and 1631 participants respectively. 9% of the Medical and 41% of the Paramedical Course were foreign students.
The Military and Hospitaller Order of Saint Lazarus of Jerusalem started in 2005 to offers grants for foreign students and has awarded at present 18.
Fontilles also offers training in countries where it has health cooperation projects (Nicaragua, Cuba, Mexico, and Rwanda) and collaborates with other prestigious Spanish and international Institutions on training.

Conclusion: The Sanatorium of Fontilles has dedicated exclusively all its activities to a specific disease and this has enabled it to work on research, training and scientific publications. In recent years work on other dermatological tropical disease has also been incorporated

P-070

Presentation Time: **Tuesday 17/09/2013 at 15:40 – 15:50**
Abstract Topic Name: **Training in Leprosy**
Presentation Screen Number: **9**
Presenter: Mr Yanjun Wang

LOW PREVALENCE AREA SOCIETY, INVESTIGATION ON LEPROSY COGNITION OF MEDICAL STUDENTS AND DOCTORS OF THE DEPARTMENT OF DERMATOLOGY

Y. Wang [1,*], J. Zhang [2], N. Ma [2], W. Zhang [2]

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Introduction: Hebei is located in the north of China, covering an area of 88000 square kilometers, population 71854202 people, as of 2012, found a total of 1589 cases of leprosy patients, there are 15malaria patients. At present, a low prevalence state, in order to understand the current low endemic area of leprosy all people cognition situation, provide the basis for formulating the prevention measures of scientific and rational, it carried out this project.

Methods: We designed the leprosy cognition questionnaire, 160 cases of ordinary people in Hebei Province, 300 medical students,45 cases of doctor Department of Dermatology general hospital conducted a questionnaire survey.

Results: The common people heard of leprosy in 32%, know the leprosy occur skin lesions accounted for 13.1%, that willcure leprosy accounted for 2.50%, fear of leprosy leprosy patients accounted for 29.4%, the need to isolate accounted for 42.16%, know where to treat leprosy disease accounted for 10.6%. Medical students know what is the source of infection of leprosy accounted for 78.7%, leprosy can cause disability 70.67%, what are the main drugs of leprosy in 0%, fear of leprosy patients, 26%
Department of Dermatology doctors know that leprosy infection source is what accounts for 100%, know 13.33% diagnostic criteria of leprosy, the main drug in the treatment of leprosy which 13.33%, fear of leprosy patients, 31.1%

Conclusion: In Hebei, the public knows little about leprosy, medical students and doctors for leprosy has certaindiscriminatory attitudes, strengthen the key crowd especially health education intervention and discrimination of medical students and the Department of Dermatology doctor leprosy is necessary.

P-071

Presentation Time: **Tuesday 17/09/2013 at 15:50 – 16:00**
Abstract Topic Name: **Training in Leprosy**
Presentation Screen Number: **9**
Presenter: Joseph Chukwu

HOW LARGE IS THE KNOWLEDGE AND ATTITUDE DEFICIT ON LEPROSY: A SURVEY OF FINAL YEAR MEDICAL STUDENTS AND MEDICAL DOCTORS IN SOUTHEASTERN NIGERIA

N. Ekeke [1,*], J. N. Chukwu [1], C. C. Nwafor [1], A. O. Meka [1], D. C. Oshi [1], C. L. Ogbudebe [1], N. O. Madichie [1], E. N. Aguwa [2], K. A. Uwakwe [3], I. Nduka [4], B. N. Azuogu [5], U. Anyanwagu [6]

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Introduction: According to some accounts, southern Nigeria was home to epidemics of leprosy in the 1930s and 1940s. One observer put the estimated prevalence at the time at an astonishing 2-30% (Russell, 1938: 66 – 71). The Nigerian TB and leprosy control programme achieved the WHO elimination target at the national level in 1998. Despite the achievement of this milestone, the country continues to notify more than 3,000 cases annually, 20% of them with visible deformities at diagnosis.
There is ample anecdotal evidence that young doctors and general health workers at health facilities including some University teaching hospitals often miss the diagnosis of leprosy when patients present to them. This contributes to late diagnosis with potential implications for individual patient care and continued transmission in the community.
As many of the 'old' crop of leprosy workers exit the stage, it becomes necessary to ascertain to what extent the torch is being passed on to the new generations of health workers to safeguard quality leprosy control services. To our knowledge, no systematic attempt has been undertaken in this country to explore this problem. This survey of knowledge and attitude of final year medical students and young medical doctors at Universities and tertiary health facilities in south-eastern Nigeria is GLRA's contribution to this imperative.

Methods: A descriptive cross sectional study of all final year medical undergraduates and medical doctors (interns) in all the six universities (medical schools) and eight tertiary health facilities in south-eastern Nigeria was done. The study was conducted in Abia, Anambra, Ebonyi, Enugu and Imo States. Pre-tested and validated self – administered questionnaires were used to obtain

information on their knowledge of diagnosis and treatment of leprosy, as well as attitude and practices. Written consent was obtained from study participants. Data were analysed using SPSS version 16.0.

Results: Out of 1019 respondents (561 students and 458 doctors), knowledge was poor with a median score of 28% and 31.5% respectively. Among the medical undergraduates, 0.4% had good knowledge, 0.7% average knowledge and 98.9% had poor knowledge of leprosy diagnosis and treatment. Similarly, 0.4% of doctors had good knowledge, whereas 7.5% and 92.1% had average and poor knowledge respectively. Only 38% of the students had good attitude and 62% poor attitude, whereas 50.4% doctors had good attitude and 49.5%, poor attitude. About 25.1% of students and 34.3% of doctors were willing to work in a leprosy clinic. Only 14.3% of students and 2.0% of doctors ever had a formal training and clinical demonstration on leprosy. Those who had ever examined at least one leprosy case were 17.3% of students and 36.9% of doctors. Respondents who indicated that people affected by leprosy should not be allowed to freely participate in community activities until they complete their treatment were 71.3% of students and 63.9% of doctors.

Conclusion: The study highlighted a very large deficit in knowledge of and attitude to clinical diagnosis and treatment of leprosy among young medical professionals in south-eastern Nigeria. A vast majority of them never examined a leprosy case or had a formal training on leprosy management in the course of their medical education or practice.

P-459

Presentation Time: **Tuesday 17/09/2013 at 15:30 – 15:40**
Abstract Topic Name: **Chemotherapy – Newer Drugs**
Presentation Screen Number: **10**
Presenter: Indropo Agusni

ONE YEAR EVALUATION OF PREVENTIVE TREATMENT IN SUBCLINICAL STAGE OF LEPROSY

I. Agusni [1,*], C. R. Prakoeswa [1], M. Y. Listiawan [1], N. Koesnartedjo [2], D. Adriaty [3], R. Wahyuni [3], I. Iswahyudi [3], S. Izumi [3]

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Introduction: Healthy individuals live in leprosy endemic area without any sign of leprosy, often show high titer of specific antibody to *M.leprae*. Since the level of this antibody is related to the antigen load, this situation is considered as Subclinical stage of Leprosy. Due to its potency to progress to manifest leprosy cases after several years, a preventive measure is needed. Children is the highest priority group who need the prevention measures. The aim of this study is to evaluate the results of preventive treatment to school children with high titer of specific antibody to *M.leprae*.

Methods: Serological surveys of leprosy were conducted to 5066 school children who live in two leprosy endemic areas of East Java for screening. Three hundreds and two school children (193 from Ra'as Island and 109 from Nguling subdistrict) were detected as sero (+++) with high anti PGL-1 antibody titer (>3.000 u/ml ELISA). A preventive treatment using Rifampicin 300mg daily combined with 250mg Clarithromycin daily for 10 days were given, continued with the same drugs intermittently every two weeks for 3 months. Clinical examination and serological examination will be evaluated every year until five years.

Results: After one year evaluation, clinically none of these children become a manifest leprosy and the majority of children (179/302 or 82.5%) showed a decrease in the antobody level to leprosy. But some of these children (41/302 or 17,95%) still showed increasing level of specific antibody. All the medications were well tolerated by these children and only a slight side effect of these drugs were reported.

Conclusion: Preventive therapy is an alternative method for solving the problem of continuously new leprosy case detection rate (NCDR), that remains stable in the last decade. Preventive regiment of leprosy using combination of Rifampicine and Clarithromycine in subclinical leprosy showed a good result after one year evaluation. The study is still in progress for a five years evaluation.

P-460

Presentation Time: **Tuesday 17/09/2013 at 15:40 – 15:50**
Abstract Topic Name: **Chemotherapy – Newer Drugs**
Presentation Screen Number: **10**
Presenter: Marcos Floriano

LEPROSY AFTER TREATMENT WITH INFLIXIMAB AND ADALIMUMAB

M. C. Floriano [1,*], M. M. Mariano [1], L. N. Sena [1], S. M. Maeda [1], N. S. Michalany [2], J. Tomimori [1]

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Introduction: The clinical results from the management of severe immune-inflammatory diseases with humanized monoclonal antibodies against tumor necrosis factor-alpha (anti -TNF-a), as infliximab and adalimumab are notable. On the other hand, we observe an increased population of immunosuppressed persons, as these drugs inhibit cell mediated immunity. Therefore, it is necessary a good selection of patients able to receive this kind of treatment in order to avoid emergence of new or latent diseases during or after therapy. It is recommended control and investigation of latent tuberculosis bacilli infection - with the PPD intradermorreaction (tuberculin skin test) exam and chest X-ray before the introduction of anti-TNF-a. However, there are other latent *Mycobacterium* infections that can also be activated, as leprosy, which is still endemic in many countries.

Methods: 43-year-old Brazilian man with 4 years history of rheumatoid arthritis managed with corticosteroids, leflunomide and courses of methotrexate. Infliximab was introduced (4 to 6 mg/kg/dose) during 18 months. Due to poor clinical response, infliximab was replaced by adalimumab. Six months later, progressive skin lesions were noted. These were characterized by warm erythematous plaques and nodules on face, trunk and lower extremities; infiltration of ear lobes; hypoesthesia on limbs and right elbow. The left ulnar nerve was enlarged. His mother and brother have had leprosy, completely treated, more than 10 years ago.

Results: The biopsy of the skin lesion revealed an inflammatory infiltrate with vacuolated macrophages and multinucleated giant cells. Fite-Faraco's staining revealed numerous acid-fast bacilli. Mitsuda´s reaction was negative. The diagnosis of Borderline-Lepromatous leprosy was established and he started treatment with multidrug therapy for multibacillary leprosy. Adalimumab was replaced by corticosteroids. After 3 months of therapy, the skin lesions improved and he still did not have any leprosy reactions during treatment.

Conclusion: Rheumatoid arthritis, ankylosing spondylitis, severe psoriasis and Crohn's diseases are affections that have presented excellent clinical results by the use of anti-TNF-a drugs. However, caution is necessary before anti-TNF-a drugs introduction, especially for infectious diseases. TNF is a critical component of both the antibacterial protection and the inflammatory response against infections, mostly the ones caused by intracellular microorganisms. Therefore, in therapeutic regimens in which the target is TNF inhibition, it can result in an increased number of complications associated with infections. Progression of recently acquired or reactivation of latent tuberculosis have been reported worldwide. The tuberculosis incidence in the population that use of these drugs is approximately 44%. Leprosy is an endemic infectious disease in Brazil. In the last decades, we have not observed an increase in number of cases of leprosy in patients with immunosuppressive conditions or diseases, like aids or iatrogenic immunosuppression (transplantation). The presented case illustrates the development of this infection after treatment of rheumatoid arthritis with infliximab and adalimumab. Considering that these two drugs act against the development of an immunological response, especially in the formation of granulomas and that leprosy has a long incubation period, it is a challenge think if these drugs were responsible for the development of this disease or if this association increases the susceptibility to this infection.

P-458

Presentation Time: **Tuesday 17/09/2013 at 15:50 – 16:00**
Abstract Topic Name: **Chemotherapy – Newer Drugs**
Presentation Screen Number: **10**
Presenter: Dr HK Kar

EVALUATION OF NERVE FUNCTION IMPAIRMENT (NFI) IN MULTIBACILLARY (MB) LEPROSY PATIENTS ON MULTIDRUG THERAPY (MDT-MB) ALONG WITH OR WITHOUT PREDNISOLONE.

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Introduction: Due to involvement of peripheral nerves in leprosy, there is loss of sensations (touch, temperature & pain) on the skin and weakness in hands, feet & eyes leading to ulceration and other deformities. Reactive states are widely accepted as common cause of nerve function impairments (NFI) and of these, type1 is regarded as the leading cause. Sometimes, nerves are functionally impaired without development of obvious symptoms & signs of reactions including nerve pain and tenderness, and this condition is called as "silent neuropathy". Prospective studies have indicated that multibacillary (MB) leprosy patients and those with existing impairment of nerve function are at the greatest risk of new nerve function impairments and reaction. The effects of corticosteroids in varying doses and duration for the treatment of reaction, neuritis and nerve damage have been studied in India and elsewhere and are reviewed in details by Naafs. Nerve function impairment (NFI) varies from 6–56% in newly diagnosed patients with leprosy and can even deteriorate during and after treatment as a result of leprosy reactions. Nerve damage may occur before anti-mycobacterial treatment, during treatment and even in patients who are released from treatment & labelled as 'cured' by leprosy programme and is a result of inflammation in the nerves due to immunological reactions. Multidrug treatment (MDT) for leprosy is primarily aimed at killing *M.leprae* and not at preventing nerve damage. Whereas, steroids are accepted method of medical treatment for nerve function impairment and reactions in leprosy. For many years corticosteroids, mostly prednisolone, have been used to treat NFI in leprosy patients. However, an optimal dose and duration of steroid treatment has yet to be established. Previous study (Smith WCS et al 2004) showed that Prednisolone had a significant effect in the prevention of reaction and nerve function impairment at four months, but this was not maintained at one year.

Methods: 60 multibacillary leprosy patients were enrolled in randomized double blind trial. Study group received MTD-MB for 12 months along with prednisolone 20 mg/day from the beginning of treatment for 6 months and tapering in 7th and 8th month. Control group received MDT-MB for 12 months without prednisolone. Nerve function assessment were done in both groups using clinical tests (nerve palpation, sensory testing using monofilament and voluntary muscle testing) and sensory and motor nerve conduction studies before initiation of treatment, at 8month and at the completion of MDT (12 months). Both study and control groups were assessed at 8 months and 12 months as compared to baseline by clinical tests and nerve conduction studies. Analysis was performed using SPSS version 17. The significance of association was tested using Chi square and Fisher's exact tests.

Results: Prednisolone had a significant effect in the prevention of reaction and nerve function impairment at 8 months and was maintained up to 12 months.

Conclusion: The use of low dose prophylactic prednisolone during the first 8 months of multidrug treatment for leprosy reduces the incidence of new reactions and sustained at one year. Patients who diagnosed as MB leprosy with impaired nerve function on NCS before starting the prednisolone not showed reversal of NFI.

18th

INTERNATIONAL LEPROSY CONGRESS

Hidden challenges

BRUSSELS, 16th-19th SEPTEMBER 2013

Wednesday 18 September 2013

Programme

DAY AT A GLANCE

Wednesday 18 September 2013

09:00 - 10:30	**Plenary Session 2: Improving quality of life** **Chair:** *Marcos Virmond* **Speakers:** *Dr Dierdre Prins-Solani, Prof Mitchell Weiss, Ms Zilda Maria Borges* — **Plenary Room A & B • Level 1**					
10:30 - 11:00	*Coffee Break and ePoster sessions* **Foyer • Level 0**					
11:00 - 12:30	**Session 19**	**Session 20**	**Session 21**	**Session 22**	**Session 23**	**Session 24**
	Relapse and Drug Resistance	**Social Sciences**	**New Diagnostic Tools**	**Molecular Epidemiology**	**Surgical Rehabilitation**	**Other Mycobacterial Diseases**
	Room C & D	**Work Group Area**	**Plenary Room A & B**	**Room E & F**	**Room 1 & 2**	**Room 3 & 4**
12:30 - 14:00	*Lunch and ePoster sessions* **Foyer • Level 0**					
14:00 - 15:30	**Session 25**	**Session 26**	**Session 27**	**Session 28**	**Session 29**	**Session 30**
	Chemotherapy 2	**Human Rights and Discrimination**	**Immunology 2**	**Epidemiological Analyses**	**Nerve Injury in Leprosy**	**Les progrès récents** (Session in French only)
	Room C & D	**Room 3 & 4**	**Room E & F**	**Work Group Area**	**Plenary Room A & B**	**Room 1 & 2**
15:30 - 16:00	*Coffee Break and ePoster sessions* **Foyer • Level 0**					
16:00 - 17:30	**Session 31**	**Session 32**	**Session 33**	**Session 34**	**Session 35**	**Session 36**
	ENL reaction 2 and Dermatology	**History of Leprosy 2**	**Molecular Biology 2**	**Promoting Early Diagnosis**	**Social Aspects and Self-Care**	**Experiences of People and Communities**
	Room 1 & 2	**Room C & D**	**Room 3 & 4**	**Plenary Room A & B**	**Work Group Area**	**Room E & F**
18:00 - 20:00	Movie projection **'Molokai, the true story of Father Damien'** — **Plenary Room A & B • Level 1**					

Wednesday 18
SEPTEMBER 2013

LIST OF ABSTRACTS

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Room: C & D

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RELAPSE AND DRUG RESISTANCE IN LEPROSY
Presenter: *Paul Saunderson*

O-099
TRENDS IN INCIDENCE AND RELAPSE RATES OF LEPROSY DURING DAPSONE MONOTHERAPY ERA IN SOUTH INDIA
Presenter: Jesuraj Arockiasamy

O-100
INCIDENCE OF RELAPSE IN A COHORT OF 2185 INDIVIDUALS RELEASED FROM TREATMENT IN SOUTH INDIA
Presenter: Vadivoo Selvaraj

O-102
LEPROSY DRUG RESISTANCE MONITORING AND RELAPSE IN NEPAL
Presenter: Dr Deanna Hagge

O-228
PROFILE OF DEFAULTERS AND PATTERNS OF DEFAULTING IN A LEPROSY HOSPITAL IN SOUTH INDIA
Presenter: Mannam Ebenezer

Social Sciences

Chair: *Dr Alice Cruz*
Room: Work Group Area

O-103
HANSEN DISEASE AS A BIOSOCIAL ISSUE: THE ROLE OF THE SOCIAL SCIENCES IN THE STRUGGLE TOWARDS HEALING AND INCLUSION
Presenter: *Alice Cruz*

O-104
LOVE IN THE TIME OF LEPROSY: DEALING WITH PARTNERSHIP AND LEPROSY
Presenter: *Beatriz Miranda*

O-105
LIVING WITH AMBIVALENCE: THE EXPERIENCES OF JAPANESE HANSEN'S DISEASE SURVIVORS AND THEIR FAMILIES IN THE ERA OF RECONCILIATION
Presenter: *Yukiko ARARAGI*

O-106
RECENT FOOD SHORTAGE IS ASSOCIATED WITH LEPROSY DISEASE IN BANGLADESH: A CASE-CONTROL STUDY
Presenter: *Sabiena Feenstra*

O-107
UNDERNUTRITION AMONG CURED LEPROSY PATIENTS
Presenter: *Irine Jini*

New Diagnostic Tools

Chair: *Professor Annemiek Geluk*
Room: A & B

O-108
NEW TESTS DETECTING CELLULAR AND HUMORAL IMMUNITY AGAINST M.LEPRAE
Presenter: *Annemieke Geluk*

O-109
IDENTIFICATION OF SEROLOGICAL BIOMARKERS OF INFECTION, DISEASE PROGRESSION AND TREATMENT EFFICACY FOR LEPROSY
Presenter: *John Spencer*

O-110
ANTIGEN ASSOCIATIONS FOR THE DIAGNOSIS OF PAUCIBACILLARY LEPROSY
Presenter: *Mariane Stefani*

O-111
A RAPID ELISA FOR LABORATORY-BASED DIAGNOSIS AND CHARACTERIZATION OF LEPROSY
Presenter: *Malcolm Duthie*

O-112
DEVELOPMENT OF NDO-LID®: A NEW POINT-OF-CARE TEST FOR LEPROSY
Presenter: *Mariane Stefani*

O-113
SMALL NERVE FIBER EVALUATION TO AID THE EARLY DIAGNOSIS OF LEPROSY
Presenter: *Dr Sérgio Antunez*

Molecular Epidemiology

Chair: *Professor Eliane Ignotti*

Room: E & F

O-114

EVIDENCE OF ACTIVE TRANSMISSION OF DRUG RESISTANT MYCOBACTERIUM LEPRAE STRAIN IN BRAZIL

Presenter: *Dr Patricia ROSA*

O-115

SPATIAL ANALYSIS SPOTLIGHTING EARLY CHILDHOOD LEPROSY TRANSMISSION IN A HYPERENDEMIC AREA OF THE BRAZILIAN AMAZON REGION

Presenter: *Josafá Barreto*

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MOLECULAR, ETHNO-SPATIAL EPIDEMIOLOGY OF LEPROSY IN CHINA: NOVEL INSIGHTS FOR TRACING LEPROSY IN ENDEMIC AND NON ENDEMIC PROVINCES

Presenter: *Varalakshmi Vissa*

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20 YEARS OF THE DECENTRALIZATION OF CARE AND THE DECREASE REDUCTION OF THE INCIDENCE OF LEPROSY IN BRAZIL

Presenter: *Eliane Ignotti*

Surgical Rehabilitation

Chair: *Dr Marcos Virmond*

Room: 1 & 2

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PERCEPTION OF PEOPLE AFFECTED BY LEPROSY ON SURGICAL REHABILITATION

Presenter: *Marcos Virmond*

O-121

IMMEDIATE EARLY ACTIVE MOTION AFTER RECONSTRUCTIVE HAND SURGERY IN LEPROSY AND PATIENT SATISFACTION

Presenter: *Indra Napit*

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A STUDY OF PATIENTS EXPECTATIONS BEFORE AND AFTER RECONSTRUCTIVE SURGERY

Presenter: *Paul Madhale*

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EFFICACY OF EARLY RESISTANCE POST OPERATIVE PROTOCOL TO HASTEN GRIP STRENGTH AFTER LASSO SURGERY: A RANDOMIZED CONTROL STUDY

Presenter: *Mr Manivannan GOVINDARAJLU*

Other Mycobacterial Diseases

Chair: *Mrs Bouke de Jong*

Room: 3 & 4

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LEPROSY AND BURULI ULCER: SIMILARITIES AND DIFFERENCES

Presenter: *Françoise Portaels*

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THE DIFFERENTIAL DIAGNOSIS OF BURULI ULCER

Presenter: *Mr Bouke de Jong*

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ARE RECURRENCES OF BURULI ULCER CAUSED BY RELAPSE OR REINFECTION?

Presenter: *Miriam Eddyani*

14:00 – 15:30

Chemotherapy 2

Chair: *Dr MS Raju*
Room: C & D

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THALIDOMIDE USE IN BRAZIL
Presenter: *Maria Araci Pontes*

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GLUCOCORTICOSTEROID INDUCED OSTEOPOROSIS (GIOP) CAUSING VERTEBRAL COLLAPSE IN LEPROSY PATIENT TAKING PREDINSOLONE FOR ERYTHEMA NODOSUM LEPROSUM (ENL); A CASE REPORT
Presenter: *Digafe Alembo*

O-130

ESTABLISHMENT AND APPLICATION OF RISK PREDICTION TEST FOR DAPSONE HYPERSENSITIVITY SYNDROME-PRELIMINARY REPORT
Presenter: *Hong Liu*

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HLA-B*1301 ASSOCIATION WITH DAPSONE HYPERSENSITIVITY SYNDROME AMONG LEPROSY PATIENTS IN CHINA
Presenter: *Weiwei Tian*

O-132

CORRELATES OF DEFAULTING FROM MDT IN LEPROSY
Presenter: *Dr Raju M S*

Human Rights and Discrimination

Chair: *Dr Douglas Soutar*
Room: 3 & 4

O-133

AN INCLUSIVE RIGHTS-BASED APPROACH TO LEPROSY
Presenter: *Doug Soutar*

O-134

LEPROSY LAWS IN BRAZIL AND IN THE STATE OF SAO PAULO, FROM THE COLONIAL TIMES TO TODAY: A CRITICAL STUDY
Presenter: *Prof. Dr Yara Monteiro*

O-136

LEARNING FROM THE EXPERIENCE OF LEPROSY: MEDICAL AND HUMAN RIGHTS APPROACHES TO STIGMA
Presenter: *Ms Anwei Law*

O-137

TOWARD A LITERATURE OF HUMAN RIGHTS: LEPROSY, HANSEN'S DISEASE, AND JAPANESE PATIENT WRITING
Presenter: *Kathryn Tanaka*

O-138

THE MEASUREMENT OF PARTICIPATION RESTRICTIONS AMONG PEOPLE WITH VARIOUS DISABILITIES IN EASTERN NEPAL
Presenter: *Sharon Stevelink*

O-267

THE PLAN BRAZIL WITHOUT POVERTY AND THE LEPROSY
Presenter: *Regiane Aparecida Cardoso de Paula*

Immunology 2

Chair: *Dr Bruno Silva*
Room: E & F

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TLR1 GENE IS ASSOCIATED WITH LEPROSY RISK AMONG BRAZILIANS
Presenter: *Carolinne de Sales Marques*

O-140

ROLE OF IFN-GAMMA-MEDIATED AUTOPHAGY IN ANTIMICROBIAL RESPONSE AGAINST MYCOBACTERIUM LEPRAE
Presenter: *Bruno Silva*

O-141

EXOSOMES RELEASED FROM MYCOBACTERIUM LEPRAE INFECTED HUMAN DENDRITIC CELLS CAN ACTIVATE T CELLS
Presenter: *Yumi Maeda*

O-142

INFLUENCE OF INTRON II MICROSATELLITE POLYMORPHISM IN HUMAN TOLL-LIKE RECEPTOR 2 GENE IN LEPROSY
Presenter: *Mr Naveenchandra Suryadevara*

O-143

POSSIBLE ROLE OF PTX3 ON LEPROSY: M.LEPRAE RECOGNITION, PHAGOCYTOSIS MODULATOR OR VESSEL INFLAMMATION MARKER?
Presenter: *DanielCarvalho*

O-144

TLR2MRNA AND TLR4MRNA EXPRESSION LEVEL ON PBMC OF LEPROSY PATIENT
Presenter: *Xinjiang Zhang*

Epidemiological Analyses

Chair: *Prof Paul Fine*

Room: Work Group Area

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LEPROSY ON THE EDGE OF ITS DISTRIBUTION
Presenter: *Paul Fine*

O-146

BAYESIAN MODELS DEMONSTRATE DECLINING TRENDS IN LEPROSY INCIDENCE IN SOUTH INDIA
Presenter: *Dr Ponnaiah Manickam*

O-147

ECOLOGICAL ASSOCIATION BETWEEN CHARACTERISTICS OF THE MUNICIPALITIES AND THE MEDIAN INCIDENCE RATE OF LEPROSY IN BRAZIL: 2009-2011
Presenter: *Lucia Freitas*

O-148

ZOONOTIC LEPROSY IN THE AMERICAS
Presenter: *Rahul Sharma*

O-149

BAYESIAN MODEL, ECOLOGICAL FACTORS AND TRANSMISSION OF LEPROSY IN AN ENDEMIC AREA OF SOUTH INDIA
Presenter: *Dr Vasna Joshua*

O-150

SOCIAL NETWORK APPROACH TO LEPROSY SPREADING
Presenter: *Ligia Kerr*

Nerve Injury and Leprosy

Chair: *Dr David Scollard*

Room: A & B

O-151

PATTERN OF NERVE CONDUCTION STUDY IN LEPROSY NEUROPATHY
Presenter: *Marcia Jardim*

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EPIDERMAL NERVE FIBER AND SCHWANN CELL DENSITIES IN THE DISTAL LEG OF NINE-BANDED ARMADILLOS WITH EXPERIMENTAL LEPROSY NEUROPATHY
Presenter: *Gigi Ebenezer*

O-154

TGF-1 MAY BE A KEY MEDIATOR OF THE FIBROGENIC PROPERTIES OF NEURAL CELLS IN LEPROSY

Presenter: *Prof. Dr MSc Bernardo M. O. Pascarelli*

O-155

THE DIAGNOSTIC VALUE OF ASSESSING NERVE DAMAGE BY HIGH-RESOLUTION SONOGRAPHY AND COLOR DOPPLER IN LEPROSY PATIENTS
Presenter: *Dr Renuka Raju*

O-156

EFFECT OF PREGABALIN ON THE CHRONIC NEUROPATHIC PAIN OF LEPROSY
Presenter: *Masamichi Goto*

Les Progrès Récents

(French Only)

Chair: *Dr Christian Johnson*

Room: 1 & 2

O-157

SITUATION DE L'ENDÉMIE LÉPREUSE EN AFRIQUE : ÉVOLUTION ET DÉFIS
Presenter: *Christian Johnson*

O-158

L'APPROPRIATION DE LA SENSIBILISATION PAR LA COMMUNAUTÉ AMÉLIORE LA DÉTECTION DE LA LÈPRE
Presenter: *Dr Jean Musafiri*

O-159

MOTIVATIONS À CONSULTER CHEZ LES MALADES SOUFFRANTS DE LA LÈPRE ET LEUR SUIVI AU BURUNDI
Presenter: *Sawadogo Michel*

O-160

PIRP : IMPLEMENTING A NATIONAL STRATEGY FOR PREVENTION OF DISABILITIES AND PHYSICAL REHABILITATION OF LEPROSY IN MADAGASCAR
Presenter: *Dr Andrianantoandro*

O-161

SPATIALISATION DE LA DISTRIBUTION GEOGRAPHIQUE DE L'ENDEMIE LEPREUSE AU BENIN DE 1995 À 2008
Presenter: *Christian Johnson*

16:00 – 17:30

ENL Reaction 2 and Dermatology

Chair: *Dr Sunil Dogra*
Room: 1 & 2

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ROLE OF DERMATOLOGISTS IN LEPROSY CONTROL
Presenter: *Sunil Dogra*

O-164

WIDENING THE FOCUS OF AN EXCLUSIVE LEPROSY REFERRAL CENTRE TO INCLUDE GENERAL DERMATOLOGY : A NEW WAY TO IMPROVE LEPROSY CASE DETECTION. EXPERIENCES FROM NEW DELHI, INDIA
Presenter: *Abraham Selvasekar*

O-165

RCT ASSESSING CICLOSPORIN IN ENL REACTION TREATMENT, IN ETHIOPIA
Presenter: *Saba Lambert*

O-166

ENLIST – THE FORMATION AND AIMS OF THE ENL INTERNATIONAL STUDY GROUP
Presenter: *Stephen Walker*

O-167

SERUM TNF-A AND CORTISOL IN VARYING SEVERITY SCALE OF ERYTHEMA NODOSUM LEPROSUM TREATED WITH CORTICOSTEROID
Presenter: *Irmadita Citrashanty*

O-168

A RANDOMIZED, DOUBLE-BLIND, PLACEBO CONTROLLED PROSPECTIVE TRIAL ON THE EFFECT OF EXTENDED CLOFAZIMINE ON ENL IN MB LEPROSY- AN INTERIM REPORT
Presenter: *Armi Maghanoy*

History of Leprosy 2

Chair: *Dr Shaik Noordeen*
Room: C & D

O-169

THE HISTORY OF LEPROSY IN COLOMBIA AND THE FAMILY'S PERCEPTION OF ITS STIGMA
Presenter: *Ms Patricia Angarita*

O-170

ON HISTORY OF THE DEVELOPMENT OF ANTICONTAGIONISM IN LEPROSY IN RUSSIA
Presenter: *Anatoly Jushchenko*

O-171

NEW PERSPECTIVES ON KALAUPAPA'S HISTORY AS REFLECTED IN HUNDREDS OF LETTERS, PETITIONS AND NEWSPAPER ARTICLES TRANSLATED FROM HAWAIIAN
Presenter: *Ms Anwei Law*

O-172

UNTANGLING LEPROSY: UGANDANS, BRITONS, AND SHIFTING ATTITUDES TOWARDS LEPROSY IN TWENTIETH-CENTURY UGANDA
Presenter: *Kathleen Vongsathorn*

O-173

WE ARE THROWN AWAY: THE LANGUAGE OF LEPROSY AND THE FOUNDING OF SWAZILAND'S NCABANENI LEPROSY SETTLEMENT
Presenter: *William McCoy*

O-174

DISPELLING MYTHS ABOUT THE GLOBAL HISTORY OF LEPROSY: BIOARCHAEOLOGICAL PERSPECTIVES ON THE TREATMENT OF PEOPLE WITH LEPROSY BY PAST COMMUNITIES
Presenter: *Prof Charlotte Roberts*

Molecular Biology 2

Chair: *Dr Philip Suffys*
Room: 3 & 4

O-176

FIRST INSIGHTS INTO MOLECULAR EPIDEMIOLOGY OF LEPROSY IN FORTALEZA, NORTHEAST BRAZIL
Presenter: *Philip Suffys*

O-177

WHOLE GENOME SEQUENCING OF MYCOBACTERIUM LEPRAE STRAINS DIRECTLY FROM LEPROSY SKIN BIOPSIES
Presenter: *Pushpendra Singh*

O-178

A COMMON SNP IN PRE-MIR-146A (RS2910164 G>C) IS GENETICALLY AND FUNCTIONALLY ASSOCIATED WITH LEPROSY: INSIGHT INTO TNF PRODUCTION
Presenter: *Paula Mello*

O-179

REVERSE TRANSCRIPTION-PCR BASED DETECTION OF VIABLE M. LEPRAE FROM ENVIRONMENTAL SAMPLES IN THE INHABITANT AREAS OF ACTIVE LEPROSY CASES: A CROSS SECTIONAL STUDY FROM ENDEMIC POCKETS OF PURULIA, WEST BENGAL
Presenter: *Ravindra Turankar*

O-180

LEPROSY IN RONDONÓPOLIS, MATO GROSSO, BRAZIL: SPATIAL, CLINICAL AND ETHNIC CHARACTERISTICS AND MYCOBACTERIUM LEPRAE STRAIN TYPE PROFILES IN A HIGHLY ENDEMIC CITY
Presenter: *Ida Maria Dias baptista*

Promoting Early Diagnosis

Chair: *Dr Joseph Kawuma*

Room: A & B

O-181

PROMOTING THE EARLY DIAGNOSIS OF LEPROSY. INTRODUCING THE SYMPOSIUM
Presenter: *Herman-Joseph Kawuma*

O-182

DIAGNOSIS OF LEPROSY IN THE UNITED KINGDOM
Presenter: *Dr Diana Lockwood*

O-183

LEPROSY IN CHILDREN UNDER 15 YEARS OF AGE: A CHALLENGE FOR LEPROSY CONTROL
Presenter: *Mariana Hacker*

O-184

"TOUCH YOUR SKIN": A NEW METHOD FOR SUSPECTING LEPROSY
Presenter: *Marcos Virmond*

O-185

SAFETY AND EFFICACY ASSESSMENT OF TWO NEW LEPROSY SKIN TEST ANTIGENS IN TARGET POPULATIONS: RANDOMIZED DOUBLE BLIND CLINICAL STUDY
Presenter: *Patrick Brennan*

O-186

DISABILITY AMONG CHILDREN AFFECTED BY LEPROSY STILL A CHALLENGE - FINDINGS FROM A REFERRAL HOSPITAL IN NORTH INDIA
Presenter: *Meenu Sethi*

Social Aspects and Self- Care

Chair: *Mrs Silatham Sermrittirong*

Room: Work Group Area

O-187

ASSESSING THE ATTITUDES AND PERCEPTION OF COMMUNITY MEMBERS AND HEALTH WORKERS REGARDING LEPROSY STIGMA IN NORTHEASTERN THAILAND
Presenter: *Mrs Silatham Sermrittirong*

O-188

ROLE OF STIGMA AND DEPRESSION IN INFLUENCING THE LEPROSY AFFECTED PERSON'S QUALITY OF LIFE
Presenter: *Mr Sathish Paul*

O-189

REASONS FOR DEFAULTING FROM MDT: PERSPECTIVES OF PEOPLE AFFECTED BY LEPROSY, HEADS OF FAMILIES AND COMMUNITY MEMBERS
Presenter: *Dr Raju M S*

O-190

PERCEPTIONS AND ATTITUDES INFLUENCING THE PRACTICE OF SELF CARE IN LEPROSY
Presenter: *Shyamala Anand*

O-191

ASSESSMENT OF SELF CARE GROUPS OF PERSONS AFFECTED BY LEPROSY, A 4-COUNTRY STUDY (INDONESIA, NEPAL, NIGERIA AND INDIA (INNI))
Presenter: *Erik Post*

O-192

EXPERIENCE OF LEPROSY AFFECTED PERSONS IN INCLUSIVE GROUPS
Presenter: *Prakash Wagle*

Experiences of People and Communities

Chair: *Zilda Maria Borges*

Room: E & F

O-193

ISOLATION TO INTEGRATION
Presenter: *Sang Kwon Jung*

O-194

SOCIAL PARTICIPATION OF DIABETES AND EX-LEPROSY PATIENTS IN THE NETHERLANDS AND PATIENT PREFERENCE FOR COMBINED SELF-CARE GROUPS COMBINED
Presenter: *Henry de Vries*

O-195

IMPROVING THE QUALITY OF LIFE OF DISABLED PERSON LIVING IN LEPROSY COLONIES IN BIHAR THROUGH CHETNA PROJECT
Presenter: *Rajni Singh*

O-196

EMPOWERMENT AND MEMORIALIZING HISTORY OF PEOPLE AFFECTED BY HANSEN'S DISEASE : THE CASE OF LO-SHENG SANATORIUM PRESERVATION MOVEMENT IN TAIWAN
Presenter: *Masato Soda*

O-197

ORGANIZING FOR CHANGE:FACILITATING THE EMERGENCE OF IDEA CHAPTERS IN SOUTHERN NIGERIA
Presenter: *Nchekwube Ndubuizu*

O-198

LINGERING MEMORIES OF YOUNGER DAYS IN LO-SHENG SANATORIUM
Presenter: *Yun-Ming Lee Chang*

10:30 – 11:00

Surgical Rehabilitation

Screen 1, 10:30 - 10:40 P-288

SURGICAL APPROACH TO THE DISABILITY-RELATED PROBLEMS SEEN ON EX-PATIENTS OF LEPROSY IN A COMMUNITY-BASED CLINIC
Presenter: *Dr Masako Namisato*

Screen 1, 10:40 - 10:50 P-289

SELECTION CRITERIA FOR RECONSTRUCTIVE SURGERY IN CORRECTION OF CLAW HAND AND THUMB DEFORMITIES IN LEPROSY
Presenter: *Mr Karthikeyan Govindasamy*

Screen 1, 10:50 - 11:00 P-294

THE USE OF NEURODYNAMIC TESTS FOR THE ASSESSMENT OF MECHANICAL SENSITIVITY AND MOBILITY OF PERIPHERAL NERVOUS SYSTEM IN LEPROSY
Presenter: *Artur Gosling*

Epidemiological Surveillance

Screen 2, 10:30 - 10:40 P-176

KAZAKH LEPROSARIUM · SPECIFIC OF THE LEPROSY WORK IN KAZAKHSTAN
Presenter: *Dr Moldagali Seitalyev*

Screen 2, 10:40 - 10:50 P-177

EVOLUTION OF THE PREVALENCE RATE OF LEPROSY IN THE BRAZILIAN STATES IN THIS LAST DECADE
Presenter: *Rosa Castália França Ribeiro Soares*

Screen 2, 10:50 - 11:00 P-178

EVOLUTION DE LA LUTTE CONTRE LA LEPRE EN REPUBLIQUE DEMOCRATIQUE DU CONGO
Presenter : *Jean Norbert Mputu Luengu- B*

Epidemiological Analyses

Screen 3, 10:30 - 10:40 P-320

EPIDEMIOLOGICAL ANALYSIS OF LEPROSY REACTIONS IN A LEPROSY CARE SERVICE IN SÃO PAULO CITY, BRAZIL
Presenter: *Marcos Floriano*

Screen 3, 10:40 - 10:50 P-321

PATIENTS UNDER FIFTEEN YEARS OLD · RETROSPECTIVE STUDY
Presenter: *Dr Apolonio Nascimento*

Screen 3, 10:50 - 11:00 P-322

PROGRESSION OF LEPROSY DISABILITY AFTER DISCHARGE: IS MDT ENOUGH?
Presenter: *Anna Maria Sales*

Prevention of Disability

Screen 4, 10:30 - 10:40 P-258

TITLE· CLINICAL PROFILE OF DEFORMITIES IN LEPROSY
Presenter: *Balachandra Ankad*

Screen 4, 10:40 - 10:50 P-246

PERSPECTIVES FOR COMBINING PEER-LED SELF-CARE GROUPS FOR PEOPLE AFFECTED BY LEPROSY OR DIABETES TO PREVENT DISABILITIES DUE TO INSENSITIVE FEET
Presenter: *Erik Post*

Screen 4, 10:50 - 11:00 P-243

DISABILITY TREND AMONG NEW CASES REPORTED TO A TERTIARY CARE REFERRAL CENTRE: SHARING EXPERIENCES FROM DELHI METROPOLIS
Presenter: *Dr Abraham Selvasekar*

Leprosy Control

Screen 5, 10:30 - 10:40 P-405

KNOWLEDGE AND AWARENESS ON LEPROSY AMONG VILLAGERS IN NANPING CITY, CHINA
Presenter: *Qing Zu*

Screen 5, 10:40 - 10:50 P-406

ASSESSMENT OF ADVERSE EFFECTS TO DRUGS (MINOCICLINE, OFLOXACIN AND CLOFAZIMINE) USED IN ALTERNATIVE MULTIDRUTHERAPY FOR MULTIBACILLAR LEPROSY PATIENTS
Presenter: *Maria Da Graca Cunha*

Screen 5, 10:50 - 11:00 P-407

LEPROSY AMONG HOUSEHOLD CONTACTS OF LEPROSY RELAPSE CASES IN A REFERENCE CENTER IN MANAUS, BRAZIL
Presenter: *Maria Da Graca Cunha*

New Diagnostic Tools

Screen 6, 10:30 - 10:40 P-285

PREVALENCE OF M. LEPRAE INFECTION IN ARMADILLOS ASSESSED BY SERUM ANTIBODY RESPONSES
Presenter: *Malcolm Duthie*

Screen 6, 10:40 - 10:50 P-286

DEVELOPMENT OF LF TEST BASED ON SYNTHETIC ANTIGENS FOR THE SERODIAGNOSIS OF LEPRAE
Presenter: *Sergey Biketov*

Screen 6, 10:50 - 11:00 P-287

EVALUATION OF UTILITY AND APPLICABILITY OF MULTIPLEX PCR IN THE EARLY DIAGNOSIS OF LEPROSY IN EASTERN INDIAN POPULATION
Presenter: *Umesh Gupta*

Experiences of People and Communities

Screen 7, 10:30- 10:40 P-349

LOKDOOTS INTERVENTION IN ADVOCATING HEALTH AND SOCIO-ECONOMIC ISSUES OF PEOPLE AFFECTED BY LEPROSY
Presenter: *Venkata Ranganadha Rao Pemmaraju*

Screen 7, 10:40 - 10:50 P-350

THE SOCIO- ECONOMIC SITUATION OF LEPROSY SETTLEMENTS IN SOUTH- EASTERN NIGERIA: A RAPID APPRASIAL
Presenter: *Nchekwube Ndubuizu*

Screen 7, 10:50 - 11:00 P-354

THE PAINSTAKING EFFORTS FOR HUMAN RIGHTS WITH DIGNITY IN KOREA
Presenter: *Kil Yong Lee*

12:30 – 14:00

Microbiology

Screen 8, 10:30 - 10:40 P-158

BLOOD CLOT ABNORMALITY IN LEPROSY PATIENTS
Presenter: *Flavio Lara*

Screen 8, 10:40 - 10:50 P-159

THREE DIFFERENT GENOTYPING OF M.LEPRAE IN A FAMILY
Presenter: *Renata mayangsari*

Screen 8, 10:50 - 11:00 P-160

HANSEN'S DISEASE, A BIOCHEMICAL PERSPECTIVE: INSIGHT INTO THE ROLE OF ANTIOXIDANTS
Presenter: *Vishal Chugh*

Training in Leprosy

Screen 9, 10:30 - 10:40 P-072

ASSESSMENT OF NON-DERMATOLOGISTS' KNOWLEDGE REGARDING CLINICAL DIAGNOSIS OF LEPROSY AND PRACTICE IN SLIT-SKIN SMEAR AS A BASIC INVESTIGATION
Presenter: *Dr Penvadee Pattanaprichakul*

Screen 9, 10:40 - 10:50 P-073

THE EXPERIENCE OF ILLNESS AND TREATMENT IN LEPROSY: THE LEARNING OF MEDICAL STUDENTS FROM THE PATIENT'S PERSPECTIVE USING THE MCGILL ILLNESS NARRATIVE INTERVIEW (MINI)
Presenter: *Artur Gosling*

Screen 9, 10:50 - 11:00 P-078

EFFICACY OF ONE MONTH TRAINING IN PHYSICAL MANAGEMENT OF IMPAIRMENT AND DISABILITY IN LEPROSY FOR PHYSIOTHERAPY STUDENTS
Presenter: *Pankaj Gupta*

Promoting Early Diagnosis

Screen 10, 10:30 - 10:40 P-331

CONTRIBUTION OF LEPROSY ACTIVE SCREENING CAMPAIGNS IN ENDEMIC AREAS IN BURUNDI: THE CASE OF FIVE PROVINCES IN 2012
Presenter: *Sawadogo Michel*

Screen 10, 10:40 - 10:50 P-332

PROMOTION OF HEALTH SEEKING BEHAVIOR OF COMMUNITY LEPROSY CONTACTS AT MOO 11 TUMBOL BAN SOK, KHONSAWAN DISTRICT, CHAIYAPHUM PROVINCE
Presenter: *Yada Youtchon*

Screen 10, 10:50 - 11:00 P-342

AN ANALYSIS OF DOOR TO DOOR CAMPAIGN FOR NEW CASE DETECTION IN BIHAR IN 2012, INDIA
Presenter: *Rajni Singh*

Surgical Rehabilitation

Screen 1, 12:30 - 12:40 P-291

"GRIP-AID KIT" FOR REHABILITATION IN LEPROSY
Presenter: *Dr Atul Shah*

Screen 1, 12:40 - 12:50 P-292

COMPARATIVE EFFECTIVE NESS OF NEURITIS IN LEPROSY PATIENTS BY SENSORY TESTING WITH BALL PEN AND MONOFILAMENT
Presenter: *Thanatpong Thienwuttiwong*

Screen 1, 12:50 - 13:00 P-293

POSTURAL BALANCE CONTROL OF THE LEPROSY PATIENT WITH PLANTAR SENSITIVITY IMPAIRMENT
Presenter: *Thania Cordeiro*

Screen 1, 13:00 - 13:10 P-290

HALF FLEXOR DIGITORUM SUPERFECIALIS (FDS) LASSO SURGERY FOR CORRECTION OF CLAW HAND IN LEPROSY
Presenter: *Dr Premal Das*

Screen 1, 13:10 - 13:20 P-296

SPLINTING MATERIAL USED FOR IMMOBILISATION IN A RESOURCE LIMITED SETTING
Presenter: *Pankaj Gupta*

Screen 1, 13:20 - 13:30 P-297

ADIPOCUTANEOUS FLAP TO RESTORE FULLNESS OF IST WEB SPACE DEPRESSION
Presenter: *Sajid Husain*

Screen 1, 13:30 - 13:40 P-301

RESTORATION OF OPPOSITION OF THE THUMB BY FLEXOR CARPI ULNARIS TRANSFER IN CASE OF LOW MEDIAN PARALYSIS
Presenter: *Sreepuram Reddy*

Screen 1, 13:40 - 13:50 P-299

RECONSTRUCTION OF MODERATELY DEPRESSED NOSE IN LEPROSY
Presenter: *Sajid Husain*

Screen 1, 13:50 - 14:00 P-300

FACTORS PREVENTING LEPROSY PATIENTS WITH DEFORMITIES FROM UNDERGOING TENDON TRANSFER SURGERY
Presenter: *Pankaj Gupta*

Epidemiological Surveillance

Screen 2, 12:30 - 12:40 P-179

CHANGES OF THE LEPROSY SITUATION IN TURKMENISTAN BETWEEN 1998 AND 2011
Presenter: *Dr Romana Drabik*

Screen 2, 12:40 - 12:50 P-180

SITUATION OF LEPROSY IN GEORGIA
Presenter: *Tina Kituashvili*

Screen 2, 12:50 - 13:00 P-181

ACTUAL STATE OF ANTI LEPROSY SERVICES OF THE REPUBLIC OF KARAKALPAKSTAN
Presenter: *Mrs Zamira Nuratdinova*

12:30 – 14:00

Screen 2, 13:00 - 13:10 P-182

LEPROSY IN UKRAINE
Presenter: *Yuriy Rybak*

Screen 2, 13:10 - 13:20 P-185

EPIDEMIOLOGICAL TRENDS OF LEPROSY IN A TERTIARY HEALTH CENTRE IN NORTH INDIA: A 10 YEARS RETROSPECTIVE STUDY
Presenter: *Vijay Jain*

Screen 2, 13:20 - 13:30 P-186

ERADICATION OF LEPROSY: HOW LONG WOULD IT TAKE IF THERE WERE A PERFECT CONTROL?
Presenter: *Maria Lucia Penna*

Screen 2, 13:30 - 13:40 P-187

REDUCING ANNUAL NEW CASE DETECTION RATE (PER 1,00,000 POPULATION) OF LEPROSY WITH VERY LOW DISABILITY · A DIFFERENT EPIDEMIOLOGICAL TREND (1999 TO 2012) IN UNION TERRITORY OF DADRA NAGAR AND HAVELI, INDIA
Presenter: *Dr Hiren Thanki*

Screen 2, 13:40 - 13:50 P-191

AN ANALYTICAL REPORT OF NEW CASES TREND IN IN SCHEDULE CAST/SCHEDULE TRIBES AND CHILD % IN BIHAR
Presenter: *Rajni Singh*

Screen 2, 13:50 - 14:00 P-189

EPIDEMIOLOGICAL ANALYSIS OF 5 YR TREND OF NEW LEPROSY CASES DETECTED (2008-12) AT TLM COMMUNITY HOSPITAL NAND NAGRI. NATIONAL CAPITAL TERRITORY OF DELHI
Presenter: *Abraham Selvasekar*

Screen 3, 12:30 - 12:40 P-323

IDENTIFICATION OF LEPROSY MULTI CASE FAMILIES THROUGH THE LEAD OF TREATED LEPROSY CASES
Presenter: *Aparna Srikantam*

Les progrès récents

Screen 3, 12:40 - 12:50 P-324

ETUDE DE DIFFÉRENTES STRATÉGIES PERMETTANT D'AMÉLIORER LE DÉPISTAGE PRÉCOCE DE LA LÈPRE À MADAGASCAR ET DE MIEUX APPRÉCIER LES DONNÉES D'INCIDENCE ET PRÉVALENCE
Presenter : *Cauchoix Bertrand*

Human Rights and Discrimination

Screen 3, 12:50 - 13:00 P-309

A LONG WALK TO THE CHALLENGE OF INTEGRATION
Presenter: *Mahamath Cisse*

Screen 3, 13:00 - 13:10 P-310

THE BRAZILIAN GOVERNMENT ACKNOWLEDGES THE VIOLATION OF RIGHTS REGARDING THE ISOLATION OF PERSONS AFFECTED BY LEPROSY
Presenter: *Maria Eugenia Noviski Gallo*

Screen 3, 13:10 - 13:20 P-311

THE ASSESSMENT OF HEALTH SERVICES FOR PERSONS AFFECTED BY LEPROSY IN LEPROSY COLONIES UNDER THE HEALTH INSURANCE SCHEME : UNIVERSAL COVERAGE
Presenter: *Chariya Soinumtip*

Screen 3, 13:20 - 13:30 P-312

IMPACT OF SELF ADVOCACY GROUPS IN ACCESSING RESOURCES
Presenter: *Mr David Jaganathan*

Screen 3, 13:30 - 13:40 P-313

IMPACT OF LEPROSY RELATED DISCRIMINATORY LAWS ON THE SOCIO-ECONOMIC AND POLITICAL LIFE OF THE PEOPLE AFFECTED LEPROSY
Presenter: *Dr Sadanand Bag*

Screen 3, 13:40 - 13:50 P-314

COMMUNITY PERCEPTIONS AND ATTITUDES TOWARDS PEOPLE AFFECTED BY LEPROSY
Presenter: *Dr Sadanand Bag*

Screen 3, 13:50 - 14:00 P-315

THE STAR: A VOICE FOR THE UNSEEN
Presenter: *José Jamirez, Jr.*

Prevention of Disability

Screen 4, 12:30 - 12:40 P-248

MOBILISING COMMUNITY THROUGH CIVIL SOCIETY ORGANIZATIONS TO SUPPORT LEPROSY SERVICES IN BIHAR, INDIA: EXPERIENCE FROM A PILOT PROJECT
Presenter: *Shivakumar Mugudalabetta*

Screen 4, 12:40 - 12:50 P-249

PHYSICAL DISABILITIES BY LEPROSY: A SYSTEMATIC REVIEW OF THE DETERMINING FACTORS
Presenter: *Eliane Ignotti*

Screen 4, 12:50 - 13:00 P-250

REACHING THE UNREACHED: DPMR SERVICES IN A TRIBAL AREA
Presenter: *Sudhakar Bandyopadhyay*

Screen 4, 13:00 - 13:10 P-251

PREVENTION OF IMPAIRMENT AND DISABILITY (POID) THROUGH EARLY CASE DETECTION AND TREATMENT: FAIRMED'S (FM) PILOT PROJECT IN ANDHRA PRADESH (AP)
Presenter: *Akshaya Mishra*

Screen 4, 13:10 - 13:20 P-252

STRENGTHENING DISABILITY CARE IN GENERAL HEALTH SYSTEM THROUGH REFERRAL CENTRES IN ODISHA
Presenter: *Dr Surendra Pati*

Screen 4, 13:20 - 13:30 P-253

MANAGEMENT OF PLANTAR ULCERS
Presenter: *Dr Atul Shah*

Screen 4, 13:30 - 13:40 P-257

ACTUAL ASPECTS OF REHABILITATION OF LEPROSY PATIENTS IN RUSSIA
Presenter: *Evgenii Shats*

Screen 4, 13:40 - 13:50 P-255

ORTHOPEDIC ADAPTATION FOR GREAT DISABILITY IN LEPROSY - A CASE REPORT
Presenter: *Dr Apolonio Nascimento*

Screen 4, 13:50 - 14:00 P-256

POSTURAL CONTROL IN HANSEN'S DISEASE
Presenter: *Larissa Viveiro*

Leprosy Control

Screen 5, 12:30 - 12:40 P-408

FEASIBILITY AND EFFECTIVENESS OF A COMMUNITY DERMATOLOGY APPROACH TO LEPROSY CONTROL IN NIGERIA
Presenter: *Erik Post*

Screen 5, 12:40 - 12:50 P-412

PUBLIC PRIVATE PARTNERSHIPS TO ADVANCE NEW APPROACHES IN TIMES OF LOW LEPROSY ENDEMICITY. THE PHILIPPINE EXPERIENCE
Presenter: *Roderick Poblete*

Screen 5, 12:50 - 13:00 P-413

IMPACT OF DISTRICT TECHNICAL SUPPORT TEAM (DTST) IN BIHAR AFTER WITHDRAWAL
Presenter: *Rajni Singh*

Screen 5, 13:00 - 13:10 P-414

AWARENESS ABOUT LEPROSY IN GENERAL POPULATION OF TWO DISTRICTS IN ANDHRA PRADESH, SOUTH INDIA
Presenter: *Dr Aparna Srikantam*

Screen 5, 13:10 - 13:20 P-415

ASSESSMENT OF KNOWLEDGE ABOUT LEPROSY IN 490 ACCREDITED SOCIAL HEALTH ACTIVIST (ASHA) WORKERS
Presenter: *Dr Aparna Srikantam*

Screen 5, 13:20 - 13:30 P-416

WHICH PUBLIC HEALTH MODEL IS SUITABLE FOR LEPROSY CONTROL?
Presenter: *Nimal Kasturiaratchi*

Screen 5, 13:30 - 13:40 P-421

SITUATIONAL ANALYSIS OF LEPROSY CONTROL IN BIHAR, INDIA
Presenter: *Shivakumar Mugudalabetta*

Screen 5, 13:40 - 13:50 P-418

ACCESS TO HEALTH CARE FOR LEPROSY PATIENTS IN BURUNDI
Presenter: *Sawadogo Michel*

Screen 5, 13:50 - 14:00 P-420

EVALUATION OF A PILOT PROJECT USING SMS TECHNOLOGY TO COLLECT LEPROSY DATA IN MOZAMBIQUE
Presenter: *Arie de Kruijff*

Detection and Treatment of Reactions

Screen 6, 12:30 - 12:40 P-357

FIELD MANAGEMENT OF REACTIONS: HELPING OR HURTING?
Presenter: *Charles Nwafor*

Screen 6, 12:40 - 12:50 P-358

ENLIST 1: A PROSPECTIVE STUDY OF THE CLINICAL FEATURES AND TREATMENT OF ERYTHEMA NODOSUM LEPROSUM AT ANANDABAN HOSPITAL, KATHMANDU, NEPAL
Presenter: *Dr Deanna Hagge*

Screen 6, 12:50 - 13:00 P-359

ENLIST 1: A PROSPECTIVE STUDY OF THE CLINICAL FEATURES AND TREATMENT OF ERYTHEMA NODOSUM LEPROSUM AT THE LEPROSY LABORATORY, OSWALDO CRUZ INSTITUTE, FIOCRUZ, RIO DE JANEIRO, BRAZIL
Presenter: *Anna Maria Sales*

Screen 6, 13:00 - 13:10 P-360

ENLIST 1: A PROSPECTIVE STUDY OF THE CLINICAL FEATURES AND TREATMENT OF ERYTHEMA NODOSUM LEPROSUM AT ALERT CENTER, ADDIS ABABA, ETHIOPIA
Presenter: *Shimelis Doni*

Screen 6, 13:10 - 13:20 P-361

"ENLIST 1: A PROSPECTIVE STUDY OF THE CLINICAL FEATURES AND TREATMENT OF ERYTHEMA NODOSUM LEPROSUM AT BOMBAY LEPROSY PROJECT, MUMBAI, INDIA
Presenter: *Vivek Pai*

Screen 6, 13:20 - 13:30 P-362

HEALTH RELATED QUALITY OF LIFE (HRQOL) IN LEPROSY REACTIONS CLINICAL TRIALS, AT ALERT, IN ETHIOPIA
Presenter: *Saba Lambert*

Screen 6, 13:30 - 13:40 P-363

TYPE 1 REACTIONS IN LEPROSY: A HOSPITAL-BASED STUDY OF CLINICAL DEMOGRAPHICS AND TREATMENT PATTERNS
Presenter: *Dr Deanna Hagge*

Screen 6, 13:40 - 13:50 P-364

LEPROSY NEUROPATHY: A STUDY BOTH CROSS-REACTING EPITOPE ON THE MYCOBACTERIUM LEPRAE AND HUMAN PERIPHERAL NERVE. A NOVEL AUTOIMMUNE MECHANISM OF NERVE DAMAGE AND APPROPRIATE THERAPEUTIC STRATEGY
Presenter: *Zhaudat Umerov*

Screen 6, 13:50 - 14:00 P-365

DEMYELINATION IN LEPROSY NEUROPATHY: CORRELATION BETWEEN ELECTRONEUROGRAPHICAL ALTERATIONS AND DETECTION OF SERUM ANTI-GANGLIOSIDE ANTIBODIES
Presenter: *Sérgio Luiz Antunes*

Experiences of People and Communities

Screen 7, 12:30 - 12:40 P-355

LEPROSY REACTIONS AFTER RELEASE FROM MULTIDRUG THERAPY IN AN ENDEMIC CLUSTER IN BRAZIL: PATIENT AWARENESS OF SYMPTOMS AND SELF-PERCEIVED CHANGES IN LIFE
Presenter: *Maria De Jesus Alencar*

Screen 7, 12:40 - 12:50 P-356

COSMETIC CAMOUFLAGE -A SIX MINUTE MAGIC FOR LEPROSY FACIAL PATCHES
Presenter: *Dr Kiran Koduri*

CBR

Screen 7, 13:00 - 13:10 P-461

INTEGRATED AND SUSTAINABLE DEVELOPMENT OF THE COMMUNITY WITH VULNERABLE AND MARGINALISED DUE TO LEPROSY/DISABILITY/CASTE/GENDER TO ACHIEVE SUSTAINABLE LIVELIHOODS, IN THE ORGANISED AND UNORGANISED SECTORS, LEADING TO POVERTY REDUCTION
Presenter: *Gabriel Pani*

12:30 – 14:00

Screen 7, 13:10 - 13:20 P-462

SOCIO-ECONOMIC REHABILITATION THROUGH GRANT OF INCOME GENERATION ARTICLES
Presenter: *Atul Shah*

Screen 7, 13:20 - 13:30 P-463

ROLE OF SHGS IN IMPROVING THE LIVES OF INDIVIDUALS AFFECTED BY LEPROSY AND GENERAL DISABILITIES
Presenter: *Mr Shirish Shelgaonkar*

Screen 7, 13:30 - 13:40 P-465

SOCIOECONOMIC ISSUES AFFECTING LEPROSY AFFECTED PEOPLE IN KOKOSSA WOREDA, WEST ARSI ZONE, OROMIA NATIONAL REGIONAL STATE, ETHIOPIA
Presenter: *Janine Ebenso*

Screen 7, 13:40 - 13:50 P-468

HEALTH EDUCATION AND SOCIAL WELFARE ACTIVITIES UNDERTAKEN BY LEPROSY PATIENTS WELFARE SOCIETY SINCE 1977 WITH AN AIM TO PROVIDE RESPECTABLE SOCIO-ECONOMIC REHABILITATION TO THE LEPROSY PATIENTS IN THE SOCIETY
Presenter: *Ved Bharadwaj*

Screen 7, 13:50 - 14:00 P-469

THE IMPACT OF SPECIALLY DESIGNED VOCATIONAL TRAINING PROGRAMMES FOR YOUNG ADOLESCENTS FROM LEPROSY BACKGROUNDS ON GRADUATES, THEIR FAMILIES AND COMMUNITIES
Presenter: *Maniksha Manickam*

Social Aspects and Self-Care

Screen 8, 12:30 - 12:40 P-347

SELF CARE GROUPS FOR PREVENTION OF DISABILITIES IN MOZMABIQUE
Presenter: *Sunil Deepak*

Screen 8, 12:40 - 12:50 P-348

FACTORS CONTRIBUTING TO DEVELOPMENT AND RECURRENCE OF PLANTAR ULCERS IN LEPROSY
Presenter: *Mrinmoy Karmakar*

Social Sciences

Screen 8, 12:50 - 13:00 P-270

POVERTY AND SOCIO-ECONOMICAL LEVEL OF LEPROSY PATIENTS IN BURUNDI
Presenter: *Sawadogo Michel*

Screen 8, 13:00 - 13:10 P-271

DEVELOPMENT OF SOCIAL INVOLVEMENT IN HANSEN'S DISEASE SANATORIUMS RESIDENTS IN JAPAN FROM THE PERSPECTIVE OF ECOLOGICAL SYSTEMS:EXAMINING THE RELATIONSHIP BETWEEN SOCIAL CHANGES AND PSYCHOSOCIAL DEVELOPMENT
Presenter: *Hiroshi Numayama*

Screen 8, 13:20 - 13:30 P-273

A TOOL TO ASSESS PSYCHOLOGICAL DISTRESS NEEDS IN LEPROSY
Presenter: *Mrs Valsa Augustine*

Screen 8, 13:30 - 13:40 P-274

EVALUATION OF MENTAL DISORDERS COMMON IN LEPROSY PATIENTS THROUGH THE "SELF REPORTING QUESTIONNAIRE
Presenter: *Isabela Maria Bernardes Goulart*

Screen 8, 13:40 - 13:50 P-276

THE IMPORTANCE OF COUNSELING AND SUPPORT IN OVERCOMING THE PHYSICAL, MENTAL, EMOTIONAL AND SOCIAL CHALLENGES OF LEPROSY
Presenter: *Nicole Holmes*

Social Aspects and Quality of Life

Screen 8, 13:50 - 14:00 P-386

HOLISTIC CHALLENGES FROM PRIMARY CARE
Presenter: *Derek Browne*

Training in Leprosy

Screen 9, 12:30 - 12:40 P-076

SITUATION OF LEPROSY IN BRAZIL, PERSONAL EXPERIENCES RELATED TO LEPROSY SYMPTOMS AND THERAPY
Presenter: *Jaison Barreto*

Screen 9, 12:40 - 12:50 P-077

A LEPROSY TRAINING PROGRAM IN MOZAMBIQUE
Presenter: *Charles Phaff*

Screen 9, 12:50 - 13:00 P-074

THE EDUCATION OF LEPROSY AND OTHER DERMATOSIS IN PRIMARY CARE
Presenter: *Artur Gosling*

Screen 9, 13:00 - 13:10 P-079

ORIENTATION OF LOCAL PRIVATE PRACTITIONERS AS A MEANS OF EARLY CASE DETECTION IN LEPROSY
Presenter: *Joydeepa Darlong*

Screen 9, 13:10 - 13:20 P-080

COORDINATION OF COLLECTIVE WORK (BOOK): ADVANCES AND CHALLENGES IN LEPROSY
Presenter: *Isaias Ferreira*

Immunology

Screen 9, 13.20 - 13.30 P-098

DIFFERENTIAL MRNA EXPRESSION PROFILES OF GENES ENCODING CORTISONE-CORTISOL SHUTTLE ENZYMES AND LOCALIZED REGULATION OF CORTISOL IN TYPE 1 REACTIONS OF LEPROSY
Presenter: *Vedithi Chaitanya*

Screen 9, 13:30 - 13:40 P-095

INCREASED SERUM CIRCULATORY LEVELS OF ALPHA-1 ACID GLYCOPROTEIN IN TYPE 1 REACTIONS OF LEPROSY
Presenter: *Dr U. Sengupta*

Screen 9, 13:40 - 13:50 P-096

ROLE OF TOLL-INTERACTING PROTEIN GENE POLYMORPHISMS IN LEPROSY MEXICAN PATIENTS
Presenter: *Mary Fafutis-Morris*

15:30 – 16:00

Screen 9, 13:50 - 14:00 P-097

BCG VACCINATION MODIFIES MACROPHAGE TOLL-LIKE RECEPTOR-4 RESPONSE TO MYCOBACTERIUM LEPRAE
Presenter: *Anastasia Polycarpou*

Promoting Early Diagnosis

Screen 10, 12:30 - 12:40 P-334

SCHOOL CHILDREN IN LEPROSY CONTROL
Presenter: *Yong Ning*

Screen 10, 12:40 - 12:50 P-335

STRATEGY TO SUSTAIN LEPROSY AWARENESS THROUGH COMMUNITY PARTICIPATION: AN ASSESSMENT OF 995 COMMUNITY VOLUNTEERS DURING AND AFTER SELECTIVE SPECIAL DRIVE
Presenter: *Ashutosh Prabhavalkar*

Screen 10, 12:50 - 13:00 P-336

HOW TO DETECT MORE EARLY CASES AT LOW ENDEMIC SITUATION WITH PACKET AREA: ANALYSIS ON 1274 NEW LEPROSY PATIENTS DETECTED FROM 2008 TO 2012 IN GUIZHOU PROVINCE, P.R OF CHINA
Presenter: *Jinlan Li*

Screen 10, 13:00 - 13:10 P-338

EVALUATION OF SUITABLE TARGET AREAS FOR STRENGTHENING LEPROSY CASE FINDING ACTIVITIES IN THAILAND
Presenter: *Boosbun Chua-Intra*

Screen 10, 13:10 - 13:20 P-340

THE EXSITING PROBLEMS AND COUNTERMEASURES OF LEPROSY CASE-DETECTION IN CHINA
Presenter: *Mrs Chunzhi Pan*

Screen 10, 13:20 - 13:30 P-341

CONTACTS CONTROL IN LEPROSY: A NEGLECTED OPPORTUNITY OF EARLY DIAGNOSIS
Presenter: *Artur Gosling*

Screen 10, 13:30 - 13:40 P-346

IMPACT OF EXTENDED CONTACT SURVEY IN LEPROSY ELIMINATION PROGRAMME IN SELECTED AREAS OF BANGLADESH
Presenter: *Sheikh Hadi*

Screen 10, 13:40 - 13:50 P-343

A STUDY ON UTILITY OF COMMUNITY VOLUNTEERS NAMED ASHAS (ACCREDITED SOCIAL HEALTH ACTIVISTS) IN EARLY CASE DETECTION IN INDIA
Presenter: *Mohammad Arif*

Screen 10, 13:50 - 14:00 P-344

HEALTH SEEKING BEHAVIOR OF LEPROSY PATIENTS ATTENDING HEALTH SERVICES IN URBAN AREA OF CENTRAL REGION, THAILAND
Presenter: *Rujira Tragoolpua*

Surgical Rehabilitation

Screen 1, 15:30 - 15:40 P-298

USEFULNESS AND BENEFITS OF RECONSTRUCTIVE SURGERY IN PATIENTS WITH DISABILITIES IN BURUNDI
Presenter: *Sawadogo Michel*

Screen 1, 15:40 - 15:50 P-302

EXTENSOR POLLICIS BREVIS DIVERSION GRAFT FOR CORRECTION OF Z-DEFORMITY (FORMENT'S SIGN) IN LOW ULNAR PALSY
Presenter: *Sreepuram Reddy*

Screen 1, 15:50 - 16:00 P-303

MAPPING MUSCLE CORTICAL REPRESENTATION AFTER TENDON TRANSFER SURGERY: A TMS CASE STUDY
Presenter: *Vagner Sá*

Epidemiological Surveillance

Screen 2, 15:30 - 15:40 P-188

BURDEN OF LEPROSY AND TREATMENT OUTCOMES AMONG CHILDREN REPORTING TO A REFERRAL HOSPITAL IN WEST BENGAL, INDIA
Presenter: *Joydeepa Darlong*

Screen 2, 15:40 - 15:50 P-192

LEPROSY TREND IN AFGHANISTAN (15 YEARS EPIDEMIOLOGICAL ANALYSIS)
Presenter: *Dr Mohammad Reza Aloudal*

Screen 2, 15:50 - 16:00 P-194

A RETROSPECTIVE STUDY OF THE EPIDEMIOLOGY OF LEPROSY IN CEBU, PHILIPPINES - IS TRANSMISSION DECLINING?
Presenter: *Dr Ma Victoria Balagon*

Human Rights and Discrimination

Screen 3, 15:30 - 15:40 P-316

EDMOND LANDRY (USPHS CARVILLE, LA 1924-1932) AN ANALYIS OF ONE MAN'S ADVOCACY AS TOLD THROUGH HIS LETTERS
Presenter: *(Emma) Claire Manes*

Screen 3, 15:40 - 15:50 P-318

TOWARDS THE FULL DEVELOPMENT, ADVANCEMENT AND EMPOWERMENT OF WOMEN AFFECTED BY LEPROSY IN NEPAL
Presenter: *Parwati Oli*

Screen 3, 15:50 - 16:00 P-319

THE DEPORTATION OF A MIGRANT WORKER WITH LEPROSY
Presenter: *Stephen Walker*

Prevention of Disability

Screen 4, 15:30 -15:40 P-254

A STUDY OF ULCER HEALING IN LEPROSY WITH WOUNDEX DRESSING
Presenter: *Rajni Singh*

Screen 4, 15:40 - 15:50 P-244

ASSESSMENT OF DISABILITY CARE SERVICES AND ITS IMPACT – A FIELD BASED STUDY IN URBAN SLUMS OF MUMBAI
Presenter: *Vivek Pai*

15:30 – 16:00

Screen 4, 15:50 - 16:00 P-259

RAPID SURVEY OF POPULATION RESIDING IN ORGANISED LEPROSY COLONIES WITHIN THE NATIONAL CAPITAL OF DELHI - GRANT IN AID SCHEME SUPPORTED BY DHS - GOVERNMENT OF NCT OF DELHI
Presenter: *Mr Sathish Paul*

Leprosy Control

Screen 5, 15:30 - 15:40 P-419

ANALYSIS ON THE EFFECT OF LEPROSY CONTROL DURING THE 11TH FIVE-YEAR LEPROSY PROGRAM IN HUBEI PROVINCE CHINA
Presenter: *Wanghua LI*

Screen 5, 15:40 - 15:50 P-427

A SURVEY AND ASSESSMENT OF THE READINESS OF THE MAE - SARENG HOSPITAL TO BE IMPROVED AS A SPECIALIZED LEPROSY UNIT UNDER LOW PREVALENCE.
Presenter: *Kissawat Somwang*

Screen 5, 15:50 - 16:00 P-423

LEPROSY CONTROL IN DEVOLVED-DECENTRALIZED HEALTH SYSTEMS: SRI LANKA EXPERIENCE
Presenter: *Nimal Kasturiaratchi*

Detection and Treatment of Reactions

Screen 6, 15:30 - 15:40 P-366

THE AUTOCRINE EFFECT OF TNF IN THE ACTIVATION OF HUMAN SCHWANN CELL DURING MYCOBACTERIUM LEPRAE INFECTION
Presenter: *Priscila Andrade*

Screen 6, 15:40 - 15:50 P-367

MULTIPLE NERVE ABSCESSES ON CUTANEOUS RADIAL NERVE - A CASE OF PURE NEURAL LEPROSY
Presenter: *Balachandra Ankad*

Screen 6, 15:50 - 16:00 P-368

TREATMENT OF LEPROSY REACTIONS AND NEURITIS: PRESERVING OR IMPROVING NERVE FUNCTION?
Presenter: *Paul Roche*

CBR

Screen 7, 15:30 - 15:40 P-470

RELEVANCE OF VOCATIONAL TRAINING CENTRE'S IN PROMOTING GAINFUL EMPLOYMENT AMONG YOUNG ADOLESCENTS AFFECTED BY LEPROSY
Presenter: *Maniksha Manickam*

Screen 7, 15:40 - 15:50 P-471

IMPACT OF VOCATIONAL TRAINING ON FEMALE STUDENTS BY LEPROSY AND GENERAL DISABILITIES
Presenter: *Shyla Fransis*

Screen 7, 15:50 - 16:00 P-473

REAL INTEGRATION OF PEOPLE HAVING PAST HISTORY OF LEPROSY (ACTIVITIES IN A COMMUNITY-BASED CLINIC IN JAPAN)
Presenter: *Dr Masako Namisato*

Social Aspects and Quality of Life

Screen 8, 15:30 - 15:40 P-387

INVOLVEMENT OF THE SCHOOL/COLLEGE STUDENTS IN LEPROSY AWARENESS PROGRAMME
Presenter: *Uday Thakar*

Screen 8, 15:40 - 15:50 P-388

PAHAL (FIRST INITIATION OF INNOVATION) A SUSTAINABLE APPROACH - VILLAGE HEALTH FORUM CONCEPT IN BIHAR
Presenter: *Rajni Singh*

Screen 8, 15:50 -16:00 P-389

INTEGRATED SELF HELP GROUP DEVELOPMENT (CASE STUDY FROM CDI PROJECT KARNATAKA, INDIA)
Presenter: *Shirish Shegaonkar*

Immunology

Screen 9, 15:40 - 15:50 P-099

COMPARISON EXPRESSION OF TLR2/1, NF-KB P105/P50, NF-KB P65 AND TNF-A IN MACROPHAGES OF ERYTHEMA NODOSUM LEPROSUM WITH MULTIBACILLARY LEPROSY PATIENT AS MARKERS OF INNATE IMMUNITY ACTIVITY
Presenter: *Yulianto Listiawan*

Screen 9, 15:50 - 16:00 P-100

IN SEARCH OF A SURROGATE MARKER FOR PROTECTIVE IMMUNITY IN M. LEPRAE INFECTION
Presenter: *Ramanuj Lahiri*

Promoting Early Diagnosis

Screen 10, 15:30 - 15:40 P-345

ACTIVE CASE-FINDING AMONG CONTACTS OF FORMER LEPROSY PATIENTS FOR THE IMPROVEMENT IN EARLY CASE DETECTION
Presenter: *Harald Schmid de Gruneck*

Screen 10, 15:40 - 15:50 P-333

FINDINGS OF THE SPECIAL ACTIVITY PLAN (SAP) IN 9 HIGH ENDEMIC DISTRICTS OF GUJARAT STATE IN INDIA
Presenter: *Dr Hiren Narendrabhai THANKI*

18th

INTERNATIONAL
LEPROSY CONGRESS
Hidden challenges

BRUSSELS, 16th-19th SEPTEMBER 2013

Wednesday 18 September 2013

Abstracts

PLENARY SPEAKERS

PL – 004

Speaker: **Dr Diedre Prins-Solani**
Title: **'Human rights and justice'**

RIGHTING WRONGS:RESTORING DIGNITY,EMBRACING JUSTICE THROUGH ACTS OF RECOGNITION

D. M. Prins-Solani [1,*]

[1]Independent, cape town, South Africa

Introduction: INTERNATIONAL LEPROSY CONGRESS 2013
PANEL DISCUSSION:
DIGNITY, JUSTICE AND PARTICIPATION
RIGHTING WRONGS: RESTORING DIGNITY, EMBRACING JUSTICE THROUGH ACTS OF RECOGNITION
This plenary address shall explore the theme, "Human Rights and Justice" through the bifocal lens of cultural heritage and human rights practices. It shall explore the delicate and often conflicting relationships between restoring dignity, justice and their role in the recognition and honouring of memory through the conservation of space.
Whilst human rights and justice have often been interpreted in legalistic ways, this paper wishes to push the envelope with respect to the ways in which rights and justice issues are interpreted, asserted and affirmed.
Deirdre Prins-Solani
International Heritage Expert

Methods: Through the use of examples of selected sites which bear significance to communities who have been affected by stigma, exclusion and unjust treatment across the globe, this exploration shall illustrate the role of cultural heritage in strengthening and furthering a human rights agenda. These roles it shall be argued, embrace both the practice of justice and the restoration of dignity through economic means, as well as through very deep and meaningful social and psychological interventions.

Results: The place of memory landscapes and the significance they bear in transforming experiences and life approaches shall also be examined in response to current questions related to the tensions between development agendas and the conservation and safeguarding of cultural heritage.

Conclusion: Whilst human rights and justice have often been interpreted in legalistic ways, this paper wishes to push the envelope with respect to the ways in which rights and justice issues are interpreted, asserted and affirmed.

PL – 005

Speaker: **Prof Mitchell Weiss**
Title: **'Understanding stigma and self-esteem'**

THE NATURE OF STIGMA AND NEW CHALLENGES OF LEPROSY CONTROL

Mitchell G. Weiss

The social and cultural history of leprosy has special significance for leprosy-related stigma. As a neglected tropical disease, this relationship also holds broader significance for public health. Implementation of multidrug therapy for leprosy in the early 1980s relied on a credible assertion that leprosy can be cured. This message aimed to discourage denial that was a barrier to effective help seeking. The nature of stigma includes direct experience of discrimination from enacted stigma, anticipation of such discrimination and diminished self-esteem of an affected individual who has accepted and internalized disqualifying views of society. Approaches to lessening social stigma and internalized stigma are complementary but distinct. Furthermore, the stigma of leprosy is distinct from that of leprosy-related disabilities. Stigma research reveals a hidden aspect of the disease burden, which supports advocacy for controlling both the disease and its social impact, and guidance on how best to do that. The landscape of leprosy control is changing with the integration of leprosy treatment in primary care and prospects for rapid diagnostics. Such developments represent a challenge and opportunity. They also pose questions about mitigating social and cultural roots of leprosy-related stigma through social interventions, psychosocial support and prospects for improved detection and treatment.

PL – 006

Speaker: **Zilda Maria Borges**
Title: **'Understanding being affected by leprosy'**

"When I hear a person with leprosy, under a mango tree in the backyard, in a community where most people live in deprivation or those disadvantaged people with such a severe form of the disease living in pain and sadness thinking of death; I wonder where to begin to strive for quality of life. Quality of life tells me to access the common culture towards people with leprosy. I address people able to access the Human and Social Rights."

When it comes to people with leprosy neglect is explicit and there is a lack of aesthetic and reconstructive which can greatly contribute to building self-esteem and dignity. The economic advancement for many people affected by leprosy is still a challenge, because the economic advancement today is associated with a series of professional training. However people with leprosy have significant difficulty accessing these skills. When thinking about quality of life you must think in terms of work, leisure, friends, family, health and education. Individuals with leprosy have difficulties which go beyond their physical condition and the reactions of others. So we dream of a new world without a lot of pain, with more access to professional training; a life which is more dignified, happy equal.

SYMPOSIUM LEADERS

L-007

Presentation Time: **Wednesday 18/09/2013 at 11:00 – 12:30**
Symposium Session: **New Diagnostic Tools**
Presenter: Prof Annemieke Geluk

NEW TESTS DETECTING CELLULAR- AND HUMORAL IMMUNITY AGAINST M. LEPRAE

Introduction: The need for diagnostic tests for leprosy that can be applied in non-expert settings may now be greater than ever before, due to changes in leprosy control programs and the decrease in special expertise required for (early) diagnosis of leprosy. However, there is no test available that can detect asymptomatic *Mycobacterium leprae* infection or predict progression of infection to clinical disease. Identification of risk factors (immunological- or genetic biomarkers) for disease development and/or onset of leprosy reactions is imperative for efficient diagnosis. Tests simultaneously detecting biomarkers specific for cellular- and humoral immunity are well-suited for diagnosis of the different clinical outcomes of leprosy.

Methods: Utilizing up-converting phosphor (UCP) reporter technology, a lateral flow assay was designed to detect human Th1 and Th2 cytokines as well antibodies. The assay was evaluated with (*M. leprae*-antigen stimulated) blood samples of leprosy patients and controls.

Results: The UCP-LF assay allowed detection of IFN-γ, IL-10 and anti-PGL-I antibodies in serum. Qualitative evaluation of 200 blood samples demonstrated excellent correlation with ELISA (R^2 = 0.92). Cytokine multiplexing and simultaneous detection of cytokine and antibody was successfully demonstrated.

Conclusions: The UCP-LF assay is a user-friendly, rapid alternative for ELISAs. This format is suitable for multiplex detection of different cytokines and can be merged with antibody-detection assays allowing simultaneous detection of cellular- and humoral immunity. Thus, the UCP-LF test can cover detection of biomarkers for the full immunological leprosy spectrum.

L-008

Presentation Time: **Wednesday 18/09/2013 at 11:00 – 12:30**
Symposium Session: **Other Mycobacterial Diseases**
Presenter: Mrs Bourke de Jong

THE DIFFERENTIAL DIAGNOSIS OF BURULI ULCER

Miriam Eddyani[1], Dissou Affolabi[2], Luc Brun[4], Jean Jacques Roux[5], Didier Agossadou[6], Ange Dossou[3], Gilbert Ayelo[3], Françoise Portaels[1], Bouke de Jong[1], Ghislain Sopoh[3]

[1]Institute of Tropical Medicine, Antwerp, Belgium, [2]Laboratoire de Référence des Mycobactéries, Cotonou, Benin, [3]Centre de Dépistage et de Traitement de l'Ulcère de Buruli, Allada, Benin, [4]Université de Parakou, Parakou, Benin, [5]Centre Hospitalier de Chambéry, Chambéry, France, [6]Programme National de Lutte contre la Lèpre et l'Ulcère de Buruli, Cotonou, Benin

Introduction: Buruli ulcer (BU) is a necrotizing skin and bone disease caused by Mycobacterium ulcerans in certain riverine regions of West and Central Africa. In most BU endemic settings the diagnosis of BU is often made on clinical and epidemiological grounds only. However, the disease presents with a diverse range of clinical symptoms and, due to possible confusion with other skin diseases, the microbiological confirmation has an important added value. The available laboratory tests in order of increasing sensitivity are culture, direct smear examination (DSE) for acid fast bacilli, and PCR targeting the insertion element IS2404 and histopathology (with similar sensitivities).
Several studies in BU endemic countries have shown that the clinical diagnosis of BU by experienced clinicians is not as straight forward as is generally thought. In the Democratic Republic of Congo for example, Kibadi et al. (2010) found that 34% of the patients with clinical and epidemiological suspicion of BU could not be microbiologically confirmed. Moreover, patients who were not microbiologically confirmed responded better to the treatment with antimycobacterial antibiotics. These unconfirmed patients most probably did not have BU but the causative bacteria of their lesions were sensitive to the antibiotics administered. The timely exclusion of BU would have avoided prolonged treatment with toxic antibiotics, and allowed for these patients to receive more appropriate antibiotic therapy targeted to their non-BU infection.
Every clinical form of BU can potentially be mistaken for another condition, including necrotizing fasciitis, tropical phagedenic ulcers and, rarely, malignancies. (Janssens et al., 2005; Phanzu et al., 2010; Kibadi et al., 2010).
Moreover, in settings where the number of BU cases declines, clinical expertise will wane, likely resulting in more misclassification of patients with lesions compatible with BU. We have therefore initiated an interdisciplinary study on the differential diagnosis of BU, with the objective to establish the optimal diagnostic approach for BU suspect lesions, as well as the improved identification of patients with alternative diagnoses.

Methods: After informed consent all recruited patients are documented by mycobacteriological analyses (IS2404-PCR, DSE and culture), common bacteriological analyses (DSE and culture) and histopathology (to differentiate super-infection from inflammation and diagnose other conditions). The clinical history, prior treatment and other associated symptoms are recorded.

Based on all clinical and laboratory information as well as treatment outcome, patients are classified as: (a) confirmed BU, (b) possible BU, and non BU (with either (c) confirmed or (d) unclear differential diagnosis). A clinical expert panel then makes a final diagnosis based on the original files of the patients that are classified in category b and d. This final diagnosis will serve as a "quasi gold standard" for analyses allowing us to calculate the contribution of each test to the final diagnosis.

Results: Data of the first year of recruitment of 150 patients will be presented as well as some detailed case reports.

Conclusion: The outcome of this project will allow us to design an algorithm for an improved clinical and microbiological diagnosis of BU and adequate management of patients. By improving the differential diagnosis of BU, more effective management of BU and non-BU patients aims to enhance patient comfort and outcome, and to preserve more toxic antimycobacterial drugs for those who need them.

L-009

Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **ENL Reaction 2 and Dermatology**
Presenter: Dr Sunil Dogra

ROLE OF DERMATOLOGISTS IN LEPROSY CONTROL

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Leprosy control programs, including multi-drug therapy for leprosy, have undergone significant changes over the last few years. With the process of integration of leprosy into general health services, dermatologists are more responsible for the care of leprosy patients than ever before. The dermatological services will continue to play an important role in diagnosis of the incident and remaining leprosy cases worldwide. The 7th WHO Expert Committee on Leprosy mentions the need for assigning a role to dermatologists for the elimination of leprosy. It stresses the need to include leprosy as a part of the curriculum of dermatology and to encourage dermatologists in ensuring that standard WHO MDT regimens are implemented and new cases are reported. In the changing scenario, when role of allied medical and surgical specialists like neurologists, ophthalmologists, physiotherapists, plastic surgeons, and even pathologists is being increasingly recognized, contributions of dermatologists can not be underestimated. Traditionally dermatologists have been involved in imparting clinical skills and training about leprosy to health care providers. Their role is even more pertinent in current scenario when leprosy is diagnosed based on skin lesions alone. The integration of leprosy into mainstream services offers opportunities for developing improved links between dermatologists and central leprosy clinics and regional health authorities. Leprosy programmes could become more effective by involving dermatologists in training for examination of skin lesions, impart knowledge on leprosy mimicking common dermatoses, neurological assessment, recognition of earliest signs of reaction, providing monofilament evaluation, physiotherapy, and footwear for patients with established nerve damage. Frequent dermatological training workshops will be essential to ensure that leprosy is not taken as a 'forgotten disease' and to sustain the knowledge and skills for early diagnosis and treatment of leprosy till disease is pushed to its last verge from the world.

ORAL PRESENTATIONS

O-098

Presentation Time: **Wednesday 18/09/2013 at 11:00 – 12:30**
Symposium Session: **Relapse and Drug Resistance**
Presenter: Paul Saunderson

RELAPSE AND DRUG RESISTANCE IN LEPROSY

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Introduction: Neither relapse nor drug resistance are currently regarded as major problems in leprosy, but it is important that we remain vigilant, so that any potential threat in this area can be dealt with quickly, before it becomes unmanageable.
This paper describes the current surveillance network for drug resistance in leprosy, which was established by WHO after an informal consultation in Agra, India at the end of 2006. Annual meetings were arranged, and since 2012, these have been sponsored by the Follereau Foundation of France and American Leprosy Missions.
Definitions of relapse are described and current findings are outlined. At present, drug resistance is rare and relapse cases respond well to a second course of multi-drug therapy (MDT).

Methods: This paper is based on a review of the literature, including published reports of the drug resistance surveillance network meetings, and on personal communication with members of the network. The network uses molecular methods to look for known genetic markers of resistance to three drugs, namely, dapsone, rifampicin and ofloxacin. The network consists of approximately a dozen centers in endemic areas, which collect samples and approximately a dozen western laboratories which do the molecular testing. A small number of labs in endemic areas can also do the molecular tests.

Results: The number of samples being tested remains low – perhaps 100-200 per year – so we cannot yet truly say that drug resistance is not a problem. Sporadic cases of dapsone resistance are reported throughout the world, but this is not of clinical significance.
Rifampicin resistance is reported much more from Brazil than elsewhere, but they are probably doing more testing. It is of note that for some years during the introduction of MDT, clofazimine was not widely used in Brazil because of its side effects, which may have allowed some rifampicin resistance to develop. At this year's meeting, reports of current year testing, from everywhere except Brazil, included 107 samples from five countries, with zero rifampicin resistance (sporadic cases of rifampicin resistance have been reported from a number of countries in previous years). The situation in Brazil will be described in more detail by others.
Ofloxacin resistance is reported, for example, in 5 out of 34 samples tested by the Stanley Browne Laboratory in Delhi, with samples from various TLM centers in India. This is worrying as the drug is not yet being used for leprosy, while being widely used for other infections.
Clofazimine resistance is difficult to test, but does not seem to be a problem.

Conclusion: There is a need to increase the number of tests being done, so that we have a more complete picture of the situation. This should include a sample of new cases, as well as relapse cases, which are rather rare. Rifampicin resistance in Brazil requires closer monitoring. The assessment of new drug regimens that would be effective in resistant cases needs to be carried forward.

O-099

Presentation Time: **Wednesday 18/09/2013 at 11:00 – 12:30**
Symposium Session: **Relapse and Drug Resistance**
Presenter: Jesuraj Arockiasamy

TRENDS IN INCIDENCE AND RELAPSE RATES OF LEPROSY DURING DAPSONE MONOTHERAPY ERA IN SOUTH INDIA

J. Arockiasamy [1,*], T. Bhatnagar [1], S. M. Mehendale [1], M. D. Gupte [2]

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Introduction: In leprosy control programmes, new case detection rate, as a proxy for incidence, reflects the trends in leprosy transmission. There is some evidence to document repeat attacks of leprosy among the treated patients. There are no tools to distinguish between new cases and relapses in programme settings. We used data from BCG trial for prevention of leprosy conducted in an extremely high-endemic setting in South India (1973-1985) to examine the trends in relapse rates along with the incidence rates of leprosy.

Methods: The BCG prophylaxis against leprosy trial was initiated in 1973, to assess the role of BCG vaccination in the prevention of progressive and serious forms of leprosy in South India. During this period, leprosy patients were treated with dapsone monotherapy only. We analyzed the trial data from four consecutive follow-up surveys conducted in 1975-77, 1978-80, 1980-82 and 1983-85 among a cohort of placebo arm and newly registered population of 243,766, 260,216, 278,918 and 287,057 respectively. The cohorts were clinically screened for leprosy by trained paramedical workers and were confirmed by medical officers. They were blinded to the earlier clinical status of the trial participant. The investigators subsequently classified the cases into old, new and relapsed cases for each of the follow-up surveys at the time of anlaysis. An individual was considered as a relapse case if he/she was detected as a case in one follow-up survey, declared leprosy-free in the next and captured as a case in the subsequent follow-up surveys. We estimated the age-specific prevalence and incidence rates of leprosy in the population for each follow-up survey. Age-specific relapse rate among known cases was calculated for the last three follow-up surveys.

Results: The prevalence of leprosy was 39.9, 44.1, 40.5 and 41.5 per 1000 during the four follow-up surveys. The incidence rates were 11.3 per 1000 per year during the first follow-up survey and 10.3, 8.7 and 9.5 per 1000 per year in the last three follow-up surveys. Both age-specific prevalence and incidence rates were similar across the follow-up survey periods. The relapse rates of leprosy among old cases were 106.1, 72.7 and 76.4 per 1000 per year during the last three follow-up surveys, respectively. These relapse rates were eight to ten times higher than the overall incidence in the population. During the first follow-up survey in 1978-80 relapse rates were lower in the population below 20 years of age. The age-specific relapse rates reduced from the first to the third follow-up survey.

Conclusion: During dapsone monotherapy era, the quantum of incidence and relapse rates declined over a decade in South India. In the present day context of low-endemic levels of leprosy and Multi-Drug Therapy (MDT) based treatment strategy, it may be useful to tease out relapsed cases from incidence cases for interpreting trends of new case detection rates.

O-100

Presentation Time: **Wednesday 18/09/2013 at 11:00 – 12:30**
Symposium Session: **Relapse and Drug Resistance**
Presenter: Vadivoo Selvaraj

INCIDENCE OF RELAPSE IN A COHORT OF 2185 INDIVIDUALS RELEASED FROM TREATMENT IN SOUTH INDIA

V. Selvaraj [1,*], R. Prabu [2], P. Manickam [3], V. N. Mahalingam [2], P. Jayasree [4], S. Mehendale [5]

[1]Bio- statistics, [2]Health systems, [3]Training, [4]Epidemiology, [5]Director, Epidemiology, National Institute of Epidemiology, Chennai, India

Introduction: In India after the integration of leprosy control programme into general health services, very little emphasis has been given on follow-up of patients released from treatment (RFT), making it difficult to estimate the exact incidence of relapse. Relapse rate is the realistic indicator of success of treatment provided under programme conditions. We estimated the relapse rates among the RFT leprosy patients in South India.

Methods: Trained field investigators traced the RFT leprosy patients during the period 2005-10 from the lists obtained from 4 districts in South India from the states of Tamil Nadu and Andhra Pradesh. Those available were clinically evaluated for evidence of relapse, 2-7 years after RFT following WHO recommended multi-drug therapy (MDT) following informed consent. Relapses identified by the field workers from February to July 2012 were clinically confirmed by medical officers. Skin smears were collected from clinically confirmed cases. Relapse in RFT patients was defined as a definite new lesion with or without nerve involvement, increase in size of lesion and/or reaction or persistence of active lesion. We calculated incidence rates of relapse per 1000 person-years (PY) and their 95% confidence intervals (CI). We compared the incidence rates using mid-P exact test. Risk factors associated with relapse were assessed by Cox-regression analysis.

Results: Of the listed 3576 RFT leprosy patients as per the records of the Government program in the endemic surveyed districts, 2185 (61%) were traceable and consented to participate. Of them, 55% were men, 7% were below 15 years and 42% were multi-bacillary (MB) type. There were 64 (2.9%) relapsed cases; 68.8% of them were males. The median period since RFT was 51 months (Range: 23-89 months). Of the relapses 75% and 95% occurred within 3 and 4 years after RFT respectively. Overall incidence of relapse per 1000 PY was 6.7 (95% CI: 5.2- 8.5); higher among MB (8.5; 95% CI: 5.9 -11.8) than that among Pauci-Bacillary patients (5.5; 95% CI: 3.8 -7.7) (p= 0.04). Incidence of relapse per 1000 PY was higher among men (8.4; 95% CI: 6.2-11.2) than in women (4.7; 95% CI: 2.9-7.1) (p=0.02). Increase in size or new lesions (64%) were commonly observed among the relapsed cases. Persistent active lesion and reactions were seen in 11% and 8% respectively. Thirty eight relapsed patients had nerve involvement and the

number of nerves involved ranged from 1 to 10. Deformity was noted in 22 patients and 13 of them were Grade 2. Sixty of the 64 relapsed patients consented for smear collection and five of them were positive. Relapses were more among those who were prescribed steroid (9/62). Multiple regression analysis indicated that gender was associated with relapse (Hazard ratio: 1.7; 95% CI: 1.003-3.01) after adjusting for age, education and type of leprosy.

Conclusion: The relapse rate identified is much lower than reported elsewhere in the literature. In the absence of baseline characteristics for all RFTs, the probable impact of non-traceable patients on relapse rates cannot be commented. Non-availability of the RFT cases at recorded addresses, sparse distribution of cases and difficulty in reaching certain geographic locations for data collection were challenging. We recommend emphasis by health systems to inform RFT patients to report to local health facilities for appropriate advice and intervention to minimize development of deformities among relapsed cases.

O-102

Presentation Time: **Wednesday 18/09/2013 at 11:00 – 12:30**
Symposium Session: **Relapse and Drug Resistance**
Presenter: Dr Deanna Hagge

LEPROSY DRUG RESISTANCE MONITORING AND RELAPSE IN NEPAL

P. Thapa [1], M. Shah [2], K. Neupane [1], S. Khadge [1], A. Neupane [1], W. Li [3], V. Vissa [3], I. Napit [2], D. A. Hagge [1,*]

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Introduction: Dapsone monotherapy was introduced in Nepal in 1957, while multidrug therapy (MDT) became standard practice during the 1980's. Monitoring relapse rates and the development of resistance to leprosy drugs are essential tools to evaluate ongoing MDT-based control strategies. Located within a leprosy referral hospital, our lab has been monitoring primary and secondary leprosy drug resistance and leprosy relapse in Nepal since 1982.

Methods: Medical charts for 520 untreated and 125 previously treated leprosy patients who were tested for drug resistance by the standardized mouse foot pad (MFP) model were reviewed. Three concentrations of dapsone (high, 0.01%, medium, 0.001% and low, 0.0001%,) or rifampicin (high, 0.1%, and low, 0.05%) were evaluated. Molecular drug resistance detection was performed on a subset of samples by real time PCR-high resolution melt (HRM) analysis (n=216) followed by sequencing (n=103) for mutations in the dapsone target gene, *folp1*. A smaller subset of samples (n=16) was screened for mutations in rifampicin target *rpoB gene*.

Results: Of 520 primary drug resistance tests performed, 95 (18.26%) patients demonstrated resistance strains with biological growth under dapsone or rifampicin. Since 1982, 74 (14.23%) patients produced evidence of drug resistance for dapsone low, 14 for dapsone medium (2.69%) and 14 for dapsone high (2.69%). High dose dapsone resistance was detected only within the last decade and confirmed by *folP1* mutation analysis. Molecular data collected thus far, identified one patient carrying a *folP1* threonine to alanine mutation in codon 53 (ACC > GCC), and two patients with heteroresistance (mixture of wild type and mutant sequences) in codon 456 (serine) in *rpoB* (TCG > TCG+TCC+TTG+TTC). High dose rifampicin resistance has not yet been detected; however, low dose rifampicin resistance was detected, at least once alongside high dapsone resistance. Since 2000, 40 MDT defaulters, nine dapsone monotherapy relapsed and 37 MB-MDT (24 doses) relapsed cases have been tested. Relapse bacterial index (BI) averaged 4.8 (ranging 2-6). Interestingly, 8 (21.6%) of the MB-MDT relapse patients had also previously received dapsone monotherapy. All defaulters were drug sensitive; while only 1 each of the dapsone monotherapy and MB-MDT relapse cases demonstrated low dapsone resistance. Time to relapse averaged 10 years (range 2-27 years). Five of the nine (55%) dapsone monotherapy cases produced viable *Mycobacterium leprae* growth. Of the 37 MB-MDT cases, 80% relapsed after 10 years, 29 (78%) demonstrated viable *M. leprae* growth, and 26 (70%) were noted as histologically active in skin biopsy. All cases demonstrating evidence of some level of drug resistance resolved with subsequent MDT treatment.

Conclusion: Low and medium dose dapsone resistance have been reported in Nepal since monitoring began in 1982; however, more recently, high dose dapsone resistance has been demonstrated by both MFP biological growth and molecular methods. High dose rifampicin resistance has not yet been detected. Most drug resistance detected was isolated from primary cases with only 2 relapse cases demonstrating low dose dapsone resistance. All relapse and drug resistant cases resolved clinically with MDT. With low reporting of relapse and high dose drug resistance, these monitoring results indicate that MDT remains significantly effective in treating leprosy in Nepal.

O-228

Presentation Time: **Wednesday 18/09/2013 at 11:00 – 12:30**
Symposium Session: **Relapse and Drug Resistance**
Presenter: Dr Mannam Ebenezer

PROFILE OF DEFAULTERS AND PATTERNS OF DEFAULTING IN A LEPROSY HOSPITAL IN SOUTH INDIA

M. David PrakashKumar [1,*], M. Ebenezer [2]

[1]Head, Department of Physiotherapy, [2]Director & Orthopedic Surgeon, Schieffelin Institute of Health Research and Leprosy Centre, Vellore, India

Introduction: The study was done to create a profile of people who default from the WHO multi drug therapy. It is known that the usual compliance rate is about 50%. Creating a profile of patients who default will help to identify the group of people who are at risk of defaulting. These patients can be accorded with more counseling to help in improving the compliance rate in a Leprosy program.

Methods: A retrospective cohort analysis was done of all the 272 patients who were started on MDT. Of this, 148(54.4%) patients completed their treatment. The remaining 124 (45.6%) defaulted on their MDT treatment during the period from January 2010-December 2011. Of these patients who defaulted, 110(88.7%) were taking MB treatment and 14(11.3%) were taking PB treatment. Variables such as Age, Sex, type of treatment, Disability grade, Number of months of treatment completed before defaulting and whether they were living in an urban area or a rural area were taken into consideration for further analysis.

Results: In those patients treated with the MB MDT and defaulted, there were 83 males (75.46%) and 27 (24.55%) females. The number of patients with Gr I or Gr II disability was 65 in those treated with MB MDT. Of this, 48 (73.85%) defaulted before half their treatment was completed. Only 17 (26.15%) defaulted after completion of more than half their treatment. There was a significant relationship between the number of people who had disabilities and early defaulting. In the patients treated with PB MDT, 11 (78.6%) patients defaulted after the first dose itself and only 2 patients completed at least 3 months treatment (14.3). In those treated with MB MDT, 33 patients (30%) defaulted after the first dose itself, 46 patients (41.8%) defaulted within 6 months and only 31 (28.2%) of the patients defaulted after completing more than 6 months of treatment. In the defaulters of MB MDT treatment, 49 were from urban areas and of this, 47 (95.92%) defaulted before half the treatment was completed, whereas only 2 (4.08%) defaulted after 6 months of treatment. The remaining 61 were from rural areas and in this group, 28 (45.9%) defaulted within 6 months and 33 (55.1%) defaulted after half the treatment was completed. The distribution of the defaulters suggests that a significant number of the urban population is likely to default earlier.

Conclusion: The defaulting patterns suggest that contrary to the usual norm, a significant number of patients in the PB group defaulted within one month of being started on MDT. Also, this study corroborates the idea that many urban dwelling people default within a short time of being started on anti Leprosy treatment. So, these groups need to be given priority and intensive health education needs to be provided to them to improve compliance to MDT.

O-103

Presentation Time: **Wednesday 18/09/2013 at 11:00 – 12:30**
Symposium Session: **Social Sciences**
Presenter: Alice Cruz

HANSEN DISEASE AS A BIOSOCIAL ISSUE: THE ROLE OF THE SOCIAL SCIENCES IN THE STRUGGLE TOWARDS HEALING AND INCLUSION

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Introduction: In order to examine what might be the role of social sciences, as well as of lay knowledge in the production of more equitable health public policies, this paper will critically examine the biomedical twist in the dialectic between citizenship and public good that aimed to turn Hansen disease into a disease like any other during the 1980's decade. In fact, the advent of poliquimiotherapy (MDT) alongside the platform between international agencies and advocacy groups in the 1990's that supported the global program for the elimination of Hansen disease as a public health problem, instigated a synthesis between a biomedical technology (MDT), the cure of Hansen disease and social inclusion that not only reinforced the biomedical jurisdiction of Hansen disease, but also the medicalization of the stigma and discrimination related with it.

Methods: This critical analysis is based upon a multi-sited ethnography developed between 2008 and 2012 in two divergent contexts that represent the polar expression of Hansen disease in the global South and North: Brazil, which remains the first country in the world with the highest relative cases of Hansen disease, and Portugal, in which Hansen disease has become a rare and imported disease. This research made use of an interdisciplinary methodology shaped by qualitative techniques such as participant-observation, documentary research and semi-open

and open interviews that encompassed macro, intermediary and micro levels of analysis (global program, State, clinic and illness' experience).

Results: The main results of this research point to: a) the active production of a neglected disease by the aggregation of a cost-efficiency model to a governamentality of the body based upon an atomist and vertical intervention directed at the individual body as locus and vector of the disease; b) the heterogeneous character of processes of medicalization that are mediated by moral landscapes and the State bureaucratization of biomedicine which, in turn, evidences the determinacy of the historical intersections between the State and civil society, as well as the corollaries of the former in medical care; c) a cleavage between biomedical cure and healing that evidences institutional and extra-institutional mediator factors in the cure of Hansen disease; d) the insufficiency of a medicalized health education and promotion in the struggle against stigma and discrimination.

Conclusion: This paper concludes with the acknowledgement of the limits of biomedical explanatory models and the need for a paradigmatic shift in public health policies towards intersectoral and participatory strategies based upon the counter-hegemonic principle of community. It then proposes the integration of historical and socioeconomic analysis, but also of situated knolwedges in the production of bottom-up strategies that take the local scale as the preponderant level of analysis and intervention with medical geographies that include the interseccionality of Hansen disease with other phenomenon of social oppression such as class or gender in the access to health and medical care, re-socializing, as such, not only Hansen disease, but also the stigma and discrimination attached to it.

O-104

Presentation Time: **Wednesday 18/09/2013 at 11:00 – 12:30**
Symposium Session: **Social Sciences**
Presenter: Beatriz Miranda

LOVE IN THE TIME OF LEPROSY: DEALING WITH PARTNERSHIP AND LEPROSY

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Introduction: In 1985 the Colombian writer Gabriel García Márquez published his book 'Love in the time of cholera'. The comparison established by Márquez between lovesickness and illness is used in this paper as a metaphor to approach the life of partners who have to deal with leprosy. From information collected, from couples where one or two of the members have to deal with leprosy in Cirebon, West Java Indonesia, issues of gender role, emotional attachment, moral judgment and couple interaction will be brought to debate.
The aim of this paper is to unveil the complexity existing in the life of people affected by leprosy when they decide to share their life with a partner or are looking forward to doing it. Social, moral and physical suffering are concepts that will guide the construction of the argument but also examples of resistance and compliance will be discussed.

Methods: In order to do so, the narratives of eight couples and three single people will be described and analysed. The interviews were developed together with one of the research assistants who have visited the families two more times after the first visit in order to collect more in-depth information. This work constitutes part of the ongoing research implemented by the SARI Project in Indonesia. The interviews were semi-structured and the preliminary results will be discussed with the participants to validate the information obtained.

Results: While love is a construction that seems to lead to partnership and/or marriage, it can result in a very complex category especially when there is a disease mediating it such as leprosy. Couples and especially women have talked in this study about arranged marriages, the fear of not accomplishing social demands, the importance of financial support and the gender roles that become even more evident through leprosy. Suffering, resistance and compliance appear as main concepts within the narratives of the participants which also challenge the medicalised view that has prevailed in the study of leprosy.

Conclusion: The life of people affected by leprosy goes beyond the disease and its treatment. Issues about relationships and families need more attention for future research and interventions. Women and men affected by leprosy face difficulties when building a relationship due to the complex and always changing understanding of love, partnership and leprosy.

O-105

Presentation Time: Wednesday 18/09/2013 at 11:00 – 12:30
Symposium Session: Social Sciences
Presenter: Yukiko Araragi

LIVING WITH AMBIVALENCE: THE EXPERIENCES OF JAPANESE HANSEN'S DISEASE SURVIVORS AND THEIR FAMILIES IN THE ERA OF RECONCILIATION

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Introduction: This paper examines the problematic experiences of survivors of Hansen's Disease and their families in 'the era of reconciliation,' through focusing on the narratives of both of them. In Japan, Hansen's Disease patients suffered for decades as they were subject to the government's long segregation policy. The reconciliation process finally began when the policy was abolished in 1996. In 2001, the court decreed that the segregation policy was wrong—they found that the government was the 'perpetrator' and they ordered compensation to survivors for their suffering. Thus a legal, institutional reconciliation process had begun between survivors (including their families) and the government. Compared with the progress of the institutional reconciliation, the conciliation between survivors and their families, which also includes the relationship of 'victim and perpetrator', has been delayed. I examine the ambivalent feelings embedded in survivors' experience, paying special attention to the complications and difficulties involved in the relationship between survivors and their families.

Methods: The qualitative-descriptive method of sociology is adopted in this study. I have been conducting life-story interviewing of many survivors since the mid-1990s; my work thus covers the period of lawsuit. I analyze their experiences, through data collected in my interviews, published narratives, interview data from families, and additional published narratives by families.

Results: When the abolition of the segregation policy in 1996, survivors released in their feelings from confinement. Despite the change in their feelings, few of them were able to restore their family ties. In 1998, some survivors sued the government for compensatory damages caused by the segregation policy. Japanese survivors of Hansen's Disease have been protesting government policies for decades. However, many had negative attitudes towards the lawsuit in the beginning because they could not recognize themselves as victims. It was only after learning to construct the concept of 'victims' in the lawsuit that they embraced the legal and conciliation process. As a results, the court ruled in favor of the plaintiffs and the legal and institutional reconciliation process began, with compensations paid out, among other terms of the settlement.On the other hand, the reconciliation process between survivors and their family has not been fully developed, because survivors have damaged relationships with their families because of the stigma of their illness. At the same time survivors believe their relationships have been damaged through their families' rejection. Again, for the families, they have ambivalent feelings of being both victims and perpetuators. They recognize survivors as intimate family members, but also recognize them as persons who bring serious damage to them, because families are afraid of the stigma associated with Hansen's Disease.

Conclusion: The experiences of survivors and their family are still problematic in Japan. It is mistaken to believe that the problem of Hansen's Disease has been solved even though the legal and institutional reconciliation processes have developed. In particular the experiences of families demonstrate that there is still severe stigma because they continue to live in a general society where the stigma associated with Hansen's Disease still remains. That demands us to seek a way to make progress in the reconciliation with the sufferers, which includes the relationship between patients, families and the rest of society.

O-106

Presentation Time: **Wednesday 18/09/2013 at 11:00 – 12:30**
Symposium Session: **Social Sciences**
Presenter: Sabiena Feenstra

RECENT FOOD SHORTAGE IS ASSOCIATED WITH LEPROSY DISEASE IN BANGLADESH: A CASE-CONTROL STUDY

S. G. Feenstra [1,*], Q. Nahar [2], D. Pahan [3], L. Oskam [4], J. H. Richardus [1]

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Introduction: Leprosy is remaining prevalent in the poorest areas of the world. Intensive control programmes with multidrug therapy (MDT) reduced the number of registered cases in these areas, but transmission of *Mycobacterium leprae* continues in most endemic countries. Socio-economic circumstances are considered to be a major determinant, but uncertainty exists regarding the association between leprosy and poverty. We assessed the association between different socio-economic factors and the risk of acquiring clinical signs of leprosy.

Methods: We performed a case-control study in two leprosy endemic districts in northwest Bangladesh. Using interviews with structured questionnaires we compared the socio-economic circumstances of recently diagnosed leprosy patients with a control population from a random

cluster sample in the same area. Logistic regression was used to compare cases and controls for their wealth score as calculated with an asset index and other socio-economic factors. The study included 90 patients and 199 controls.

Results: A recent period of food shortage and not poverty *per se* was identified as the only socio-economic factor significantly associated with clinical manifestation of leprosy disease (OR 1.79 (1.06-3.02); p=0.030). A decreasing trend in leprosy prevalence with an increasing socio-economic status as measured with an asset index is apparent, but not statistically significant (test for a trend: OR 0.85 (0.71-1.02); p=0.083).

Conclusion: Recent food shortage is an important poverty related predictor for the clinical manifestation of leprosy disease. Food shortage is seasonal and poverty related in northwest Bangladesh. Targeted nutritional support for high risk groups should be included in leprosy control programmes in endemic areas to reduce risk of disease.

O-107

Presentation Time: **Wednesday 18/09/2013 at 11:00 – 12:30**
Symposium Session: **Social Sciences**
Presenter: Irine Jini

UNDERNUTRITION AMONG CURED LEPROSY PATIENTS

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Introduction: Persons suffering from stigmatized diseases such as Leprosy, become, socioeconomically disadvantaged, making them undernourished and malnourished, which forms the basis of many other adverse physical consequences, which needs to be detected and addressed in both curative and preventive programs. In this post-MDT era where integrated leprosy services are freely available, it is essential that we assess the problems of undernutrition among cured leprosy patients and seek suitable solutions.

Methods: A random sample of Multibacillary Leprosy patients, who completed the stipulated course of MDT at a Referral Hospital in Delhi, India, were compared with a matched control of non-leprosy patients in terms of their Body Mass Index(BMI), considered a valid indicator of nutritional status. Heights and Weights were measured using standardized equipment and BMI calculated using the formula, Weight (kg) divided by Height ^{2} (m). Those BMI was less than 18.5 were considered undernourished.

Results: Samples of 90 leprosy patients released from treatment were compared to 100 non leprosy patients from the same hospital. Using the cut-off point of BMI <18.5, 32% of RFT patients are undernourished as compared to only 9% without leprosy, the difference statistically highly significant(p<0.01)This differential was also evident in broad age-groups and gender. RFT patients with grade 2 disability had significantly higher under nutrition (BMI<18.5 was 35.4 as compared to 0% among those without grade 2 disability. (p<0.01) The mean (SE) of BMI among those with and without grade 2 disability was 20.4(0.4) and 23.0(1.0), the difference statistically significant (p<0.05).

Conclusion: Under nutrition is widely prevalent among cured leprosy patients, especially those with grade 2 disabilities, and require proper medical and public health care to prevent further complications.

O-108

Presentation Time: **Wednesday 18/09/2013 at 11:00 – 12:30**
Symposium Session: **New Diagnostic Tools**
Presenter: Prof Annemieke Geluk

NEW TESTS DETECTING CELLULAR- AND HUMORAL IMMUNITY AGAINST M. LEPRAE

A. Geluk [1,*] and the IDEAL consortium

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Introduction: The need for diagnostic tests for leprosy that can be applied in non-expert settings may now be greater than ever before, due to changes in leprosy control programs and the decrease in special expertise required for (early) diagnosis of leprosy. However, there is no test available that can detect asymptomatic Mycobacterium leprae infection or predict progression of infection to clinical disease. Identification of risk factors (immunological- or genetic biomarkers) for disease development and/or onset of leprosy reactions is imperative for efficient diagnosis. Tests simultaneously detecting biomarkers specific for cellular- and humoral immunity are well-suited for diagnosis of the different clinical outcomes of leprosy.

Methods: Utilizing up-converting phosphor (UCP) reporter technology, a lateral flow assay was designed to detect human Th1 and Th2 cytokines as well antibodies. The assay was evaluated with (M. leprae-antigen stimulated) blood samples of leprosy patients and controls.

Results: The UCP-LF assay allowed detection of IFN-γ, IL-10 and anti-PGL-I antibodies in serum. Qualitative evaluation of 200 blood samples demonstrated excellent correlation with ELISA (R2 = 0.92). Cytokine multiplexing and simultaneous detection of cytokine and antibody was successfully demonstrated.

Conclusion: The UCP-LF assay is a user-friendly, rapid alternative for ELISAs. This format is suitable for multiplex detection of different cytokines and can be merged with antibody-detection assays allowing simultaneous detection of cellular- and humoral immunity. Thus, the UCP-LF test can cover detection of biomarkers for the full immunological leprosy spectrum.

O-109

Presentation Time: **Wednesday 18/09/2013 at 11:00 – 12:30**
Symposium Session: **New Diagnostic Tools**
Presenter: John Spencer

IDENTIFICATION OF SEROLOGICAL BIOMARKERS OF INFECTION, DISEASE PROGRESSION AND TREATMENT EFFICACY FOR LEPROSY

J. S. Spencer [1,*], M. S. Duthie [2], A. Geluk [3], M. Balagon [4], P. Saunderson [4], D. Chatterjee [1], M. Jackson [1], P. J. Brennan [1], H. M. Dockrell [5]

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Introduction: We have examined the reactivity of lepromatous and tuberculoid leprosy patient sera against a panel of 12 recombinant *M. leprae* proteins, and found that six were strongly recognized by MB patients, while only three were consistently recognized by PB patients. Additionally, antibody responses against a subset of antigens which provided a good prognostic indicator of disease progression were analyzed in 51 household contacts of MB index cases for up to two years.

Methods: To gain a better understanding of the dynamics of patient antibody responses during and after drug therapy, we measured antibody titers to four recombinant proteins, PGL-I and LAM at baseline and up to two years after diagnosis for temporal changes in antibody titers. Responses of the 51 household contacts were examined by immunoblot and ELISA for up to two years following enrolment.

Results: Both the reactivity patterns to individual antigens and the decrease in antibody titer were patient specific and declined more rapidly in the case of antibody titers to proteins versus carbohydrate and glycolipid antigens. Antibody responses in one individual showed increases in titers during reactional episodes. Although the majority of these contacts showed no change or an actual decrease in antibody titer, seven individuals developed higher titers towards one or more of these antigens. Of these seven individuals, one was diagnosed with BL disease 19 months after enrolment, while a second person was diagnosed with the indeterminate form 28 months after enrolment.

Conclusion: The results of this study indicate that antibody titers to specific *M. leprae* antigens can be used to monitor treatment efficacy in leprosy patients and to assess disease progression in those most at risk for developing this disease.

O-110

Presentation Time: **Wednesday 18/09/2013 at 11:00 – 12:30**
Symposium Session: **New Diagnostic Tools**
Presenter: Mariane Stefani

ANTIGEN ASSOCIATIONS FOR THE DIAGNOSIS OF PAUCIBACILLARY LEPROSY

R. Oliveira [1], E. Hungria [1], A. Freitas [1], A. Sousa [1], M. Costa [1], S. Reed [2], M. Duthie [2], M. Stefani [1,*] on behalf of Mariane Stefani

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Introduction: The development of any laboratory test for leprosy diagnosis needs to take into account the Th1/Th2 dichotomy that leads to cell mediated immunity (CMI) in paucibacillary (PB) patients and humoral immune response in multibacillary (MB) disease. While serological tests to evaluate humoral immune responses among MB leprosy have been described, no laboratory test to detect PB leprosy patients exists. This study assessed the potential application of different *Mycobacterium leprae* (*M. leprae*) antigen combinations to stimulate CMI among PB leprosy.

Methods: Study groups included: 1.Newly diagnosed untreated PB and MB leprosy patients (n=20/group); 2.Pulmonary tuberculosis patients (TB n=20), 3.Healthy endemic controls (EC n=20); 4.MB household contacts (HHC n= 20). Patients and controls were recruited at "Centro de Referência em Diagnóstico e Terapêutica Goiânia/Goiás" in central-western Brazil. The ML2055, ML46f, LID-1, ML0276, ML1632 and ML2044 *M. leprae* recombinant proteins (rML) were tested individually and in five different *M. leprae* antigen combinations (rML Mix): Mix # 1: 46f + LID-1,

Mix # 2: ML2055 + ML1632 + ML2044, Mix # 3: ML0276 + 46f, Mix # 4: ML2055 + LID-1, Mix # 5: ML0276+LID-1. The CMI of patients and controls was assessed based on IFN-g production in whole blood assay (WBA) using venous undiluted heparinized whole blood (450 mL/well, 24 well plates, Costar, MO/USA) stimulated with: 10 mg/mL of each inidivual rML or rML Mix, *M. leprae* cell sonicate (10 mg/mL CSU/USA) and PHA (2 mg/mL, Sigma, MO/USA). After 24 hours incubation (37°C, 5% CO_2), plasma was collected for IFN-g detection by ELISA (QuantiFERON/CMI/Cellestis, Australia; cut-off: 50 pg/mL).

Results: The stimulation in WBA with four out of five *M. leprae* antigen combinations resulted in higher levels of IFN-g when compared to individual proteins. Mix # 1 (46f + LID-1) almost doubled IFN-g production (median=105 pg/mL) compared to individuals proteins (LID-1, median=53 pg/mL and 46f, median=61 pg/mL) ($p<0.05$). Mix # 5 (ML0276 + LID-1) was also capable to induce higher levels of IFN-g production (median=101.5 pg/mL; $p=0.0005$) than the individuals proteins. IFN-g production was also high among HHC after stimulation with Mix # 1 and Mix # 5, similarly to what was observed among PB leprosy. None of the proteins nor *M. leprae* antigen combinations induce IFN-g production among EC or TB patients indicating that the enhancement in IFN-g production by different antigen combinations did not compromise the specificity of the cellular response.

Conclusion: Different combinations of *M. leprae* proteins had a synergistic effect enhancing the IFN-g production among PB leprosy patients and HHC group without loosing specificity. These results indicate that antigen combinations can be potentially applied in the development of new laboratory tests to diagnose PB leprosy and in vaccine design.

Financial Support: Heiser Foundation for TB and Leprosy/NY/USA; American Leprosy Missions/USA.

O-111

Presentation Time: **Wednesday 18/09/2013 at 11:00 – 12:30**
Symposium Session: **New Diagnostic Tools**
Presenter: Malcolm Duthie

A RAPID ELISA FOR LABORATORY-BASED DIAGNOSIS AND CHARACTERIZATION OF LEPROSY

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Introduction: Despite the recent reduction in the number of registered worldwide leprosy cases as a result of the widespread use of multi-drug therapy, the number of new cases detected each year remains relatively stable. The World Health Organisation recommends that leprosy diagnosis and treatment be provided as a soon as possible, but currently the diagnosis is based on the appearance of clinical signs. This requires expert clinical, as well as labor intensive and time consuming, laboratory or histological evaluation.

Methods: Our previous studies indicated that the combination of serological antibody responses against PGL-I (or NDO-BSA) and the LID-1 fusion construct could be complementary. We designed a conjugate of NDO-LID, which was achieved by reaction of LID-1 lysine residues with synthetic NDO following activation of the NDO hydrazide to the reactive acyl azide. We then evaluated seroreactivity of the conjugated NDO-LID form in Leprosy *Detect*™ fast ELISA. This test format was developed by InBios International (Seattle, WA, USA) and is capable of providing expedited laboratory-based diagnosis of leprosy. Samples and assay controls are added to ready-to-use pre-coated/ pre-blocked wells and results are obtained in less than 90 minutes. Given the well strip format of the test, as few as 4 and as many as 90 samples can be evaluated in a single plate.

Results: Direct comparison of tests conducted using typical ELISA conditions (i.e., uncoated plates and elongated incubation periods) versus the rapid ELISA format indicated that an enhanced signal was obtained for sera from confirmed leprosy cases without any change in the signal obtained from negative control sera. As expected, multibacillary leprosy patients recognized NDO-LID with stronger antibody responses than paucibacillary patients. It was apparent that the conjugated NDO-LID provided an augmented signal in ELISA of samples that were borderline positive for each antigen alone, and complemented the recognition of samples that were positive for only one of the antigens.

Conclusion: The Leprosy *Detect*™ fast ELISA represents a valuable tool for both diagnosis and monitoring of leprosy patients.

O-112

Presentation Time: **Wednesday 18/09/2013 at 11:00 – 12:30**
Symposium Session: **New Diagnostic Tools**
Presenter: Mariane Stefani

DEVELOPMENT OF NDO-LID®: A NEW POINT-OF-CARE TEST FOR LEPROSY

L. Cardoso [1], A. Freitas [1], E. Hungria [1], R. Oliveira [1], R. Dias [2], M. Collovati [2], S. Reed [3], M. Duthie [3], M. Stefani [1,*]

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Introduction: Leprosy presents as a spectrum and no laboratory test is commercially available for its diagnosis/prognosis. Here we report the results of a new point-of-care (POC) lateral flow test developed for leprosy using phenolic glycolipid-I (PGL-I/NDO) and LID-1 fusion-protein antigens (NDO-LID,Orangelife®/Brazil). A new rapid-test reader platform integrated in a cell phone was also used (Smart Reader application-SR®).

Methods: The anti IgM and anti IgG reactivity to NDO-LID® tests was evaluated using sera samples from: 1. Newly diagnosed untreated multibacillary (MB=108) and paucibacillary (PB=104) leprosy patients classified by Ridley & Jopling criteria; 2. Leprosy household contacts (HHC=75); 3. Pulmonary tuberculosis patients (sputum positive/HIV negative;TB=53); 4. Healthy endemic controls (EC=101). Patients and controls were recruited in central-western Brazil. NDO-LID® anti IgM/IgG reactivity (SR®:cut-off=10) was compared to anti PGL-I IgM ELISA (cut-off:optical density=0.250).

Results: Across the spectrum of leprosy forms (from lepromatous/LL to tuberculoid/TT pole) a gradual decrease in the seropositivity to NDO-LID® test was observed: 97.4% for LL, 83.7% for borderline lepromatous/BL, 76.9% for borderline borderline/BB patients; 26.2% for borderline tuberculoid/BT and 14% for TT patients. Seropositivity among HHC was 5.3%, 5.7% for TB and 3% among EC. The estimated sensitivity of NDO-LID® test across the leprosy spectrum was 87%, with a specificity of 96.1%.

Conclusion: MB patients are important *Mycobacterium leprae* disseminators and are at increased risk of complications such as reactional episodes. As such, the new NDO-LID® POC test represents an important tool for MB leprosy detection/diagnosis and treatment. The use of digital and automated rapid test SR®-app provides a means to generate controlled and consistent results across diverse settings.

Sponsorship: CAPES-grant#02479/09-5; PRONEX/FAPEG/CNPq-07/2009; American Leprosy Missions.

O-113

Presentation Time: **Wednesday 18/09/2013 at 11:00 – 12:30**
Symposium Session: **New Diagnostic Tools**
Presenter: Dr Sérgio Antunez

SMALL NERVE FIBER EVALUATION TO AID THE EARLY DIAGNOSIS OF LEPROSY

X. Illarramendi [1,*], E. A. F. da Costa [1], A. M. Miranda [1], J. A. C. Nery [1], R. T. Vital [1], A. M. Sales [1], E. N. Sarno [1], S. L. G. Antunez [1]

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Introduction: Leprosy diagnosis is complex and especially difficult in the early stages of the disease. It is based in the clinical examination and the pathological aspects of the nerve or skin samples. In a certain number of individuals, mainly contacts of leprosy patients, with a suspected lesion, the established methods are not enough to define the diagnosis. The need of a sensitive and specific test for the early diagnosis of the disease remains a challenge.

Methods: A cross sectional study was developed to evaluate the presence of small fiber neuropathy in contacts and patients with less than 5 suggestive skin lesions and negative bacterial index. Small nerve fiber alteration was defined by quantitative sensory testing (QST) and the morphologic alterations of skin innervation. Thermal and pain sensation of the skin lesions were evaluated by QST using MEDOC Thermal sensory analyzer and compared to the contralateral healthy skin. Histopathological evaluation under light microscopy with haematoxylin-eosin, Gomori trichromic and Wade staining was performed of a skin sample of the lesion.

Results: A total of 27 plaques and 41 hypochromic skin patches were evaluated. Anaesthesia to cold was observed in 11% of the lesions and hypoesthesia in 61% of them. Heat pain threshold measurement revealed anaesthesia in 22% of the lesions and hypoesthesia in 65% of the lesions. In 49% of the samples a non-specific inflammatory infiltrate was observed. Various alterations were observed related to cutaneous nerve branches such as perineural thickening, increased cellularity, and adjacent inflammatory infiltrate. These alterations were present in both the definite leprosy cases defined by the presence of epitheloid granuloma (n=17) or intraneural inflammation and the probable cases.

Conclusion: Histopathological findings of cutaneous nerve branches involvement in combination with quantitative sensory testing are useful tools to aid the clinician at the diagnostic decision.

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Presentation Time: **Wednesday 18/09/2013 at 11:00 – 12:30**
Symposium Session: **Molecular Epidemiology**
Presenter: Dr Patricia Rosa

EVIDENCE OF ACTIVE TRANSMISSION OF DRUG RESISTANT MYCOBACTERIUM LEPRAE STRAIN IN BRAZIL

P. S. Rosa [1,*], S. M. Diório [2], A. F. F. Belone [3], I. M. F. D. Baptista [2], P. N. S. N. Suffys [4], L. R. V. Fachin [3], L. M. Trino [2], B. G. C. Sartori [1], L. R. D. L. R. De Lamano [2], M. E. I. Araújo [4], W. F. B. Delanina [5], F. B. Marques [5], S. Ura [6], C. T. Soares [3], M. B. Xavier [7], M. O. Moraes [4], M. Kai [8], M. Matsuoka [8], M. T. Mira [9], M. D. C. L. Virmond [6]

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Introduction: Over the past decade, leprosy detection rates have been decreasing slowly in Brazil. Several factors are involved in the maintenance of leprosy transmission, such as operational limitations, drug regimen failure and drug resistance, among others. To investigate the impact of drug resistance over disease relapse and transmission, we genotyped *Mycobacterium leprae* isolates obtained from leprosy affected individuals resident at the former leprosy colony of Santo Antonio do Prata (Prata colony). This Colony, founded in the 1920's and located in the Amazonic state of Pará, north of Brazil, has been recently reported one of the highest leprosy prevalence in the world. A major gene effect controlling susceptibility to the disease was identified in the colony, suggesting an enrichment of genetic risk factors for leprosy within this population. Therefore, the Prata Colony presents unique characteristics that make it ideal for the study of factors related to transmission and maintenance of the endemic.

Methods: Multibacillary (MB) cases who have had completed at least one multi-drug therapy regimen and their contacts living in the Prata colony were invited to participate in the study. After signing an informed consent, volunteers were submitted to complete dermatological and neurological evaluation. Individuals presenting active leprosy (both relapse and new cases) were classified according to the Ridley & Jopling protocol and submitted to a skin biopsy for *M. leprae* genotyping. Drug resistance was investigated by direct sequencing of polymorphic sites of the *rpoB*, *folP1* and *gyrA* gene; *M. leprae* strain typing was performed by Multiple-locus VNTR Analysis (MLVA).

Results: A total of 207 participants were enrolled: 104 individuals that had completed treatment and 103 contacts. Twelve pre-treated individuals (11 MB and 1 PB) and 10 contacts (2 MB and 8 PB) were diagnosed with active disease. Among the 12 relapse cases, 6 presented rifampicin and dapsone double resistance, and 3 dapsone resistance *M. leprae* isolates. Interestingly, among the *M. leprae* isolated from the 10 new cases, two were double resistant, one was rifampicin and another, dapsone resistant. None of the samples presented mutations in the *gyrA* gene. All *rpoB* mutations were in codon 531, TCG to ATG (Ser to Met), while different *folP1* mutations occurred at codon 55: 10 cases presented CCC to CGC (Pro to Arg), one CCC to GCC (Pro to Ala), and one CCC to CTC (Pro to Leu). Upon MLVA typing, clustering level in this particular population was as high as 55%, forming six clusters of two cases each. We observed a considerable number of family links between reactivation cases (mostly multibacillary) and new cases; this observation, combined with the resistance SNP profile observed, strongly suggests transmission of resistant strains among relapse cases and contacts.

Conclusion: The observation of active transmission of resistant *M. leprae* in an isolated population poses a specific challenge for leprosy control programs; this indicates that disease control policies should focus on pockets of high endemicity of leprosy, often subjected to poor epidemiological surveillance due to logistic problems such as limited access to health services and poor adhesion to treatment due to cultural behavior. Perhaps more importantly, our findings document active emergence and transmission of *M. leprae* resistant strains under specific, favorable conditions. The current extend of the situation at the Prata Colony, as well as to what extend the observations in the Prata may be true for open populations, is currently unknown.

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Presentation Time: **Wednesday 18/09/2013 at 11:00 – 12:30**
Symposium Session: **Molecular Epidemiology**
Presenter: J osafá Barreto

SPATIAL ANALYSIS SPOTLIGHTING EARLY CHILDHOOD LEPROSY TRANSMISSION IN A HYPERENDEMIC AREA OF THE BRAZILIAN AMAZON REGION

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Introduction: The distribution of leprosy in Brazil is heterogeneous, with the more socioeconomically developed states in the South of the country having already achieved the elimination target, while high-burden pockets are found in other regions. Most of the areas with clusters of cases are in the Brazilian Amazon, long recognized as a highly endemic leprosy area. Active transmission is ongoing, as demonstrated by the incidence of leprosy in children. Geographic information systems and spatial analysis can provide a better understanding of the patterns of disease transmission in space and time. These analytical tools have been used to monitor epidemiological indicators over time, identify risk factors and clusters of high endemicity, and to indicate where additional resources should be targeted. The objectives of this study were to identify the spatial distribution of leprosy in a hyperendemic municipality of the Brazilian Amazon and to associate its pattern with the occurrence of leprosy and *Mycobacterium leprae* subclinical infections among household contacts and school children.

Methods: This study was performed in the city of Castanhal (1.29° S; 47.92° W) in the state of Pará. All residences of those individuals affected by leprosy in the urban area, detected from 2004 to February 2010, were georeferenced to map the distribution of cases. Spatial statistics (global and local Moran's I, Kulldorff spatial scan statistics, Ripley's K-function, and Knox space-time test) were used to detect spatial and temporal clustering of leprosy. Additionally, we conducted a cross-sectional study involving 302 household contacts and 188 school children. All subjects were clinically assessed, and their levels of IgM anti-PGL-I were determined by ELISA.

Results: A total of 633 new cases of leprosy were detected from 2004 to February 2010, ≈10% among children <15 years old, classifying the municipality as hyperendemic. The spatial distribution of cases was heterogeneous, with local clusters of cases in specific regions of the city ($p<0.01$). We also observed a significant spatio-temporal clustering of cases at distance lags of 50-200 meters and time lags of 1-4 years. Thirty-nine percent of household contacts were positive for anti-PGL-I, and we detected 8 (2.6%) new cases among these individuals. One hundred and twenty-five school children (66.5%) were seropositive, and we detected 9 (4.8%) new cases of leprosy in this group. When we visited the homes of school children affected by leprosy, 31 contacts were clinically examined, and 3 (10%) new cases were detected. All 4 visited schools were in hyperendemic census tracts; 134 of 188 (71.3%) examined students live in hyperendemic areas; 41 (21.8%) were residing within 50 meters of at least one leprosy case; 120 (63.8%) and 178 (94.7%) were dwelling less than 100 or 200 meters from a case, respectively. We did not observe significant differences in the levels of IgM anti-PGL-I or in the seropositivity as a function of proximity.

Conclusion: Spatial analysis revealed a clustering pattern of leprosy cases in this hyperendemic municipality. The high seroprevalence of anti-PGL-I and of undiagnosed cases among both household contacts and school children suggests that there are many active foci of infection and that *M. leprae* is circulating in this population. Joining clinical, epidemiological, serological and spatial data provided a better understanding of the transmission dynamics of leprosy at fine spatial scales and evidenced high rates of childhood leprosy transmission within this hyperendemic city of Brazil. (CNPQ DECIT/MS CAPES FAPESPA SESPA).

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Presentation Time: **Wednesday 18/09/2013 at 11:00 – 12:30**
Symposium Session: **Molecular Epidemiology**
Presenter: Varalakshmi Vissa

MOLECULAR, ETHNO-SPATIAL EPIDEMIOLOGY OF LEPROSY IN CHINA: NOVEL INSIGHTS FOR TRACING LEPROSY IN ENDEMIC AND NON ENDEMIC PROVINCES

X. Weng [1], Y. Xing [1], J. Liu [1], Y. Wang [2], Y. Ning [3], M. Li [4], W. Wu [5], L. Zhang [6], W. Li [7], J. Vander Heiden [7], V. Vissa [7,*]

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Introduction: Leprosy continues to be detected at near stable rates in China even with established control programs, necessitating new knowledge and alternative methods to interrupt transmission.

Methods: A molecular epidemiology investigation of 190 patients was undertaken to define *M. leprae* strain types and discern genetic relationships and clusters in endemic and non-endemic regions spanning seventeen provinces and two autonomous regions. Patients (n=190) attending the Province or County level Skin Disease Control Stations (SDCS) of Centers of Disease Control across Chinawere included. *M. leprae*were strain typed using established multi-locus variable number of tandem repeat analysis (MLVA) for all patients and SNP typing (1, 2, 3 or 4 and subytpes) methods for 101 patients using DNA extracted from skin biopsies. The population structure of 144 samples having complete data was explored using principal component analysis using the complete panel of VNTR loci. Maximum parsimony analysis was performed using a weighted step matrix to accommodate for the copy number differences at each locus.

Results: Several scenarios of clustering of leprosy from township to provincial to regional levels were recognized, while recent occupational or remote migration showed geographical separation of certain strains. First, prior studies indicated that of the four major *M. leprae* subtypes defined by single nucleotide polymorphisms (SNPs), only type 3 was present in China, purportedly entering from Europe/West/Central Asia *via* the Silk Road. However, this study revealed VNTR linked strains that are of type 1 in Guangdong, Fujian and Guangxi in southern China. Second, a subset of VNTR distinguishable strains of type 3, co-exists in these provinces. Although the majority of the Guangdong strains are of SNP type 1 or a version of SNP type 3 seen in neighboring Jiangxi and Guangxi, 6/22 strains diverged. Four were migrants from other provinces with three being non-Han; majority of Guangdong patients are Han. Third, type 3 strains with *rpoT* VNTR allele of 4, detected in Japan and Korea were discovered in Jiangsu and Anhui in the east and in western Sichuan bordering Tibet. In Sichuan, this type was found amongst the Zang/Tibetan nationality patients. Fourth, considering the overall genetic diversity, strains of endemic counties of Qiubei, Yunnan; Xing Yi, Guizhou; and across Sichuan in southwest were related. However, closer inspection showed distinct local strains and clusters.
The strain type responsible for the dominate cluster (previously identified as groups A and B), and includes a number of Zhuang ethnicity multi-case families in Qiubei,Yunnan (YN-QB) is not seen in Guizhou or Sichuan. This indicates restricted spread of the strain outside of YN-QB.
In Xing Yi city, Guizhou, several strain type clusters were detected. One composed of at least seven cases with an atypical allele of 7 for (AC) 8b has four patients from the township of BaJieZhen. Of five Buyei minority patients in the entire cohort and three belong to this cluster and township.

Conclusion: Altogether, these insights, primarily derived from VNTR typing reveal multiple and overlooked paths for spread of leprosy into, within and out of China and invoke attention to historic maritime routes in the South and East China Sea. More importantly, new concepts involving spatial, molecular, occupational and ethnic clues for prospective case finding and tracking of leprosy from county to national level have been identified and should be incorporated in the field to limit transmission.

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Presentation Time: **Wednesday 18/09/2013 at 11:00 – 12:30**
Symposium Session: **Molecular Epidemiology**
Presenter: Eliane Ignotti

20 YEARS OF THE DECENTRALIZATION OF CARE AND THE DECREASE REDUCTION OF THE INCIDENCE OF LEPROSY IN BRAZIL

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Universidade do Estado de Mato Grosso/UNEMAT, Cáceres – MT

Introduction: Decentralization of the diagnosis of leprosy to the municipalities and the primary care services is one of the most important strategies for the elimination of leprosy as a public health problem in Brazil.

Objective: To analyze the percentage changes in the detection of leprosy in Brazil, as well as the decentralization of the assistance to the leprosy patients in the last 25 years (1987 to 2011).

Method: Study of secular trends in New Case Detection Rate (NCDR) for leprosy in Brazil between 1997 to 2011. To analyze the potential increase in accessibility to diagnosis and treatment, a comparison was made between the proportion of cases diagnosed within the health services and municipalities over a 25-year period, split into 5-year intervals.

Results: There was a reversal in the epidemiological pattern of increase to decrease the detection rate of leprosy from 2003 which went from 29.3 to 17.7 new cases per 100 000 inhabitants. In the first five-year period there was an average of 126 patients per health unit, but in 2011 there are less than four patients on average per unit. The reduction of the disease occurs in reverse the expansion of the number of health units and municipalities providing care to patients across the country.

Conclusion: At the beginning of the last decade there was an inversion in the trend of leprosy detection, which represents a reduction in the incidence of the disease in Brazil. Even with maintaining network health and municipalities able to make the diagnosis of leprosy cases, the disease remains in decline.

O-120

Presentation Time: **Wednesday 18/09/2013 at 11:00 – 12:30**
Symposium Session: **Surgical Rehabilitation**
Presenter: Marcos Virmond

PERCEPTION OF PEOPLE AFFECTED BY LEPROSY ON SURGICAL REHABILITATION

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Introduction: Leprosy related deformities and disabilities had a high potential of devaluation and marginalization of the affect person, attaching stigma to this condition. With the introduction of WHO-MDT leprosy cases develop less deformities and disabilities compared to decades earlier. However, there are still many cases in need for surgical rehabilitation. In fact, leprosy affected persons can face economic deterioration[1] and stigma due to a still prevailing sense that leprosy is a cursed disease linked to the deformities. Disability reduces the possibility of undertaking productive work. It is hence true that for social and economic rehabilitation, surgery is essential to correct residual deformities[2]. However, over the past decades rehabilitation has been assessed in pure technical grounds not taking into consideration how patients perceive the changes after having undergone surgery[3]. Psychological and social aspects on the outcome of the rehabilitation process are as important as the physical results of surgical procedures[4]. This study aims to discuss the need for a comprehensive approach for measuring the outcome of surgical rehabilitation in leprosy affected persons.

Methods: A literature review was done assessing two electronic databe (Medline and Lilacs) to collect available experiences in measuring outcome of surgical rehabilitations as well results[3,5,6]. In addition, we conducted a cross-sectional evaluation of quality of live (WHOQUOL brief), participation (Participation Scale)[5], self-perception of expectation's fulfillment (questionnaire and a visual scale) and function (goniometry and Jebsen-Taylor Test) in a group of 40 leprosy patients submitted to, at least, one surgical procedure for correction of claws hand, droop foot, lagophtalmus or lack of opposition of the thumb. Statistical analysis included two-sample Student's *t* test.

Results: A total of 86 surgeries were performed. Mean scores for WHOQUOL were 61.34 (± 9.0) for physical domain, 64.69 (± 11.3) for psychological, 76.87 for social ((± 16.4) domain, 64.63 (± 13.6) for ambient and the overall domain showed 65.11 (± 9.5). Therefore, the social domain showed the highest score and the physical the lower, indicating that physical rehabilitation may have some positive relation to the social behavior of affected people. According to Participation Scale, 52.5% scored 12 or less, therefore not showing significant participation restriction, whereas 47.5% scored 13 or more. Only 5% revealed sever restriction. Comparison of results of QOF and Participation Scale also indicate that there is evidence that restrictions can influence quality of life in all domains ($p<0.005$). Indeed, the group who scored 13 and more in the Participation Scale consistently showed mean scores inferior to those that scored 12 or less. Most of the people studied (87.5%) had a good perception on expectation's fulfillment for surgical results and, in fact, the results of the functional modifications are concentrated in good and moderate, according to the proposed evaluation systems.

Conclusion: It is stressed the need to provide physical rehabilitation services to people affected by leprosy who has disabilities and deformities in the hands, feet and eyes, so that they can profit from reconstructive surgeries. The team should be multidisciplinary thus providing a comprehensive care to patients, enhancing their self-esteem and reintegrating them into the society. Outcome evaluation should be comprehensive therefore including social, economic and psychological markers besides pure functional evaluation systems

O-121

Presentation Time: **Wednesday 18/09/2013 at 11:00 – 12:30**
Symposium Session: **Surgical Rehabilitation**
Presenter: Indra Napit

IMMEDIATE EARLY ACTIVE MOTION AFTER RECONSTRUCTIVE HAND SURGERY IN LEPROSY AND PATIENT SATISFACTION

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Introduction: Hand deformity is a major concern among the deformities due to leprosy. Immediate early active motion after reconstructive hand surgery has not been standard protocol in most centres. Patient satisfaction is one of the main parameters by which to evaluate the outcome of reconstructive surgery. To contrast early active and conventional mobilization practices, we performed a retrospective study of patient charts and physiotherapy records to evaluate patient satisfaction in two groups of patients after completion of physiotherapy at the time of discharge from hospital.

Methods: This was a retrospective chart study with review of 180 procedures in 143 patients in Anandaban hospital from 2008 to 2012. Immediate early active motion of the hand after reconstructive surgery on day 2 was started in 2011 in Anandaban hospital. Ninety two cases

of hand surgery for claw deformity and loss of thumb opposition performed in 2011-2012 with postoperative immediate early active motion beginning on day 2 were reviewed to determine the outcome of each patient satisfaction assessment at the time of discharge. Eighty eight cases of identical hand surgery for claw deformity and loss of thumb opposition performed in 2008 to 2010 with conventional immobilization of the hand for 3 weeks were similarly reviewed for comparison. Lasso with Flexor Digitorium Superficialis tendon transfer for claw hand deformity and Opponensplasty with Flexor Digitorium Superficialis tendon transfer for loss of thumb opposition were the most commonly performed reconstructive surgical procedures. The results in both groups were analyzed by reviewing the patient charts, postoperative surgical assessment forms and the patient satisfaction assessment forms. Patient satisfaction assessments were performed using a scale from 0, indicating worst, to 10, indicating best, as compared to a normal hand. Patient satisfaction scores were subdivided into poor (1-3), good (4-6) and excellent (7-9).

Results: The group of 88 cases of reconstructive hand surgery with immediate early active motion averaged a patient satisfaction score of 7.63, whereas the group of 92 cases of reconstructive hand surgery with conventional immobilization averaged only 6.35. Conventional methods yielded patient satisfaction scores rating outcome satisfaction 2.2% poor (2 cases), 30.4% good (28 cases) and 67.4% excellent (62 cases). In contrast, immediate early mobilization resulted in no poor satisfaction outcomes, 13.6% good (12 cases) and 86.4% excellent (76 cases). Functional and cosmetic appearance, range of motion, swelling, pain, dexterity, hand strength and morbidity was better in the group with the immediate early active motion of hand. The average hospital stay was reduced by 8 days in this group.

Conclusion: We found that patient satisfaction scores were higher in the group of patients with immediate early active motion of post reconstructive hand surgery due to leprosy. It yielded better results in functional and cosmetic appearance, early relief of pain, quicker restoration of hand function and early discharge from hospital reducing hospital expenses.

O-122

Presentation Time: **Wednesday 18/09/2013 at 11:00 – 12:30**
Symposium Session: **Surgical Rehabilitation**
Presenter: Paul Madhale

A STUDY OF PATIENTS EXPECTATIONS BEFORE AND AFTER RECONSTRUCTIVE SURGERY

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Introduction: The disabilities caused by leprosy are the main cause of the fear and stigma associated with leprosy and Reconstructive surgery is an effective tool to correct deformities caused by nerve damage in leprosy. Several patients from different states of Maharashtra & Karnataka take the benefits of this reconstructive surgery to get rid of their deformity, for patients benefit, we offer four reconstructive surgery camps in a year for functional improvement and bring restoration to normality. Study determines the factors affecting the quality of life before surgery and to assess the effect and expectations of reconstructive surgery after the deformity correction, for a leprosy patient, appearance and functional improvement is very important since deformity not only separates him from his family, friends and relatives but it causes a stigma against in the community.

Methods: All patients with deformity due to leprosy attending Richardson leprosy hospital Miraj, in 2011, were screened for RCS. All who were selected for RCS and were willing, and consented to participate were interviewed using the SALSA Scale and Participation Scale. After surgery all were called for follow up after 3 months and then again after 1 year, and the interviews were repeated. The interviews were taken by trained physio therapists. Outcome changes in SALSA Scale and Participation Scale score were analysed.

Results: 152 patients underwent surgery and took part in the study. Participants who had surgery revealed changes in functional activities after 3 months of follow up; same were assessed after 1 year follow up showed a significant improvement than before, improvement ranged score from 53 to 22 before and after surgery for hands, whereas for improvement ranged score from 58 to 28 before and after surgery for feet, and improvement ranged score from 47 to 18 before and after in eye surgery.

Conclusion: Our finding suggests that Reconstructive surgery has played significant role in correcting deformities in leprosy by giving effective functioning resulting into physical & functional improvement and made them active in the household as well as in the community. There is a change in the quality of life after surgery; patients are satisfied by their appearance and in improvement in functioning. Quality of life makes them to live and to be a part of community.

O-124

Presentation Time: **Wednesday 18/09/2013 at 11:00 – 12:30**
Symposium Session: **Surgical Rehabilitation**
Presenter: Mr Manivannan Govindarajlu

EFFICACY OF EARLY RESISTANCE POST OPERATIVE PROTOCOL TO HASTEN GRIP STRENGTH AFTER LASSO SURGERY: A RANDOMIZED CONTROL STUDY

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Introduction: Claw hand deformity is commonly observed in Hansen's disease as compared to other form of pathological sequeale. Lasso procedure using FDS tendon, either from middle or ring finger is frequently used to correct Claw hand deformity, which aims to achieve maximum functional recovery of the hand. In conventional postoperative therapeutic method there is a reduction in grip strength immediately after the surgery.Grip strength takes few months to get back to its maximum strength, by then there may be change in physiological property of the muscle. Therefore, it is essential to restore the grip strength as early as possible immediately after surgery. The aim of this study is to determine the effect of early resistive program in hastening grip strength after lasso procedure using FDS for claw hand deformity correction, and its impact on Basic-ADL performance and Fine manipulation.

Methods: A Randomized Controlled Trial was conducted to determine the effectiveness of early resistance program to control the grip strength reduction after lasso procedure using FDS for claw hand deformity correction. Totally, 124 patients who were aged between 20 to 50 years, with ulnar claw hand deformity were selected for the study, and randomly allocated to two groups:. Sixty two patients underwent resistance program and other 62 patients underwent conventional therapy protocol. The dynamometer and pinch gauge were used to measure grip and pinch strengths respectively. The Karigiri Hand Function Assessment, Karigiri Basic-ADL Scale were used to measure hand function and Basic-ADL respectively. Pre test measurements were done day before the surgery and post test measurements done after 3 weeks of post operative therapeutic intervention. The scores were computerized and subjected to statistical analysis using SPSS. For each group, a paired t-test was done. The differences were tested by t-test.

Results: The Mean (SD) grip strength in kg, at the end of intervention in experimental group was 9.5 (2.6), whilst in control group 4 (2.7). The Mean (SD) of the difference (between pre and post) of the grip strength was lower in experimental group and was statistically significant (p=<.001). The Mean (SD) of the difference (between pre and post) in performance of fine manipulation (p=<.001) and Holding soap (p=.02) in Basic-ADL also was statistically significant.

Conclusion: The significant increase in grip strength and Basic-ADL favors early resistance program after tendon transfer in claw correction to hasten the grip strength as early as possible to improve the hand functions.

O-125

Presentation Time: **Wednesday 18/09/2013 at 11:00 – 12:30**
Symposium Session: **Other Mycobacterial Diseases**
Presenter: Françoise Portaels

LEPROSY AND BURULI ULCER: SIMILARITIES AND DIFFERENCES

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Introduction: Leprosy and Buruli ulcer (BU) are two priority neglected diseases that present similarities and differences.

Methods: Various aspects of both diseases are compared.

Results: Leprosy and BU, caused by *M. leprae* and *M. ulcerans*, respectively tend to affect the cooler body areas, presenting primarily with skin lesions. Leprosy invades peripheral nerves, and may also involve internal organs such as the testes or eyes, whereas extracutaneous BU primarily involves bone, often underlying skin lesions. Leprosy occurs in more than 90 countries worldwide. BU has been reported, though not necessarily microbiologically confirmed, in 33 countries. BU is endemic to Africa, particularly west African countries and to a lesser degree, Australia. In Africa, in a cohort of 1061 leprosy patients and 180 BU patients, we found both diseases in 6 patients. Interestingly, all 6 patients had either indeterminate or tuberculoid leprosy. The worldwide burden of leprosy has fallen markedly over the past 2 decades, due largely to multiple drug therapy (MDT), but the disease remains a significant public health concern in some countries. BU is less common than leprosy and is considered re-emerging in west and central Africa, probably because of environmental and topographic changes. Accumulating data suggest BU incidence is underestimated. Leprosy is a communicable disease, whereas BU is directly related to environmental factors, and thus considered noncommunicable. One generally accepted mode of transmission of leprosy is by nasal droplets from infected untreated persons, but *M.*

leprae shedding from skin may also be relevant. The most plausible mode of transmission of BU is through minor trauma to the skin that may go unnoticed, allowing entrance of *M. ulcerans*. The incubation period of leprosy in most cases is believed to range from 3 to 7 years, whereas for BU it is considered about 3 months. Both diseases can be confirmed by microbiological tests such as direct lesion smear examination, histopathology and molecular tests (PCR), but only *M. ulcerans* can be cultivated *in vitro*. World Health Organization (WHO) MDT administered for 1 or 2 years effectively arrests disseminated leprosy, but disability remains problematic. Reducing disability and nerve function impairment are increasingly important. The therapy for BU recommended by WHO, rifampin and intramuscular streptomycin is effective for most lesions. Reducing disability from scarring is also an increasingly important aspect of BU management. Leprosy is considered by WHO "eliminated as a public health problem" in most areas of the world, but eradication remains a distant goal. For BU, though far less common than leprosy, achieving a reasonable degree of control in endemic regions may prove especially challenging given its environmental reservoir and continuing topographic changes. For leprosy, and to a lesser degree BU, new tools for detecting early or pre-clinical disease would be useful in public health efforts, including reducing long term disability. Vaccination strategies for leprosy and BU are being explored. BCG vaccination provides some protection against leprosy and against severe forms of BU such as osteomyelitis.

Conclusion: In countries where both diseases are endemic, we propose their control should be performed under the same national program, and combined public health activities should be put in place. This approach will allow improving early case detection, treatment outcome and prevention of disabilities and will be cost effective for countries and NGO's who financially support both programs.

O-126

Presentation Time: **Wednesday 18/09/2013 at 11:00 – 12:30**
Symposium Session: **Other Mycobacterial Diseases**
Presenter: Mr Bouke de Jong

THE DIFFERENTIAL DIAGNOSIS OF BURULI ULCER

M. Eddyani [1], D. Affolabi [2], L. Brun [3], J. J. Roux [4], D. Agossadou [5], A. Dossou [6], G. Ayelo [6], F. Portaels [1], B. de Jong [1,*], G. Sopoh [6]

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Introduction: Buruli ulcer (BU) is a necrotizing skin and bone disease caused by *Mycobacterium ulcerans* in certain riverine regions of West and Central Africa. In most BU endemic settings the diagnosis of BU is often made on clinical and epidemiological grounds only. However, the disease presents with a diverse range of clinical symptoms and, due to possible confusion with other skin diseases, the microbiological confirmation has an important added value. The available laboratory tests in order of increasing sensitivity are culture, direct smear examination (DSE) for acid fast bacilli, and PCR targeting the insertion element IS*2404* and histopathology (with similar sensitivities).

Several studies in BU endemic countries have shown that the clinical diagnosis of BU by experienced clinicians is not as straight forward as is generally thought. In the Democratic Republic of Congo for example, Kibadi et al. (2010) found that 34% of the patients with clinical and epidemiological suspicion of BU could not be microbiologically confirmed. Moreover, patients who were not microbiologically confirmed responded better to the treatment with antimycobacterial antibiotics. These unconfirmed patients most probably did not have BU but the causative bacteria of their lesions were sensitive to the antibiotics administered. The timely exclusion of BU would have avoided prolonged treatment with toxic antibiotics, and allowed for these patients to receive more appropriate antibiotic therapy targeted to their non-BU infection.
Every clinical form of BU can potentially be mistaken for another condition, including necrotizing fasciitis, tropical phagedenic ulcers and, rarely, malignancies. (Janssens et al., 2005; Phanzu et al., 2010; Kibadi et al., 2010).
Moreover, in settings where the number of BU cases declines, clinical expertise will wane, likely resulting in more misclassification of patients with lesions compatible with BU. We have therefore initiated an interdisciplinary study on the differential diagnosis of BU, with the objective to establish the optimal diagnostic approach for BU suspect lesions, as well as the improved identification of patients with alternative diagnoses.

Methods: After informed consent all recruited patients are documented by mycobacteriological analyses (IS*2404*-PCR, DSE and culture), common bacteriological analyses (DSE and culture) and histopathology (to differentiate super-infection from inflammation and diagnose other conditions). The clinical history, prior treatment and other associated symptoms are recorded.
Based on all clinical and laboratory information as well as treatment outcome, patients are classified as: (a) confirmed BU, (b) possible BU, and non BU (with either (c) confirmed or (d) unclear differential diagnosis). A clinical expert panel then makes a final diagnosis based on the original files of the patients that are classified in category b and d. This final diagnosis will serve as a "quasi gold standard" for analyses allowing us to calculate the contribution of each test to the final diagnosis.

Results: Data of the first year of recruitment of 150 patients will be presented as well as some detailed case reports.

Conclusion: The outcome of this project will allow us to design an algorithm for an improved clinical and microbiological diagnosis of BU and adequate management of patients. By improving the differential diagnosis of BU, more effective management of BU and non-BU patients aims to enhance patient comfort and outcome, and to preserve more toxic antimycobacterial drugs for those who need them.

O-127

Presentation Time: **Wednesday 18/09/2013 at 11:00 – 12:30**
Symposium Session: **Other Mycobacterial Diseases**
Presenter: Miriam Eddyani

ARE RECURRENCES OF BURULI ULCER CAUSED BY RELAPSE OR REINFECTION?

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Introduction: Buruli ulcer (BU) is a necrotizing skin and bone disease caused by the enigmatic pathogen *Mycobacterium ulcerans* in riverine regions of West and Central Africa. The highly clonal nature of *M. ulcerans* has complicated molecular analyses on the epidemiology of the pathogen, as typing methods with sufficient resolution have been lacking. Increased availability of Next Generation Sequencing (NGS) techniques now allow us to address previously unanswerable questions, such as whether BU recurrences are caused by relapse or reinfection.

Methods: Among the 4951 clinically BU suspected patients that consulted the BU treatment centre Gbemotin in southern Benin between 1989 and 2010, 131 had multiple BU episodes · at least 6 months apart. Only from 7 of these patients cultures grew from each of two or three disease episode. From 4 patients with 2 episodes the paired isolates (2 patients with 3 isolates each and 2 patients with 2 isolates each) were stored in the comprehensive culture collection of the ITM and still viable. The genomic DNA of 10 *M. ulcerans* isolates was sequenced using an Illumina HiSeq 2000 sequencer with 500x coverage. A Python utility called Nesoni was used to map sequence reads to the Ghanaian Agy99 *M. ulcerans* reference genome. Nesoni identified SNPs and indels up to 10 bp. Variant sites (SNPs and indels) were concatenated to form a multiple alignment, from which a phylogenetic tree was constructed using SplitsTree4. In order to exclude reinfections with similar *M. ulcerans* strains prevalent in the patient's environment, we compared the number of SNP differences between the paired isolates and a set of isolates from the same geographical area and time period.

Results: Preliminary results on 6 genomes from paired isolates of 2 patients that have been analyzed to date suggest that second episodes are due to relapse rather than reinfection. When comparing the genomes of the 2 BU-episodes we find maximum 1 SNP difference between the genomes of paired isolates. This is much less than the number of SNP differences with isolates of BU patients from the same geographical area and time period, which differed by 11 to 54 SNPs.

Conclusion: NGS of paired *M. ulcerans* strains collected from patients with multiple episodes of BU has sufficient resolution to distinguish relapse from reinfection. Preliminary results on a small number of patients suggest that second episodes are due to relapse rather than reinfection, which is important for the design and interpretation of immunological studies on BU.

O-128

Presentation Time: **Wednesday 18/09/2013 at 14:00 – 15:30**
Symposium Session: **Chemotherapy 2**
Presenter: Maria Araci Pontes

THALIDOMIDE USE IN BRAZIL

M. A. D. A. Pontes [1,*], H. S. Gonçalves [1], P. C. Almeida [2], B. B. Oliveira [3], I. C. Cstro [3], I. C. Passos [3], G. I. C. Araujo [3], F. T. SIlva [3], T. C. Felismino [3], T. F. Oliveira [3], A. J. Tachibana [3], G. O. Penna [4], R. A. Ribeiro [3]

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Introduction: After reemergence of thalidomide in modern pharmacology, due to its immunomodulator and anti-angiogenic effects, the drug has been prescribed for several clinical conditions. However, recent reports of children born with thalidomide-associated malformations made clear the need for research aiming to better understand the socio-cultural context of the use of the drug.

Methods: This is a descriptive, cross sectional study developed at the city of Fortaleza, Ceará, in four secondary and tertiary health care centers of the Governmental Health Care System (SUS), selected through prior analyses of thalidomide prescription records. Males and females from all age groups taking thalidomide were included in the study, as well as the staff physicians who prescribed thalidomide during the study period. Social, economical, and demographical data was collected from the patients, who were also required to answer questions regarding their knowledge of adverse effects of the drug and recommended care during usage. The focus of the interviews

with the medical doctors was to identify the main clinical indications and criteria that guided the prescription of the drug.

Results: Thalidomide was distributed to 508 individuals; 152 (29.9%) were females, 55 (36%) of them in the fertile age group. Of 94 users selected for an interview, 58 (61.7%) did not complete their primary education, 89 (94.7%) had a family income of up to 4 times the minimum salary, 64 (68.1%) reported to have been informed of adverse effects of thalidomide by the prescribing doctor, prior to their use, and 29 (30.9%) reported not having been informed to leave the medication out of reach of others.

Conclusion: The results confirm the need of educational measures directed toward the physicians, patients and the general population, including strict monitorization of the use of thalidomide in order to ensure safety and effectiveness. Thalidomide is today a therapeutic option for severe clinical conditions, despite the serious consequences that can result from its misuse.

O-129

Presentation Time: **Wednesday 18/09/2013 at 14:00 – 15:30**
Symposium Session: **Chemotherapy 2**
Presenter: Digafe Alembo

GLUCOCORTICOSTEROID INDUCED OSTEOPOROSIS (GIOP) CAUSING VERTEBRAL COLLAPSE IN LEPROSY PATIENT TAKING PREDINSOLONE FOR ERYTHEMA NODOSUM LEPROSUM (ENL); A CASE REPORT

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Introduction: Patients with ENL often require treatment with high doses of corticosteroids for prolonged periods, especially in settings where thalidomide is not available. Osteoporosis is one of the most frequent severe adverse effects of steroid treatment. Bone loss starts early during corticosteroid treatment with the greatest rate of bone loss occurring in the first 6 months.

Methods: A 22 year old woman with BL complicated by ENL had completed MB MDT five months previously. She had been taking prednisolone and clofazimine for 10 months. The current dose was 35 mg and the cumulative dose of prednisolone was 8270mg. She presented with severe and constant pain over the lumbar spine for two weeks. There was no history of trauma. The pain was so severe that she was not able to walk. There were no urinary or bowel symptoms. She had no symptoms suggestive of TB. She had normal menses.
On examination she was in severe pain. There was marked tenderness over the lumbar spines. There were no neurological signs. Her ENL was quiescent.

Results: The clinical differential diagnosis included osteoporotic fracture of the vertebra and spinal tuberculosis. Anti-tuberculous therapy (ATT), analgesia, vitamin D3 and calcium supplementation were commenced. Her ENL recurred as a consequence of enzyme induction by rifampicin and necessitated an increase in her prednisolone. Cyclosporine was initiated as a steroid-sparing agent.
A chest and thoraco-lumbar spine X-ray was performed. The chest X-ray was normal but the spinal imaging and MR showed osteoporosis with partial collapse of the vertebral spines involving T12 to L4 and there were no features suggestive of spinal TB. The ATT was stopped.

Conclusion: The frequency of osteoporosis secondary to corticosteroids for ENL is not known but the occurrence after only 10 months is cause for concern because may ENL patients require treatment for many years. In many leprosy endemic countries, such as Ethiopia, thalidomide and other steroid sparing agents are not available.
Differentiating between osteoporotic spinal fractures and TB is often difficult and it is prudent to have a low threshold for initiating ATT. However ATT may lead to an increased steroid requirement which may worsen osteoporosis. The MRI findings in this case were so suggestive of osteoporosis that we felt continuing ATT was not justified. Access to MRI facility is limited in many leprosy endemic settings.
We propose that all patients should receive prophylaxis for osteoporosis when starting corticosteroids which are expected to be required for prolonged periods. This includes all patients with leprosy reaction who are treated with corticosteroids.
The type of prophylaxis: calcium, vitamin D supplementation and biphosphonate.Zoledronic acid and teriparatide are now recommended along with alendronate and risedronate for the treatment of GIOP, depends up on the availability of these treatments and funding.
National leprosy programmes, leprosy NGOs, leprosy patient groups and all those involved in the management of patients with leprosy should advocate the free availability of the treatment of leprosy reactions and any evidence-based prophylaxis for adverse effects of anti-reactional treatment.

O-130

Presentation Time: **Wednesday 18/09/2013 at 14:00 – 15:30**
Symposium Session: **Chemotherapy 2**
Presenter: Hong Liu

ESTABLISHMENT AND APPLICATION OF RISK PREDICTION TEST FOR DAPSONE HYPERSENSITIVITY SYNDROME----PRELIMINARY REPORT

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Introduction: Dapsone (DDS), as an antibiotic and anti-inflammatory agent, has been widely used in the treatment of pathogen-causing infections and chronic inflammatory diseases. About 0.5-3.6% of individuals treated with DDS develop severe dapsone hypersensitivity syndrome (DHS) whose mortality rate is up to 11-13%. Currently, no tests are available to predict the risk of DHS.

Methods: We performed a genome-wide association study (GWAS) in DHS subjects and controls through the trend test of single nucleotide polymorphisms (SNPs) and imputed human leukocyte antigen (HLA) molecules. Validation was performed in additional series of DHS cases and controls through Roche 454 sequencing. Subsequently, for a retrospective analysis, the identified risk predictor was analyzed on 17 newly diagnosed leprosy cases (two suffered DHS after treatment by DDS) from Shandong province in 2012 using PCR-SSP and Taqman.

Results: One locus within MHC region was confirmed to be a strong risk factor for DHS and responsible for the association of DHS, whose presence had a high sensitivity and specificity as a predictor for DHS. In the retrospective analysis, two DHS cases both carried the risk allele of the HLA locus and it was absent in the remaining 15 non-DHS leprosy cases, which showed a fully consistency between the genetic test and clinical phenotype.

Conclusion: MHC locus is a strong risk factor for DHS in the Chinese population, shedding light on the pathogenesis of DHS. More importantly, our findings will facilitate the development of genetic tests to identify individuals at risk for this potentially life-threatening condition and help to obtain the full benefits of DDS therapy more safely and effectively.

O-131

Presentation Time: **Wednesday 18/09/2013 at 14:00 – 15:30**
Symposium Session: **Chemotherapy 2**
Presenter: Weiwei Tian

HLA-B*1301 ASSOCIATION WITH DAPSONE HYPERSENSITIVITY SYNDROME AMONG LEPROSY PATIENTS IN CHINA

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Introduction: The use of dapsone in leprosy patients is complicated by a potentially life-threatening hypersensitivity syndrome in about 2% of cases. Although the exact mechanism of DHS remains unclear, numerous reports have described the associations between human leukocyte antigens (HLA, especially MHCI) and drug eruptions in patients with various diseases. Acetylator status and cytochrome P450 2C9 (CYP2C9) were both associated with metabolism of dapsone, which separately determined by NAT2 genotypes, and genetic polymorphisms of the CYP2C9 gene. Genetic factors influencing the immune response or drug metabolism of dapsone might confer susceptibility.

Methods: MHC region typing and gene polymorphisms of related metabolism enzymes were detected in 122 leprosy patients exposed to dapsone in Southern China and 100 non-leprosy control individuals recruited from local community blood donors.

Results: Definite dapsone hypersensitivity syndrome (DHS) was identified in 20 cases, and was excluded in 102 individuals with more than 8 weeks' exposure to the drug (dapsone tolerant). *HLA-B*1301* was present in 18 (90%) of the 20 patients with DHS, and in 7 (6.9 %) of the 102 dapsone tolerant patients (odds ratio 122.1 [95% CI 23.5-636.2], pc=6.038×10^{-12}), while *HLA-B*1313* was present in remaining 2 (10%) of the 20 patients with DHS and in only 1 (1%) of the 102 dapsone tolerant patients. There was no significant association among any of the genotypes or phenotypes of CYP 2C9 (including the single nucleotide polymorphisms of its promoter) and NAT2 with occurrence of DHS.

Conclusion: Genetic susceptibility to DHS is carried on the *HLA-B*1301* haplotype, without influence from the genotypes or phenotypes of the important dapsone metabolism enzymes NAT2 and CYP 2C9. *HLA-B*1301* can be a useful biomarker in predicting DHS before administering dapsone to leprosy patients in the Chinese population.

O-132

Presentation Time: **Wednesday 18/09/2013 at 14:00 – 15:30**
Symposium Session: **Chemotherapy 2**
Presenter: Dr Raju M S

CORRELATES OF DEFAULTING FROM MDT IN LEPROSY

M. S. Raju [1,*], M. Elkana [2], P. Failbus [3], J. P. Palla [4], U. K. Hembrom [5], P. S. Rao [1]

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Introduction: Despite a nationally consistent programme across India, the rates of adherence to Multi Drug Therapy (MDT) appear to differ markedly across geographical areas and treatment centres. As a foundation for planning an innovative and participatory community based intervention to maximize adherence and prevent defaulting in MDT, it was felt essential to explore correlations between the rate of defaulting, demographic and disease related variables from existing hospital records.

Methods: Data from 3,579 new cases registered for MDT in leprosy in the period 2007-2010 were extracted. The study sample drew from four leprosy hospitals/ treatment centres across the four high endemic states (Uttar Pradesh, Chhattisgarh, Maharashtra and Andhra Pradesh). Year wise proportion of patients defaulting was calculated on aggregate as well as with reference to each centre, and cross tabulated with various demographic and disease related factors. Chi-squared tests were conducted to determine levels of statistical significance.

Results: Of the 3,579 new cases, 1944 (54.3%) defaulted, with variation across centres ranging from 44% to 66% Comparison across type of leprosy indicated a statistically significant difference (p=0.04) between MB (55.7%) and PB (50.6%) cases. Defaulting rates for male patients ranged from 45% to 67.7% across centres, compared with 42.4% to 61.5% for female patients. There was a statistically significant difference (p=0.04) between the overall male (56.35%) and female (51.47%) defaulting rate. The rates of defaulting for those with more severe disabilities (WHO Gr-2) ranged from 44% to 67.5% across centres, while those with less severe disabilities (Gr-0&1) ranged from 42.6% to 72.7%. Comparisons across severity of disability were only statistically significant across 2 centres. No statistically significant variation was found between the defaulting rates of adult patients (43.6% to 65.4%) compared with children (36.2% to 69.3%), respectively. Across each of these categories and centres, defaulting rates remained consistent over the 4 years.

Conclusion: Gender of the patient is significantly correlated with defaulting from MDT, which suggests that a gender-specific approach may be beneficial to maximize adherence.
The link between severity of disability and adherence to MDT appears unclear, possibly being influenced by local cultural factors.
Whether patients were children or adults did not appear to play a significant role in defaulting.
The consistency of findings over the 4 year period suggests that behavior change programme (Health Education/Information Education Communication) conducted over this period may not have impacted defaulting to the extent anticipated.

O-133

Presentation Time: **Wednesday 18/09/2013 at 14:00 – 15:30**
Symposium Session: **Human Rights and Discrimination**
Presenter: Doug Soutar

AN INCLUSIVE RIGHTS-BASED APPROACH TO LEPROSY

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Introduction: Human rights that pertain to people affected by leprosy should not be seen as relating *only* to *health* or *disability*. People affected by leprosy have the same human rights as all people. Inclusive, rights-based development refers to the participation of *all* stakeholders in development processes. This includes those affected by leprosy.

Methods: N/A

Results: N/A

Conclusion: International legal instruments exist which have a direct relevance to leprosy work. A rights-based approach to leprosy work means utilizing the full range of such instruments.
Based on principles of sustainability, integration, quality, equity and social justice, this presentation proposes development of a **Charter for Persons Affected by Leprosy** outlining the rights and responsibilities of those affected.This would set out the ways in which persons affected, the community, health providers and governments can work as partners in a positive and open relationship with a view to improving leprosy related care and enhancing the effectiveness of the diagnosis, treatment and rehabilitation process. It allows for all parties to be held more accountable to each other, fostering mutual interaction and a positive partnership.
Advocacy for the reduction of stigma and discrimination and promotion of legislative reform will be important. But the overarching need is for the promotion of broader collaboration. Traditionally, those affected by leprosy were isolated, ostracised and segregated. People who are marginalized, disabled or oppressed, including those affected by leprosy, need to engage more broadly with each other in order to promote the rights of *all*. Initiatives focusing *only* on the human rights of those affected by leprosy will risk failure and their advocates will themselves continue to be marginalized and excluded from the development process unless a more inclusive and universal rights-based approach is taken.

O-134

Presentation Time: **Wednesday 18/09/2013 at 14:00 – 15:30**
Symposium Session: **Human Rights and Discrimination**
Presenter: Prof Dr Yara Monteiro

LEPROSY LAWS IN BRAZIL AND IN THE STATE OF SAO PAULO, FROM THE COLONIAL TIMES TO TODAY: A CRITICAL STUDY

Y. N. Monteiro [1,*], M. P. Manini [2] on behalf of Leprosy São Paulo Fundation

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Introduction: Leprosy is one of the major themes in the History of Medicine, as well as of marginalized groups. In assessing the research on the disease conducted so far, we observed that few studies focus on its legal aspect despite their importance as source of information for other studies, such as the government's stance through time, assessment of adopted public policies, the society's attitude and the discriminatory measures adopted.
By studying leprosy in Brazil we often observe that the growing spread of the disease, the strong stigma against it and the fear of contagion led the society to pressure the government, thus resulting in specific legislation. Identical process occurred in Sao Paulo, the country's wealthiest state and with the largest incidence of the disease, where extremely strict laws were enforced. During our research we observed that the Brazilian laws regarding diseases in general and leprosy in particular were scattered throughout different thematic areas, such as legislation on Labor, Social Security, Immigration, health in ports, etc., a contributing factor for the unawareness and even the "concealment" of several legal standards, thus forcing a comprehensive research project to be undertaken by conducting a careful analysis that would allow their identification in the existing legislation.

Methods: Methodologies applied for conducting this critical study include those from the Law and the humanities areas, which allowed the identification and systematization of the legal standards from the colonial times to today. Data for the research was gathered from: 1) official sites; 2) sites specific to Law; 3) printed compilation of laws and decrees; 4) specific bibliography. The extensive amount of gathered information resulted in two databases: one concerning the federal legislation and another concerning the Sao Paulo legislation. They were chronologically organized, the legal definitions were identified (ex: regulation, law, ordinance), and summary of each law and link for viewing the full text were included.

Results: The project resulted in the identification and systematization of 1,479 legal standards concerning leprosy. Two long indexes were prepared: one at federal level, which comprised 711 legal standards, and one for Sao Paulo, which comprised 768. When comparing the Sao Paulo legislation with the Brazilian legislation, according to their specific period in time, we noticed discrepancies between them, which pointed to the fact that the governmental levels were not in line with or aware of each other's regulations.
The assessment of those indexes highlighted the diversity in the Brazilian legislation, its wide range of definitions of standards and changes overtime. We were able to identify the different governmental sources and levels with power to write the legal standards, therefore with power to interfere in the regulations regarding the disease and the patient's life. Assessment of collected data and the content of legal texts, when faced with the advancement of therapies and the foreign recommendations, revealed that the laws did not always follow or reflect the scientific progress.

Conclusion: The vast amount of information that resulted from this project will encourage further studies and considerations on prophylactic choices and on a deeper concept of Legal Justice. Thereby, by adding to the History of Leprosy, this Project is expected to add to the History of Silence and Suffering as well.

O-136

Presentation Time: **Wednesday 18/09/2013 at 14:00 – 15:30**
Symposium Session: **Human Rights and Discrimination**
Presenter: Ms Anwei Law

LEARNING FROM THE EXPERIENCE OF LEPROSY: MEDICAL AND HUMAN RIGHTS APPROACHES TO STIGMA

A. Skinsnes Law [1,*], O. K. Skinsnes [2]

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Introduction: The stigma associated with leprosy has been so pervasive and continuous that even dictionary definitions of stigma include references to leprosy. The experience of defining and addressing the stigma associated with leprosy has important implications for dealing with

the existence or potential development of stigma in association with other diseases, including a number of neglected tropical diseases.

Methods: A medical model was put forth in the 1960's (Skinsnes, *Leprosy Review*, 1964) that discussed how the characteristics of leprosy were especially conducive for producing a negative social response to the disease. Almost forty years later, a campaign to eliminate the stigma was initiated which adopted a human rights approach (IDEA, 2003). An analysis of these two approaches was undertaken to help understand the medical and social reasons why the stigma persists long after the discovery of a cure and how looking at leprosy through the lens of human rights can offer important solutions.

Results: The medical approach to stigma proposed that eight characteristics uniquely join together in leprosy to create a negative social response: 1) The disease would be externally manifest; 2) It would be progressively disabling; 3) It would appear to be incurable; 4) It would be nonfatal and chronic; 5) It would have an insidious onset; 6) It would have a fairly high endemicity, only limitedly epidemic; 7) It would have an incidence rate associated with low standards of living; 8) It would have a long incubation period.
The development of MDT as a rapid and effective cure for leprosy should render the first three characteristics moot since the disease no longer needs to be externally manifest, disabling, or regarded as incurable. In addition, the availability of a rapid cure brings into question whether or not the disease should continue to be labeled as "chronic" for the general public since this implies that it will be long lasting. The other four characteristics can largely be rendered moot by incorporating a human rights approach to dealing with stigma. Having an insidious onset, affecting only certain people in a population rather than being a disease common to many, being associated with low standards of living, and having a long incubation period that adds to uncertainty of the cause of the disease, have led to a historical social response that often tends to place responsibility for the disase on those individuals affected by it. Adopting a human rights approach clearly places any "blame" on society rather than on the individual by focusing on the unjustifiable denial of rights. Looking at leprosy through the lens of human rights reaffirms the inherent dignity that is the birthright of every individual (Kofi Annan, 1997). Focusing on the mistakes of society rather than any perceived actions on the part of the individual, the human rights approach is both empowering and self-affirming. It renders irrelevant the characteristics associated with leprosy or any other disease by strongly focusing on the rights inherent in the Universal Declaration of Human Rights that are guaranteed for every individual, without exception.

Conclusion: The evolution of the response to leprosy from one of fear, based largely on medical characteristics and society's tendency to set apart, either physically or socially, those who are different, to a response based on the affirmation of inherent dignity and promotion of universal human rights can provide important insights into addressing stigma or potential stigma in other diseases or conditions.

O-137

Presentation Time: **Wednesday 18/09/2013 at 14:00 – 15:30**
Symposium Session: **Human Rights and Discrimination**
Presenter: Kathryn Tanaka

TOWARD A LITERATURE OF HUMAN RIGHTS: LEPROSY, HANSEN'S DISEASE, AND JAPANESE PATIENT WRITING

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Introduction: In the early twentieth century, Japan instituted increasingly stringent mandates that persons with Hansen's Disease be subject to quarantine. In Japanese leprosaria, patient writing was encouraged to help residents accept their illness and isolation from society. Studies of patient writing have focused on its zenith in the 1930s, when writing by leprosaria residents became so popular it was referred to as the distinct genre of "leprosy literature." However, the genre resulted in essentializing patients and the diverse literary expressions of their experience. In the 1960s, patient writing was renamed "Hansen's Disease literature" in order to combat stigma associated with the earlier name, yet this did nothing to challenge assumptions of a monolithic corpus. I argue that reading "leprosy literature" and "Hansen's Disease literature" as a single genre has led to oversimplified responses to patient writing, either celebrating it as protest or dismissing it as coerced to support state policies. I consider how the content and purposes of the genres have transformed in response to changing social and medical knowledge in order to clarify the distinction between leprosy literature and Hansen's Disease literature. In this way I reveal the diversity and the richness of patient writing in Japanese leprosaria.

Methods: I take the introduction of Promin as the break between "leprosy literature" and "Hansen's Disease literature." By tracing the history of patient writing and drawing on a variety of materials, including patient magazines published within the hospitals, I argue that leprosy literature provided a way for sufferers to create social connections and communities, while the post-Promin Hansen's Disease literature became a way leprosaria residents contested social stigma and government policies targeting their illness. I analyze examples of both pre-and post-Promin literature in order to reveal the continuities, changes and complexities of the genres.

Results: My work challenges a one-dimensional view of patient writing. By exposing the changes underscored by the shifting name of the genre, I trace the various ways patients use literature to engage the world outside the hospital. This study has implications beyond Japan as it speaks to the global processes through which patients overcome stigma and reclaim their human rights. Thus, telling the story of life with Hansen's Disease is an essential part of the struggle for the recognition of patient autonomy, and patient-produced literature becomes a "literature of human rights" as patients use writing to reclaim their rights and their status in society.

Conclusion: In recent years, research on health and the body has provided insights into medicine's role in the construction of community and everyday life. My research adds to this scholarship by exploring the historical, medical, and social implications of leprosy literature and Hansen's Disease literature, which I argue are distinct genres of writing produced by patients in Japanese leprosaria. This study moves beyond the traditional understanding of patient writing as a single genre in order to emphasize the ways literature reflects social change and shifting medical knowledge. Through an exploration of the intersection of medicine, literature, and human rights as they are reflected across the various literary forms chosen by patients, including poetry, fiction, and essays, I demonstrate how medical knowledge and notions of health and illness are matters of historical, social, and literary relevance.

O-138

Presentation Time: **Wednesday 18/09/2013 at 14:00 – 15:30**
Symposium Session: **Human Rights and Discrimination**
Presenter: Sharon Stevelink

THE MEASUREMENT OF PARTICIPATION RESTRICTIONS AMONG PEOPLE WITH VARIOUS DISABILITIES IN EASTERN NEPAL

S. Stevelink [1,*], N. Banstola [2], W. van Brakel [3]

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Introduction: People with disabilities may face varies challenges across life domains including work, social and mobility. The present study examined the level of participation restrictions among people with various disabling conditions in Eastern Nepal.

Methods: The 18-item Participation Scale was used to measure participation restrictions among people with various disabling conditions. Internal consistency, inter-tester reliability, construct validity and floor and ceiling effects of the Participation Scale were also assessed.

Results: A total of 153 respondents and 55 controls were included in the study. The majority of the respondents had a leprosy-related disability. Sixty-three percent of the participants reported moderate to extreme restrictions in social participation. Especially severe restrictions in work-related areas were identified, followed by problems in the social areas of life and in the mobility domain. The internal consistency of the Participation Scale, measured with Cronbach's alpha, was 0.78 for the work-related participation subscale and 0.93 for the general participation subscale. The inter-tester reliability coefficient was 0.90. All hypothesized correlations were as expected confirming the construct validity of the scale. Only the subscale work-related participation showed ceiling effects.

Conclusion: The majority of the respondents reported a considerable level of participation restrictions across life domains. Interventions should be developed especially targeting work and social life domains. Besides, the Participation Scale showed to be a valid and reliable instrument in this particular cultural setting.

O-267

Presentation Time: **Wednesday 18/09/2013 at 14:00 – 15:30**
Symposium Session: **Human Rights and Discrimination**
Presenter: Regiane Aparecida Cardoso de Paula

THE PLAN BRAZIL WITHOUT POVERTY AND THE LEPROSY

Cardoso de Paula, Coordenação Geral de Hanseníase e Doenças em Eliminação/CGHDE/DEVEP/SVS/MS/Instituto Educatie de Ensino e Pesquisa/SP, Rosa Castália França Ribeiro Soares Coordenação Geral de Hanseníase e Doenças em Eliminação /CGHDE/DEVEP/SVS/MS, Eliane Ignotti Universidade do Estado de Mato Grosso UNEMAT, Cáceres – MT.

Introduction: The plan Brazil without poverty mobilized the Brazilian government regarding to reduce beyond the poverty the diseases related to the poverty that leprosy is included.

Objective: To describe the plan "Brazil without poverty" focusing public health activities for leprosy.

Method: Descriptive analyses based on in the governmental documents and the leprosy database.

Results: The plan is intersectorial, and integrates dozens of actions from many government areas. The main goal of the plan is to take off from extreme poverty 16 million inhabitants. One of its actions is focused to guarantee the access of the poorest population to health services. The diseases close to the elimination are considered priority for facing the poverty reduction in the country. One of these health actions is related to the diseases related to the poverty: leprosy. It is a new approach that impacts directly in the school age students' health that lives in the leprosy

endemic areas. In December 2012, 191 priorities municipalities for leprosy diagnosed in young people at the age of 15 and 1041 new leprosy cases were diagnosed in this part of population. The plan for 2013/2014 aims to encourage diagnose and treatment in cases of leprosy children younger than 15 of age, mainly in 258 municipalities considered priority for leprosy.

Conclusion: As leprosy is one the diseases related to the poorest people, the reduction of this disease by the MoH is based on aggregate efforts of all government levels to reach the elimination of leprosy as a public health problem and consequently to reduce the poverty until 2015.

O-139

Presentation Time: **Wednesday 18/09/2013 at 14:00 – 15:30**
Symposium Session: **Immunology 2**
Presenter: Carolinne de Sales Marques

TLR1 GENE IS ASSOCIATED WITH LEPROSY RISK AMONG BRAZILIANS

C. De Sales Marques [1,*], V. Brito-de-Souza [2], L. T. A. Guerreiro [1], J. H. Martins [3], E. P. Amaral [4], C. C. Cardoso [1], I. M. F. Dias-batista [2], W. L. da Silva [2], J. A. D. C. Nery [1], P. Medeiros [2], P. Giglioti [2], A. P. Campanelli [5], M. Virmond [2], E. N. Sarno [1], M. T. Mira [6], F. C. F. Lana [4], E. R. Caffarena [3], A. G. Pacheco [3], A. C. Pereira [2], M. O. Moraes [1]

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Introduction: Leprosy can be considered a complex disease in which both environmental and host factors can influence the disease outcome. From among several genetic and epidemiological evidences, the broad spectral phenotype and the low genetic variability of *M. leprae* suggest that host genetic factors may be of major influence towards infection and disease progression. It has been suggested that subtle genetic variations in relevant immune response genes are regulating every step of the host-pathogen interaction in leprosy outcome.Pathways triggered by PRRs, such as Toll-like receptor 1 (TLR1), are key to define infection, and polymorphisms located at TLRs genes were repeatedly associated with leprosy *per se* and leprosy reactions. The goal of our study was investigated the association between *TLR1* gene and leprosy *per se* in Brazilians, and validate functionally the associated marker, evaluating the downstream activation of the TLR1 pathway.

Methods: First, we performed a case-control study in a population from Bauru, São Paulo state, and a family-based study from Almenara, Minas Gerais state. Then, we conducted a replication approach in two case-control samples from Rio de Janeiro and Rondonopolis respectively, enrolling a total of 3.162 Brazilian individuals. DNA samples were genotyping by allelic discrimination using Real Time PCR TaqMan assay (Applied Biosystems). For case-control studies, the association of SNP (N248S, rs4833095) with leprosy was evaluated by logistic regression model, comparing the frequencies between cases and controls, trough software R 2.15. In the family-based study, a Transmission Disequilibrium Test (TDT) was performed, based on counts of transmission of a marker allele from heterozygous parents to affected child (FBAT software). For functional studies, we compared carriers and non carriers of risk variation, and evaluated the cytokines profile from PBMCs of healthy subjects by ELISA (Mann-Whitney test), as well as the changes on TLR1 structure by molecular dynamics analyses (Pymol and Gromacs 4.5.4 softwares).

Results: The *TLR1* 248S allele was significantly more frequent in patients than controls, and associated with susceptibility to leprosy *per se* in both case-control (OR_{Bauru} = 1.81, p=0.004) and family-based (z=2.02, p=0.05) studies. This association was consistently replicated in other populations (OR_{Rio} = 1.59, p= 0.006; $OR_{Rondonopolis}$ = 1.56, p= 0.03), corroborating 248S as a susceptibility factor for leprosy in Brazilians. Additionally, we demonstrated that PBMCs carrying 248S produced lower log (TNF/IL-10) when stimulated with sonicated *M. leprae* or BCG Moreau strain. Finally, comparative modeling and molecular dynamics simulations indicated that 248S-TLR1 structure was more electronegative than 248N-TLR1.

Conclusion: Our results suggest that *TLR1 248S* SNP is associated with leprosy risk, consistent with its hypo-immune regulatory function and altered electrostatic profile. From this work, we can conclude that genetic variations at *TLR1* gene may influence susceptibility profile to leprosy *per se* among Brazilians.

O-140

Presentation Time: **Wednesday 18/09/2013 at 14:00 – 15:30**
Symposium Session: **Immunology 2**
Presenter: Bruno Silva

ROLE OF IFN-GAMMA-MEDIATED AUTOPHAGY IN ANTIMICROBIAL RESPONSE AGAINST MYCOBACTERIUM LEPRAE

B. J. D. A. Silva [1,*], P. R. Andrade [1], T. P. Amadeu [1], V. Diniz [1], S. Côrte-Real [1], V. C. Valentim [1], H. Ferreira [1], J. A. Nery [1], E. N. Sarno [1], R. O. Pinheiro [1]

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Introduction: Leprosy is a chronic infectious disease caused by the intracellular pathogen *Mycobacterium leprae* (ML). Previous data suggest that the establishment of different clinical forms of leprosy is driven by host innate mechanisms. Macrophages from multibacillary (LL) and paucibacillary (BT) patients seem to have a different behavior in relation to the bacteria. While in LL patients there are highly infected macrophages, in BT rare or few bacilli are found. Electron microscopy studies showed the presence of phagosomes with double membrane in macrophages exposed to ML, suggesting a possible involvement of autophagy in the immunomodulatory response. In the present study we evaluated the role of autophagy in the immune response to ML.

Methods: THP-1 monocytic cell line differentiated with PMA (200 nM), monocytes from healthy subjects and LL and BT macrophages isolated from skin lesions were used. For evaluate autophagy transmission electron microscopy, Western blotting, immunohistochemistry and immunofluorescence techniques were used. Cathelicidin and b-defensin 2 gene expression were evaluated by real time PCR. IL-15 and IL-10 were evaluated by ELISA. IDO activity was measured by HPLC.

Results: Ultrastructural analysis showed a higher number of autophagosomes in isolated skin lesion cells from BT patients compared to LL patients or normal tissue. The increase of the autophagosome marker LC3-II observed in skin biopsies from BT patients was associated with higher gene expression of cathelicidin and ß-defensin 2. Previous studies have demonstrated that IFN-γ induces autophagy in human monocytes and that the levels of IFN-γ were significantly raised in skin cells and serum of BT patients when compared to LL. Here, we demonstrated that IFN-γ treatment in ML-stimulated THP-1 cells decreased the interaction of the bacilli with the host cell, accompanied by increased IDO activity and LC3-II and Atg3 expression. The autophagy induction by ML was not dose dependent, and ML at 10:1 induced higher expression of LC3-II when compared to 2:1 or 50:1. There was an increase on LC3-II expression in *ex vivo* BT macrophages when compared to LL, in the presence or absence of IFN-γ. IFN-γ treatment promotes ML and LC3-II co-localization in THP-1 macrophages and leads to increased levels of IL-15 and decreased levels of IL-10 in the culture supernatants. The pre-treatment with autophagic inhibitors wortmannin or 3-MA was able to reduce IFN-γ-induced LC3-II expression and led to decreased IL-15 levels, without interfere with IL-10 production, after stimulation with IFN-γ and ML.

Conclusion: These data indicate that IFN-γ induces IL-15 in ML-stimulated macrophages, which contributes to increase the microbicidal activity in host cells by autophagy induction. These findings may contribute to a better understanding of the mechanisms associated with leprosy immunopathogenesis.

O-141

Presentation Time: **Wednesday 18/09/2013 at 14:00 – 15:30**
Symposium Session: **Immunology 2**
Presenter: Yumi Maeda

EXOSOMES RELEASED FROM MYCOBACTERIUM LEPRAE INFECTED HUMAN DENDRITIC CELLS CAN ACTIVATE T CELLS

Y. Maeda [1,*], T. Mukai [1], Y. Fukutomi [1], T. Tamura [1], M. Makino [1]

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Introduction: Leprosy is caused by infection with *Mycobacterium leprae*, which is an intracellular pathogen. It is known that the most susceptible human cells are Schwann cells, macrophages and dendritic cells (DCs). Previously, we reported that *M. leprae* infected DCs could induce higher production of cytokines such as IL-12 through TLR2, when activated with *M. leprae* derived lipopeptide (LipoK), and these activated DCs stimulated autologous T cells. Since exosomes derived from DCs and macrophages are known to contribute to antigen presentation, we characterized the exosomes derived from *M. leprae* infected DCs stimulated with LipoK.

Methods: *M. leprae*Thai-53 strain was inoculated into the foot-pad of nude mouse and was grown for 9 months. Viability of *M. leprae* was confirmed by the radio-respiratory method using ^{14}C-palmitic acid. DCs were cultured from human monocytes purified from whole blood cells kindly obtained from the Japanese Red Cross Society. Exosomes were isolated from culture supernatants of uninfected or *M. leprae* infected DCs or LipoK stimulated infected DCs after 72 h culture in exosome-free FCS. Class II beads or Total exosome isolation kit (invitrogen) was used to purify the exosomes. For flow cytometric tests, exosomes attached to class II beads were gated and

the expression of antigens were analyzed. For Western blot analyses, exosomes were suspended in tris-buffered saline, mixed with Laemmli buffer before loading onto SDS gel. Rabbit anti-*M. leprae* membrane protein antibody was kindly obtained from Drs. Patrick Brennan/John Spencer from CSU.

Results: Higher expression of HLA class I, II and CD86 antigens were observed on the surface of the exosomes obtained from *M. leprae* infected DCs stimulated with LipoK, when compared to that infected by *M. leprae* alone. The results suggest that TLR2 involvement can enhance the release of exosomes from infected cells. When the bacilli was labeled with FITC, higher level of fluorescence was observed from exosomes derived from LipoK stimulated DCs, indicating that these exosomes may contain *M. leprae* components. When the purified exosomes were characterized by western blot analyses using polyclonal antibody to *M. leprae* membrane fractions, appearance of a broad band indicated that indeed the exosomes contain the *M. leprae* membrane components. Further, stimulation of T cells, with the exosomes purified from culture supernatants, showed that the exosomes derived from LipoK stimulated *M. leprae* infected DCs could induce higher level of IFN-gamma production from autologous T cells.

Conclusion: The study indicates that these LipoK induced exosome production could activate T cells probably by presenting *M. leprae* antigens and therefore they may be useful for immuno-therapeutic applications.

O-142

Presentation Time: **Wednesday 18/09/2013 at 14:00 – 15:30**
Symposium Session: **Immunology 2**
Presenter: Mr Naveenchandra Suryadevara

INFLUENCE OF INTRON II MICROSATELLITE POLYMORPHISM IN HUMAN TOLL-LIKE RECEPTOR 2 GENE IN LEPROSY

N. C. suryadevara [1, 2, 3, 4,*] on behalf of [1], S. K. neela venkata [1], V. L. valluri [2], S. jonnalagadda [3], P. devalraju [2], S. jain [3], S. ksr [4], A. mpjs [1] and Immunology and molecular biology division

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Introduction: Leprosy is a chronic granulomatous infection caused by the obligate intracellular organism *Mycobacterium leprae*. *TLR2* plays a key role when activated by *M. leprae* lipoproteins with an ability to start protective responses which induce killing and therefore control of disease spread. Microsatellite polymorphisms in intron2 of *TLR2* gene have been reported to be associated with development of clinical features of several infectious diseases. The study aims to evaluate the influence of GT microsatellite on the expression of *TLR2* which could make humans more prone to *M.Leprae* infections.

Methods: A total of 279 individuals were enrolled in the study, 88 were leprosy patients, 95 were house hold contacts (HHC) and 96 were healthy controls (HC). Genotyping was done using PCR-Sequencing method. *TLR2* mRNA expression was analyzed by RT-PCR. IL-10 and IFN-γ levels in MLSA stimulated cell culture supernatants were measured using *ELISA*. Statistical analysis was performed using Chi-Square (χ^2) test and t-tests.

Results: Allele/genotype of *TLR2* microsatellite which includes longer GT repeats was associated with susceptibility with low *TLR2* mRNA expression while that which includes shorter GT repeats was associated with resistance to leprosy with high *TLR2* mRNA expression .

Conclusion: To conclude allele/genotype that includes longer (L) GT repeats in Intron2 of *TLR2* gene with associated high IL-10 levels might act as a marker for susceptibility to leprosy and high IL-10 producing allele of *TLR2* microsatellite might predispose house hold contacts to leprosy infection.

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Presentation Time: **Wednesday 18/09/2013 at 14:00 – 15:30**
Symposium Session: **Immunology 2**
Presenter: Daniel Carvalho

POSSIBLE ROLE OF PTX3 ON LEPROSY: M.LEPRAE RECOGNITION, PHAGOCYTOSIS MODULATOR OR VESSEL INFLAMMATION MARKER?

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Introduction: PTX3 is the first member of the long pentraxin family. Macrophages, dendritic cells and endothelial cells are major producers of PTX3 in response to Toll-like receptor engagement and inflammatory cytokines (eg. TNFα and IL-1β). Was also described that PTX3 is important to fungi opsonization and responses. In other hand PTX3 has a protective role on vascular inflammation, and can also be used as an early marker of inflammation mainly those related to vessels. In other hand, PTX3 also play an important role on phagocytosis of late apoptotic cells, mainly neutrophils, being expressed on membrane of those cells and when blocked by monoclonal antibody or excess of soluble PTX3 the phagocytosis is reduced. Histologically type 2 reactions are characterized by the presence of vasculitis, a dense neutrophils infiltrate and apoptotic cells, being compatible with PTX3 involvement.

Methods: Our aim was to evaluate the role of PTX3 in ENL. We tested skin biopsies for PTX3 expression by PCR and immunohistochemistry, during ENL and after one week of thalidomide treatment. *In vitro* experiments were made to demonstrate the PTX3 gene expression by *M.leprae* and its modulation by thalidomide. We also accessed *M.leprae* opsonization by PTX3 and its phagocytosis by flow cytometry while cytokines were measured by ELISA. Blood neutrophils from ENL patients and normal donors were evaluate to PTX3 expression and phagocytosis also by flow cytometry.

Results: Here we show an increased PTX3 gene expression at ENL lesions that is reduced at lesions in remission due thalidomide treatment in four accessed patients, being confirmed by immunohistochemistry. In vitro assays showed that human macrophages activated by LPS and *M.leprae* had the PTX3 gene expression reduced in presence of 30µM thalidomide. However we tried to show that PTX3 can be seen in leprosy in a fashion more than a just inflammatory marker. When $20x10^6$ *M.leprae* was incubated with 100µg/ml of PTX3, it can be identified by anti-PTX3 antibodies, indicating that PTX3 binds to M.lperae. In the same way, PTX3-treated-*M.leprae* is 39%±2 more phagocyted by monocytes than non-treated mycobacteria. We also demonstrate an increased chemokines IL-8 and MIP-1β production in response to mycobacteria by macrophages when *M.leprae* is opsonized by PTX3, means that PTX3 may act in mycobacteria recognition and can also have an effect on ENL development.
Looking to the role of PTX3 at apoptosis phenomena, preliminary results showed that neutrophils from ENL patients had raised PTX3 expression and spontaneous apoptosis than healthy donors. In parallel experiments, the neutrophils from patients were also more phagocyted than from healthy donors, we also observed a blockade with anti-PTX3 and soluble PTX3.

Conclusion: It is still not clear the whole participation of PTX3 in leprosy, especially on ENL, however our results indicates the participation of this molecule on recognition of mycobacteria and clearance of apoptotic cells from tissues could affect the pathophysiology on dis disease.

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Presentation Time: **Wednesday 18/09/2013 at 14:00 – 15:30**
Symposium Session: **Immunology 2**
Presenter: Xinjiang Zhang

TLR2MRNA AND TLR4MRNA EXPRESSION LEVEL ON PBMC OF LEPROSY PATIENT

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Introduction: Leprosy is a chronic infectious disease, which causes serious human health problems. Guizhou Province was a major leprosy epidemic area in China. From 1950 to 2008, there were a total of 28,721 cases of leprosy patients found and 10,429 cases of survival in Guizhou. Toll-like receptors (TLR) are pattern recognition receptors that recognize pathogen-associated molecular patterns and functions, and critical mediators of proinflammatory cytokine response. Our previous studies have shown that TLR2 protein is strongly expressed in epidermis and dermis in all specimens from tuberculoid leprosy (TT) and lepromatous leprosy (LL). TLR4 protein is weakly expressed in stratum basale layer in both TT and LL. These results suggest that the pattern recognition receptors, TLR2 and TLR4, may mediate and take part in the innate immune response in leprosy. To determine whether the TLR2 and TLR4 are involved in the process of leprosy infection and immunity, we collected blood samples from patients with leprosy to identify the relationship between expression of TLR2mRNA and TLR4mRNA and leprosy infection.

Methods: The peripheral blood samples were collected from 150 patients who have been diagnosed for leprosy infection by typical clinical symptoms and positive leprosy bacillus, as well as histopathological examination. The patients were recruited at the institute for CDC of the Bijie district, Guizhou Province of China. Among 150 cases of leprosy patients, there were 103 cases of LL and 47 cases of TT. The blood samples of control group were collected from 50 cases of healthy adult volunteers. Informed consent was obtained from each patient and the study was approved by *Human Research Ethics Committee*. After separation of peripheral blood mononuclear cells PBMC from blood, total RNA were extracted from PBMC with Trizol method. Total RNA was purified and quantitated. R-T PCR was performed using PrimeScript™kit (TaKaRa). PCR primers were as follows: TLR2 (146bp), 5′-GAAAGCTCCCAGCAGGAACATC-3′(forward) and 5′-GAATGAAGTCCCGCTTATGAAGACA-3′(reverse); TLR4 (143bp), 5′-TTGAGCAGGTCTAGGGTGATTGAAC-3′(forward) and 5′-ATGCGGACACACACACTTTCAAATA-3′(reverse); ′-actin (186bp): 5′-TGGCACCCAGCACAATGAA-3′(forward) and 5′-CTAAGTCATAGTCCGCCTAGAAGC A-3 ′(reverse).The significance of the observed differences was calculated using Student's t test. The correlation analysis was done with Pearsons correlation. The analysis of the data was done with SPSS software version 16.0 and the p-value of less than 0.05 was considered to be significant.

Results: The levels of both TLR2 mRNA and TLR4 mRNA expression were significantly higher in leprosy in comparison with normal controls (0.56±0.06 vs. 0.22±0.10 for TLR2 mRNA, P<0.01; 0.34±0.04 vs. 0.21±0.07 for TLR4 mRNA, P<0.01). In the subtypes of leprosy, both TT and LL exhibited a higher expression of TLR2 mRNA (0.62±0.07 vs. 0.22±0.10 for TT, P<0.05; 0.43±0.11 vs. 0.21±0.07 for LL, P<0.05); There was no difference in TLR2 mRNA expression between LL and TT; In comparison with both normal controls and LL leprosy, TT displayed a higher levels of TLR4 mRNA expression (p<0.05).

Conclusion: The levels of TLR2 mRNA and TLR4 mRNA expression in the leprosy group are significantly higher than that in the control group. These results suggest that TLR2 and TLR4 may play an important role in the pathogenesis of leprosy, especially TLR4 could be involved in the development of TT leprosy.

Funding: The study was supported by research grants from National Natural Science Foundation of China(30960350)

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Presentation Time: **Wednesday 18/09/2013 at 14:00 – 15:30**
Symposium Session: **Epidemiological Analyses**
Presenter: Paul Fine

LEPROSY ON THE EDGE OF ITS DISTRIBUTION

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Introduction: Much of the discussion of leprosy trends in recent years has focused upon the (relatively) "high prevalence" populations of the world. This presention will examine the patterns and trends of leprosy at the edge of its distribution, in areas where the disease, and perhaps the infection, are apparently disappearing, or have relatively recently disappeared. Such areas include parts of Southern Europe, Northern and Southern Africa, Southern Latin America, Japan, and Australia. The difficulties of studying leprosy in such populations will be discussed, including the small numbers of cases, absence of a test for infection, lack of certainty as to where infection may have taken place, long and variable incubation periods, and absence of a leprosy programme. Though conclusions must be cautious, because of these constraints, the consistency of patterns both between populations, and with our understanding of the natural history of *M leprae* infection, allow reasonable confidence in describing patterns and trends at the apparent edge of leprosy's distribution today. Data will be presented from several countries, and there will be an encouragement for other countries to examine this issue. Despite the problems of obtaining and interpreting data from such populations, observed patterns reveal aspects of the natural history of *M leprae* which are difficult to discern in populations where leprosy is more common. And they can inform discussion of the probable long term future of the disease in different populations of the world.

Methods: xx

Results: xx

Conclusion: xx

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Presentation Time: Wednesday 18/09/2013 at 14:00 – 15:30
Symposium Session: Epidemiological Analyses
Presenter: Dr Ponnaiah Manickam

BAYESIAN MODELS DEMONSTRATE DECLINING TRENDS IN LEPROSY INCIDENCE IN SOUTH INDIA

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Introduction: Leprosy trends have been classically studied through age, period and cohort analysis. Leprosy distribution is uneven within high endemic regions and sometimes within smaller levels. Additionally, for a chronic disease like leprosy, birth cohorts undergo long duration of exposure to socio-economic and environmental changes and control activities. Hence, such spatio-temporal dependence has to be accounted while analysing leprosy trends and Bayesian models accommodate the same. We examined leprosy incidence trends from South Indian leprosy vaccine trial data through Bayesian space-time models.

Methods: South India leprosy vaccine trial was a randomized-placebo controlled study (Gupte *et al.*1998) conducted during 1991-2003. It included 171,400 individuals without leprosy or any serious illness and aged 1-65 years. They were from 148 rural administrative units (called *panchayats*) comprising of 264 contiguous villages in Chingleput district, South India. Three follow-up surveys were conducted (1993-95, 1997-98 and 1999-2003) to identify new cases of leprosy. Majority of the cases were of pauci-bacillary and a small proportion was multi-bacillary leprosy (2%). Incidence cases and *panchayat* population were cross-classified into 20 age-groups (1-4, 5-9,...,90-94,95-99) and mid-points of three survey time-periods (1994, 1997 & 2001) since time taken for each of the surveys was varying in length. Cohorts were computed on the basis of survey time, period and age. There were 20 overlapping or rolling birth cohorts defined in the Bayesian model, considering the mid-point, the cohorts were labeled as 1902, 1907,...,1997. The variation of incidence of leprosy over space (*panchayat*) and time was modeled from 1991 to 2003 over 148 *panchayats* after controlling for age. We used expected incidence of 40 per 10,000 in the study area as the prior for the model. We used Space-Cohort (SC) and Space-Period (SP) models with and without including interaction terms. The models with and without interaction terms were compared using Deviance Information Criterion (DIC). The models with interaction term out-performed with smaller DIC values. Hence, we used SC and SP models with interaction terms for subsequent analysis. We used Gibbs sampling in WinBUGS to obtain posterior distributions and estimate median relative risks (RR) and 95% credibility intervals (CI) for cohort, period and spatial effects.

Results: The risk of leprosy steadily declined for successive birth cohorts [RR of 6.4 (1902) to 0.42 (1997)] except for two birth cohorts (1912-21 and 1917-26). Those who were born after 1996 had 58% (RR=0.42) less risk of leprosy as compared to those born before 1997. The period effect over three time-points using SP model showed a significantly higher risk for 1994 (RR=1.31; 95% CI=1.23-1.4), whereas 2001 had significantly lower risk than the overall average (RR=0.74; 95% CI: 0.69-0.79). The RR for leprosy across *panchayats* ranged from 0.51 to 1.93. Thirteen *panchayats* had a significantly higher risk of leprosy.

Conclusion: We observed that risk of leprosy declined for those born after 1956 and over three time-points, hence, documenting reduced leprosy transmission. The increased risk of leprosy for older cohorts indicated possibility of endogenous reactivation of past infection. The presence of clusters with continuing risk of leprosy indicates the need to identify and plan focused strategies for such small areas within low-endemic regions.

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Presentation Time: **Wednesday 18/09/2013 at 14:00 – 15:30**
Symposium Session: **Epidemiological Analyses**
Presenter: Lucia Freitas

ECOLOGICAL ASSOCIATION BETWEEN CHARACTERISTICS OF THE MUNICIPALITIES AND THE MEDIAN INCIDENCE RATE OF LEPROSY IN BRAZIL: 2009-2011

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Introduction: Brazil is the second country in the world with the largest number of leprosy cases, and presents and presents striking social inequalities and regional disparities. Leprosy occurrence is unequally distributed across the country's territory. The study aimed to investigate the association between selected socioeconomic characteristics of the Brazilian municipalities and the incidence rate of leprosy in the period between 2009-2011.

Methods: This is an ecologic study in which each of the Brazilian municipalities were the units of analysis. Data on leprosy cases were acquired from the Notifiable Diseases Information System (SINAN). Information on characteristics of the municipalities were obtained from the national demographic census 2010. The average, median, fist quartile (1Q) and third quartile (3Q) incidence rates of leprosy were calculated per 100,000 inhabitants for all Brazilian municipalities for the period 2009-2011. The distribution of incidence rates in municipalities was non-symmetric. Bootstrapped quantile regression models were fitted to test the associations (p-value < 0.05). Variables with p-value < 0.2 were kept in the final model to adjust for possible confounding.

Results: In the period 2009-2011, the average incidence rate of leprosy in Brazil was 18.5 per 100,000 inhabitants, and the median incidence rate among municipalities was 8.4 per 100,000 inhabitants (1Q-3Q: 0.7-25.0). At the adjusted analysis, the median leprosy incidence rate ratio was 1.5 (95%CI 1.1; 1.7) in the small municipalities (up to 50,000 inhabitants) compared to large ones (over 100,000 inhabitants), 2.2 (95%CI 1.8; 3.2) for municipalities with higher unemployment rates (> 8.0%) compared to those with lower (<= 3.0%); 4.1 (95%CI 1.9; 6.3) for municipalities with higher social inequality rates (20/20 income ratio) (>26%) compared with lower; 4.5 (95%CI 2.3; 6.9) with higher literacy rates (> 23.0%) compared to those with lower (7.0%) and 6.6 (95%CI 3.5; 9.6) with higher poverty rates (>43.0%) compared to those with lower (<= 25.0%). The median incidence rate were 37.9 (95%CI 34.3; 41.6) and 29.5 (95%CI 24.7; 34.3) at the Center-Western and Northern regions, respectively, compared to those living at the Northeastern. The proportion of households with inadequate solid waste management showed no association after adjustment.

Conclusion: Leprosy incidence is still high in Brazil. The study revealed an ecological association between poorer socioeconomic characteristics of municipalities and higher median leprosy incidence. It is necessary to implement highly effective control measures, especially at small and poor municipalities located at the Center-Western and Northern regions, in which leprosy is highly endemic.

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Presentation Time: **Wednesday 18/09/2013 at 14:00 – 15:30**
Symposium Session: **Epidemiological Analyses**
Presenter: Rahul Sharma

ZOONOTIC LEPROSY IN THE AMERICAS

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Introduction: Other than humans, nine-banded armadillos (*Dasypus novemcinctus*) are the only known natural host for leprosy, their natural habitat ranges from Northern Argentina to the Central United States. Biomarkers of *M. leprae* have been reported among armadillos from across the range and the contact with this animal has been suggested as a risk factor for leprosy.

Methods: To better understand the role of armadillos in the ecology of leprosy in southern United States, we re-sequenced genome of *M. leprae* isolated from 3 human patients and 1 infected armadillo, and aligned against already available genome sequences of standard strains. Wide geographical affiliation was determined by single nucleotide polymorphism (SNP) based analysis and a set of 10 variable number tandem repeat (VNTR) was also analyzed for further discrimination of various SNP subtypes.

Results: Although, all 7 *M. leprae* genomes compared were 99.995% identical, we have identified 52 informative markers and developed a single nucleotide polymorphism (SNP) based algorithm to define the geographical affiliation of *M. leprae* strain. Using this combination of SNP-VNTR analysis, we found that 88% of the armadillos and 64% of the autochthonous human cases from southern United States are sharing a single unique strain (3I-2-v1) of *M. leprae*, probably through zoonotic transmission. Combination of SNP and VNTR analysis appeared an appropriate approach for study global affiliation as well as transmission of leprosy. We have also identified a second zoonotic strain (3I-2-v15; which differs at three VNTR loci) and was commonly present among 10 patients and multiple armadillos from South Florida where armadillos were free from the infection 20 years ago.

Conclusion: Leprosy appears to be an emerging zoonosis in the US, and may be present in other parts of Americas. Awareness about the potential risk of acquiring leprosy from Armadillos could significantly reduce the burden of leprosy in these areas and may also help reducing the stigma attached to this disease. Detailed studies are required throughout the range of armadillo's natural habitat to identify any emerging infection and potential risk factors for this inter–species transmission.

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Presentation Time: **Wednesday 18/09/2013 at 14:00 – 15:30**
Symposium Session: **Epidemiological Analyses**
Presenter: Dr Vasna Joshua

BAYESIAN MODEL, ECOLOGICAL FACTORS AND TRANSMISSION OF LEPROSY IN AN ENDEMIC AREA OF SOUTH INDIA

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Introduction: Interactions between *Mycobacterium leprae* and the human host and its dynamics of transmission are still not clear. Geographic clustering of cases are suggestive of role of environmental factors in the spread of leprosy. Bayesian method can analyze spatial clustering during the estimation of model parameters. The objective of our study was to investigate environmental correlates of leprosy based on spatial dependency using Bayesian model.

Methods: Data from an endemic area of leprosy, across 148 panchayats (Population size: 300,000) from two taluks in South India were used for this analysis. In 2001, totally 2098 leprosy cases were identified in this population. The study area exhibited spatial clustering of cases confirmed using various measures of spatial autocorrelation. We employed a Bayesian model and included demographic data (gender, age, caste, contact status) as well as environmental and ecological data [population density, Famine Early Warning System (FEWS) rainfall data; Moderate Resolution Imaging Spectroradiometer (MODIS) Day land Surface Temperature and Normalized difference Vegetation Index (NDVI)]). Prevalence of leprosy was adjusted for spatial and non-spatial random effects using OpenBUGS software for analysis.

Results: Bayesian models with the spatial random effect out-performed with less deviance information criteria. Male gender (RR=1.08; 95% CI=1.04-6.36), contact status (RR= 1.26; 95%CI=1.24-1.30) and higher NDVI (RR=1.07; 95% CI=1.01-7.98) were independent correlates of leprosy prevalence. The spatial dependency between householdswithin a radius of 250 meters [RR=0.25 (Km); 95% CI=.02-0.29] was significant.

Conclusion: As reported previously male gender and contact status were found to be associated with leprosy prevalence. Significant association between NDVI and leprosy prevalence calls for exploring the role of indirect transmission.

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Presentation Time: **Wednesday 18/09/2013 at 14:00 – 15:30**
Symposium Session: **Epidemiological Analyses**
Presenter: Ligia Kerr

SOCIAL NETWORK APPROACH TO LEPROSY SPREADING

L. S. Kerr [1,*], J. V. Miranda [2], S. R. Pinho [2], R. F. Andrade [2], C. C. Frota [3], L. C. Rodrigues [4], M. L. Barreto [5], R. B. Gomes [2], N. A. Almeida [2], F. B. Moreira [2], A. Pontes [6], H. Gonçalves [6], G. Penna [7], S. Bührer-Sékula [8], P. Suffys [9], C. Kendall [10]

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Introduction: We use concepts from complex networks to investigate the spread of leprosy. We collected geolocated data on social interaction during the last 10 years, such as housing, worksites, school and leisure activities. Patients were considered nodes in the social network, which were connected by links whenever they share one or more of these sites. By measuring several parameters associated with the theory of complex networks related to specific aspects of network topology, we obtained measures of these networks that link the dynamics of movement of individuals who, in turn, can influence the spread of leprosy.

Methods: We developed a new and robust computational system (GRAPHTUBE) to generate the activity/geographic networks of 397 cases and 211 controls. Using filters applied to the database, the software builds person-to-person (PP) networks combining information by type of activity (housing, school, worksites and leisure activities), geographic location, time and sociodemographic characteristics. Network properties analyzed included degree, density, average topological distance between nodes, and clustering coefficient. The results took into account: a) differing network parameters for cases and controls; b) the effect of geographical distance in locales frequented by cases and controls using both individual geolocation and neighborhood; c) analysis of the proximity matrices of cases and controls; d) comparison of the topological distances in the networks of cases and controls, e) comparison of critical distances in the networks of cases and controls for the establishment of dynamic states.

Results: The results demonstrate differences in the topology of the case and control networks, especially in school and worksite networks, demonstrating the potential for systematic differences in contacts. This difference is repeated in analyses of these networks using either personal GPS or neighborhood cutoffs. Different patterns were also obtained for topological distance within the case and control networks. School and worksite networks demonstrate more of this difference than housing and leisure activity networks. Cases and controls are found overlapping in school and worksites much more frequently than in houses or leisure sites. In housing networks, cases and controls do not overlap. Finally we note that cases are much more clustered than controls in general as well as in school and worksites.

Conclusion: Our study confirms the importance of the household in leprosy transmission, however, we found potential systematic extra-household transmission in work and school that merit future investigation. Because both settings are institutional, they present several opportunities for policy and program interventions that may help target the 50% of new leprosy infections that do not report a household exposure.

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Presentation Time: **Wednesday 18/09/2013 at 14:00 – 15:30**
Symposium Session: **Nerve Injury in Leprosy**
Presenter: Marcia Jardim

PATTERN OF NERVE CONDUCTION STUDY IN LEPROSY NEUROPATHY

M. R. Jardim [1,*], R. T. Vital [1], S. L. Balassiano [2], M. V. B. Hacker [1], M. Nascimento [1], E. N. Sarno [1], X. Illarramendi [1]

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Introduction: Numerous case reports or case series in the literature show great variation in nerve conduction studies (NCS). The reflection of the pathological process in the NCS remains unclear and the electrophysiological pattern of leprosy neuropathy still needs to be defined.

Methods: Patients from a reference service were evaluated before, during and after treatment with multidrug therapy (MDT) in order to establish an NCS pattern at different stages during the course of leprosy. The radial, median, ulnar and sural sensory nerve action potentials were recorded at a fixed stimulation-recording. Motor nerve conduction studies (mNCS) were recorded of the ulnar, the median and the common peroneal nerves. The pattern of neuropathy was defined according to the number of nerves impaired, the distribution of impairment and the type of nerve lesion.

Results: A total of 822 NCS from 509 leprosy patients (67.4% male, mean age 40.9 ± 1.59, 57.6% MB, 27.3% grade 2 disability) were included. NCS exams were divided into 3 groups: before-MDT (n=230) NCS performed until 2 months after patients were started on MDT; during-MDT (n=228), tests performed 2 months after the beginning until 2 months after the end of MDT; after-MDT (n=364), NCS performed 2 months after completing the MDT scheme. Normal sensory and motor function was observed in 30/230 NCS before-MDT, 27/228 during-MDT and 35/364 after-MDT, while severe dysfunction, demonstrated by sensory-motor polyneuropathy, was seen in 3.6% before-MDT, 0.88% during-MDT, and 1.8% after-MDT. No conduction could be registered in 20 (8.7%), 13 (5.7%) and 31 (8.5%) sNCS before, during and after MDT, respectively. Motor polyneuropathy had a mixed pattern at all periods of evaluation (5.2%, 7.8% and 3.3%). Among the sensory nerves, the sural was significantly the most affected nerve at all periods; the ulnar and median nerve were as frequently affected, except for after-MDT, in which the ulnar nerve was slightly more affected. Regarding the motor nerves, the frequency of alteration was significantly different between the 3 nerves evaluated before and after-MDT, the median nerve being the least affected. The peroneal nerve was the most affected during-MDT and the ulnar nerve, after-MDT. Mononeuritis multiplex predominated in both sensory and motor NCS at all periods, except for mNCS during-MDT that showed mononeuropathy. The presence of axonal or demyelinating lesion in at least one nerve had a similar proportion in mNCS throughout all periods. During and after-MDT, the presence of axonal lesion in at least one nerve was more frequent in sNCS than in mNCS, while demyelination was more frequently observed in the mNCS.

Conclusion: The asymmetric pattern of nerve involvement in leprosy had been previously described as a "mosaic polyneuropathy". Although we observed seldom cases of polyneuropathy, the extension of alterations is characterized as mononeuritis multiplex. The asymmetry observed is due both to the number of the nerves and the type of lesion. In the NCS the primary lesion may be demyelinating, axonal or mixed according to the lesion pathogenesis. The invasion of Schwann cells by *Mycobacterium leprae* may induce simultaneous or progressive lesion of the axon, the myelin sheath or the interstitium. Leprosy neuropathy is a complex disease involving different pathological processes which may occur at different periods during the course of the disease.

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Presentation Time: **Wednesday 18/09/2013 at 14:00 – 15:30**
Symposium Session: **Nerve Injury in Leprosy**
Presenter: Gigi Ebenezer

EPIDERMAL NERVE FIBER AND SCHWANN CELL DENSITIES IN THE DISTAL LEG OF NINE-BANDED ARMADILLOS WITH EXPERIMENTAL LEPROSY NEUROPATHY

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Introduction: Leprosy is a leading cause of peripheral neuropathy and one of the earliest clinical sign is the loss of sensation, suggesting involvement of small unmyelinated sensory axons ensheathed by Remak Schwann cells. Nine–banded armadillos are naturally susceptible to *M.leprae,* and the neuropathological features closely recapitulate leprosy neuritis in humans. We used epidermal nerve fiber density (ENFD) in skin punches as a novel tool to assess small fiber damage in *M.leprae* infected armadillos.

Methods: Eleven naïve and 9 *M.leprae*-infected armadillos underwent motor nerve conduction velocity (MNCV) recordings and 3 mm skin biopsies at the distal leg (DL). Biopsies were also obtained from ears, upper and lower abdomen in naïve animals. 50µm sections were immunostained against axons (anti-PGP9.5) and Schwann cells (anti-p75 nerve growth factor receptor). Epidermal nerve fibers and Schwann cells were quantified using established protocols and design-based stereology.The results were reported as Mean with SEM and statistical analysis was carried out by nonparametric Mann-Whitney test.

Results: Naïve animals had no detectable antibodies to the *M. leprae* species specific PGL1 antigen. The mean MNCV along the posterior tibial nerve among naïve animals was 55.33 ± 7.99 m/s. Using a standard threshold of 49 m/s, infected armadillos showed abnormal MNCV in at least one posterior tibial nerve or limb. A length-dependent innervation was observed, similar to that seen in humans with extremely dense innervation in the ear and abdomen. In armadillos, the lower limit of normal (defined as the 5th percentile) was 21.3 fibers/mm at the DL. In naïve animals the mean ENFD in DL was 31.3+2.2 and in infected animals the mean ENFD was 26.9+2.4. This difference was not statistically significant (p=0.3). Schwann cells of dermal cutaneous nerves showed a trend towards increasing density (Naïve: 2285 + 206 cells/mm^3, *M.leprae* infected: 3139 +416 cells/mm^3, p=0.1).

Conclusion: Similar to humans, length dependent, progressively decreasing epidermal densities were demonstrated in naïve Armadillos. The increasing proliferation of Schwann cells in infected Armadillos suggest that *M.leprae* not only prefer the housing of Schwann cells but also modify the cells for further multiplication from the early onset of infection. Quantifying ENFD and Schwann cells is feasible in nine-banded armadillos and promises to be an important tool for investigating early sensory neuropathy in leprosy.

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Presentation Time: **Wednesday 18/09/2013 at 14:00 – 15:30**
Symposium Session: **Nerve Injury in Leprosy**
Presenter: Prof Dr MSc Bernardo M. O. Pascarelli

TGF-β1 MAY BE A KEY MEDIATOR OF THE FIBROGENIC PROPERTIES OF NEURAL CELLS IN LEPROSY

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Introduction: Fibrosis is the main cause of irreversible nerve damage in leprosy. Phenotypic changes in *Mycobacterium leprae* (ML)-infected Schwann cells (SC) have been suggested. TGF-β1 serves as an inhibitor of SC proliferation and myelination during development, but it may promote the transition of SCs after peripheral nerve injury to a proliferating, non-myelinating phenotype, and thereby enhances the regenerative response. In addition to its role as an inducer of collagen and fibronectin synthesis, TGF-β1 can mediate SCs transdifferentiation into myofibroblasts and can act as an inflammation suppressor. Besides, in leprosy lesions, the expression of TGF-β was previously demonstrated. In this context, we hypothesize that ML infection, while inducing a protective environment, triggers reprogramming of the SC phenotype, leading to transdifferentiation, connective tissue cell expansion and fibrogenesis.

Methods: ST88-14 human SC line cultures were stimulated with ML alone or with TGF-β1, or pre-treated with SB-431542, an inhibitor of the TGF-β1 type I receptor (ALK5), stimulation for different periods of time prior to stimulation. For TGF-β analysis, semi-quantitative RT-PCR, intracellular flow cytometry and ELISA techniques were used. To detect αSMA, real time qRT-PCR, intracellular flow cytometry and immunofluorescence staining were used. The levels of SOX9 and ZEB1, mediators of transdifferentiation, were verified by real time qRT-PCR. Type I collagen and fibronectin mRNA levels were quantified by real time qRT-PCR and protein deposition by semi-quantitative ELISA. Nerve biopsy specimens collected at the Souza Araújo Ambulatory for diagnostic purposes were used for immunostainning of types I and III collagens, fibronectin, GLUT-1 (perineurial cell marker), CD34 ("fibroblast-like" cell marker), and αSMA (myofibroblast marker). These fragments of nerve biopsies were also processed and expression of *Tgfb1, αSma, Zeb1, Sox9, Col1a2,* and *Fn1* genes evaluated by real time qRT-PCR.

Results: ML increased TGF-β production in mRNA and protein levels in ST88-14 cultures. TGF-β1 alone or ML increased numbers of αSMA+ cells presenting characteristic stress fibers in this SC line cultures. Augmented SOX9 and ZEB1 levels, known to be involved in the epithelial-mesenchymal transition, were confirmed via mRNA analysis to be elevated in addition to type I collagen and fibronectin deposition. Pre-treatment with the ALK5 inhibitor confirmed that TGF-β1 added to ST88-14 cultures or induced by ML is responsible by SC mesenchimal phenotypic transdifferentiation. Leprosy nerves were then used to identify the fibrogenic cell phenotypes present in neural tissue showing varying grades of fibrosis. At first, types I and III collagen and fibronectin were found in the endoneurium and perineurium of all biopsies; and αSMA+ cells filled the fibrotic perineurium but not the endoneurium, in which CD34+ cells identified as endoneurium fibroblasts predominated. Transcriptional studies of leprosy nerves confirmed our previous data, but αSMA mRNA were not different from the control samples.

Conclusion: All findings suggest that TGF-β orchestrates a myriad of events in the fibrogenic evolution of leprosy nerve lesions and could mediate SC-myofibroblast transdifferentiation during some evolutionary stages.

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Presentation Time: **Wednesday 18/09/2013 at 14:00 – 15:30**
Symposium Session: **Nerve Injury in Leprosy**
Presenter: Dr Renuka Raju

THE DIAGNOSTIC VALUE OF ASSESSING NERVE DAMAGE BY HIGH-RESOLUTION SONOGRAPHY AND COLOR DOPPLER IN LEPROSY PATIENTS

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Introduction: Leprosy is the most common treatable peripheral nerve disorder worldwide with periods of acute neuritisleading to functional impairment of limbsand stigmatizing deformities. Since the hallmarks of leprosy arenerve enlargement and inflammation, we used high-resolution sonography (HRUS) and color Doppler (CD) imaging todemonstrate nerve enlargement and inflammation.

Methods: HRUS of the ulnar (UN), median (MN), lateral popliteal (LP) and posterior tibial (PT) nerves was done in 74 leprosy patients using aEsaoteMyLab 5 Colour Doppler System using linear array probe (LA435 Bandwidth frequency of 6-18 MHz). Out of 74 cases, 53 were in reaction (cases) and 21 were not in reactions (controls). We also compared the sonographic findings in these patients with those of 55 healthy Indian controls.

Results: The nerves were significantly thicker in the leprosy patients ascompared to healthy controls ($p<0.0001$ for each nerve). The kappa for clinical palpation and nerve enlargement by sonography was 0.27 for all examined nerves (0.31 for UN, 0.22 for PN and 0.21 for LP).Ulnar nerve was significantly thicker in reactional patients as compared to control leprosy patients ($p<0.015$). Increased neural vascularity by CD imaging was present in 75 (13%) of the 584 peripheral nerves examined, ulnar 46 (61.3%), median 16 (21.3%), LP 7 (9.3%) and PT 6 (8%) and 71 nerves (95%) were from reactional patients. Endoneural flow was observed in multiple nerves in 9 (17%) of 53 patients with type 1 and type 2 reaction. Significant correlation was observed between clinical parameters of grade of thickening, sensory loss and muscle weakness and the sonographic abnormalities of nerve echotexture, endoneural flow and crosssectional area ($p <0.0001$) except between sensory loss and endoneural flow ($p=0.0003$).

Conclusion: We conclude that clinical examination of enlarged nerves in leprosy patients is subjective and inaccurate, whereas sonography provides an objective measure of nerve damage by showing increased vascularity, distorted echotexture and enlargement. The damage is sonographically more extensive and includes more nerves than clinically expected.

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Presentation Time: **Wednesday 18/09/2013 at 14:00 – 15:30**
Symposium Session: **Nerve Injury in Leprosy**
Presenter: Masamichi Goto

EFFECT OF PREGABALIN ON THE CHRONIC NEUROPATHIC PAIN OF LEPROSY

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Introduction: In Japan, 27% of the individuals with cured leprosy suffer from chronic neuralgia (cross sectional study in 1995). They typically occur in cold environment and before rain, and relevant nerve trunks show mild pain on pressure. As they are not active neuritis, steroid is ineffective. NSAIDs and vitamin B12 have been used yet with limited effects. Pregabalin is a calcium channel alpha2delta ligand that is effective against neuropathic pain such as post-herpetic neuralgia and diabetic neuropathy by blocking the hyperexcitability of neurons in the spinal dorsal horn. Since post-herpetic neuralgia and chronic neuralgia in leprosy are both inflammatory neuropathies, pregabalin might be effective in the latter condition.

Methods: In 2011, we started to use pregabalin in our leprosy sanatorium with 199 residents. 21 patients with chronic neuralgia (13 males, 8 females, age 83+7, body weight 50+8 kg) have received pregabalin with mean daily dose of 60mg (25-150mg). Pretreatment renal function was estimated by estimated creatinine clearance (Clcr). 13% of the 12 patients were 60<Clcr, 56% were 30<Clcr<60 and 31% were 5<Clcr<30.

Results: Improvement of pain was observed in 19 of 21 (90%) cases. The effect appeared with a few days after starting the administration, and loss of pain, decrease of pain, decrease of NSAIDs usage and better sleep were observed. Due to advanced age and impaired renal function, typically 25mg of pregabalin before bedtime was sufficient. Major adverse effects were wobble (67%) and dizziness (24%), and 38% of the patients could not continue the drug.

Conclusion: If the patients complain intractable pain of nerves once involved by leprous neuritis and the nerves are fibrosed, neuropathic pain should be considered. In such cases pregabalin could be an effective remedy.

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Presentation Time: **Wednesday 18/09/2013 at 14:00 – 15:30**
Symposium Session: **Les Progrès Récents**
Presenter: Christian Johnson

SITUATION DE L'ENDÉMIE LÉPREUSE EN AFRIQUE : ÉVOLUTION ET DÉFIS

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Introduction: Grâce à l'introduction de la PCT en 1981, la lutte contre la lèpre a enregistré d'énormes progrès dans la plupart des pays d'endémie. Mais si la prévalence globale de la maladie a connu une diminution spectaculaire de près de 90%, la détection des nouveaux cas a connu une diminution moins marquée car en 2000, 719 330 nouveaux cas de lèpre étaient enregistrés. En 2010, le nombre de nouveaux cas rapportés par l'OMS est de 228474 nouveaux cas. L'objectif de cette présentation est d'analyser les informations relatives à la situation de l'endémie lépreuse en Afrique francophone en vue de dégager les principales évolutions ainsi que les défis majeurs.

Methods: Revue et analyse critique des statistiques et des principaux indicateurs de la lutte anti lépreuse en Afrique.

Results: En 1994 les statistiques de l'OMS rapportent 47900 nouveaux cas de lèpre en Afrique. En 2010, ce nombre est de 25345 nouveaux cas. Le taux de détection a évolué passant de 8,1/100.000 habitants en 2000 à 3,3/100 000 habitants en 2010. La proportion des patients porteurs d'infirmité de degré 2 parmi les nouveaux cas était de 11% en 2000 contre 10% en 2010. Ces résultats globaux ne traduisent pas la disparité de la situation de l'endémie lépreuse entre les différents pays d'endémie. Cette disparité rend toute comparaison inter pays difficile. Dans beaucoup de pays d'Afrique francophone, la situation de l'endémie lépreuse reste contrastée car les statistiques rapportées par les ministères de la santé sont fortement influencées par les facteurs opérationnels ce qui pose le problème de leur fiabilité. Les systèmes de santé sont par ailleurs appelés à faire face à de nombreux défis et parfois, la lutte contre est souvent reléguée au second plan. Dans ce contexte difficile, des défis importants doivent être relevés notamment le dépistage et la prise en charge correcte des nouveaux cas de lèpre ainsi que des réactions pour lesquelles la prise en charge est très insuffisante; la mise en place de services de routine et de référence de qualité; le maintien d'une expertise lèpre de qualité au niveau des pays d'endémie. Toutes ses actions doivent être soutenues par un plaidoyer efficace en vue de susciter l'engagement des administrations nationales et locales en faveur de la lutte anti lépreuse.

Conclusion: La stratégie mondiale renforcée pour réduire davantage la charge de la lèpre pour la période 2011-2015 élaborée par l'OMS, en mettant l'accent sur les infirmités degré 2 offre aux pays d'endémie en Afrique Francophone l'opportunité de remettre la qualité de la détection et de la prise en charge au cœur des stratégies de lutte.

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Presentation Time: **Wednesday 18/09/2013 at 14:00 – 15:30**
Symposium Session: **Les Progrès Récents**
Presenter: Dr Jean Musafiri

L'APPROPRIATION DE LA SENSIBILISATION PAR LA COMMUNAUTÉ AMÉLIORE LA DÉTECTION DE LA LÈPRE

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Introduction: Dans un contexte de crise socio-économique que connaît la RDC alignée 178ème pour l'indice de développement humain et un taux d'analphabétisme de plus élevés, le fait que la lèpre « ne fait pas mal » ne motive pas les personnes souffrant des dermatoses pour consulter les services de santé, surtout si elles doivent parcourir des longues distances. La RDC a éliminé la lèpre comme problème de santé publique depuis 2007, mais dans la Province Orientale Ouest, le territoire d'Ubundu est un des foyers qui retardent cela alors qu'il ne couvre que 8% d'habitants de cette région (284.352 habitants). La tendance des trois dernières années donne l'impression d'une certaine réactivation de ce foyer. Ainsi le Programme Lèpre et Action Damien ont décidé d'organiser une campagne de sensibilisation et dépistage des cas afin d'évaluer la tendance.

Methods: Les statistiques de 2007 à 2012 des 2 Zones de Santé du Territoire d'Ubundu ont été exploitées. En 2010 et 2011, il a enregistré trois fois plus des malades qu'en 2009. Une campagne de dépistage des cas a été organisée du 12 au 21 février 2013. La sensibilisation en langue locale centrée sur la lèpre a été adoptée comme principale stratégie utilisant des Relais Communautaires et leaders de communauté. Au total 26 encadreurs et 50 Infirmiers ont été recyclés avec 360 Relais communautaires et 317 leaders de communauté sensibilisés.

Results: 1.991 suspects ont été examinés, parmi lesquels 306 nouveaux cas dépistés dont 171 PB et 135 MB, 48 malades avec infirmités du 2ème degré (15,6%), et 78 enfants (25,4%). La proportion des femmes à 54%.

Discussion: La proportion très élevée des enfants parmi les nouveaux cas suggère que l'endémie est toujours bien active dans cette contrée. La proportion élevée d'infirmités de 2ème degré montre un dépistage trop tardif, sans doute suite à une sensibilisation insuffisante de la communauté.

Limitations et difficultés rencontrées: La dispersion des encadreurs ne permet pas l'homogénéité du diagnostic; de faux positifs et faux négatifs sont à redouter dans cet exercice. Les routes impraticables, la consommation exagérée de carburant pour naviguer sur des rivières et l'instabilité du personnel médical formé sont autant des difficultés rencontrées.
On a noté beaucoup des cas de dermatoses et d'usage des produits cosmétiques chez les jeunes.

Conclusion: L'implication des Relais communautaires s'est révélée déterminante pour que près de 2.000 personnes viennent consulter. Il est important d'organiser un suivi des infirmiers afin de valider chaque diagnostic de lèpre pendant le reste de l'année.
Les écoles et les églises sont l'espoir pour pérenniser la sensibilisation de la lutte contre la lèpre.

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Presentation Time: **Wednesday 18/09/2013 at 14:00 – 15:30**
Symposium Session: **Les Progrès Récents**
Presenter: Michel Sawadogo

MOTIVATIONS À CONSULTER CHEZ LES MALADES SOUFFRANTS DE LA LÈPRE ET LEUR SUIVI AU BURUNDI

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Introduction: Une étude a été conduite au Burundi en vue d'évaluer le devenir des patients chez qui une chirurgie réparatrice avait été effectuée du 1er janvier 2008 au 31 décembre 2010 avec pour objectifs d'apprécier l'utilité et les bénéfices de l'intervention pour le patient et son entourage, d'analyser la perception des patients et de leur entourage sur la lèpre et la chirurgie réparatrice et de recueillir les suggestions des enquêtés.

Methods: Il s'agit d'une étude transversale à visée descriptive. Une étude cas-témoin a été nichée de façon à apprécier la différence entre les patients opérés (cas) et les autres lépreux non opérés (témoins). L'étude s'est déroulée essentiellement dans les 5 provinces encore endémiques du Burundi dans les Hôpitaux de références et des centres de santé (CDS) choisis selon la provenance des malades opérés. Un questionnaire a permis de recueillir des informations sur le diagnostic et le suivi.

Results: Les signes qui ont inauguré la maladie étaient des lésions cutanées chez 37 patients (soit 77,1%); des troubles neurologiques chez 6 patients (soit 12,5%) et des lésions cutanées associées aux troubles neurologiques chez 5 patients (soit 10,4%). Chez les témoins, les lésions cutanées ont été évoquées dans 70 cas (soit 72,9%), les troubles neurologiques dans 16 cas (soit 16,7%) et des lésions cutanées associées aux troubles neurologiques dans 10 cas (soit 10,4%).

La consultation du patient avait été motivée par des conseils de l'entourage du patient dans 22 cas (soit 45,8%); l'initiative personnelle dans 17 cas (soit 35,4%); la sensibilisation des acteurs de santé dans 8 cas (soit 16,7%) et les autorités de l'école chez 1 patient (soit 2,1%). Chez les témoins, la consultation a été motivée par l'entourage du patient dans 50 cas (soit 52,1%), l'initiative personnelle dans 27 cas (soit 28,1%) et la sensibilisation des acteurs de santé dans 19 cas (soit 19,8%). L'existence d'une notion de contage lépreux était inconnue chez 34 patients (soit 70,8%) et confirmée chez 14 patients (soit 29,2%): un voisin du patient dans 10 cas (soit 20,8%) et une parenté dans 4 cas (soit 8,3%). Chez les témoins, la notion de contage lépreux était inconnue dans 66 cas (soit 68,75%) et connue dans 30 cas (soit 31,25%): un voisin dans 20 cas (soit 66,7%) et une parenté dans 10 cas (soit 33,3%).

Conclusion: La lutte contre la lèpre constitue encore un défi pour le Burundi. Le diagnostic de la maladie reste encore tardif, les malades mettant des années à consulter. Les sources d'information sur la maladie restent encore en grande majorité l'entourage du malade. Des actions urgentes sont nécessaires pour corriger les insuffisances constatées dans le Programme National Lèpre au Burundi

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Presentation Time: **Wednesday 18/09/2013 at 14:00 – 15:30**
Symposium Session: **Les Progrès Récents**
Presenter: Dr Andrianantoandro

PIRP : IMPLEMENTING A NATIONAL STRATEGY FOR PREVENTION OF DISABILITIES AND PHYSICAL REHABILITATION OF LEPROSY IN MADAGASCAR.

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Introduction: With 1500 new cases detected per year, Leprosy remains a significant problem in Madagascar.However, the detection of residual cases is difficult and the degree of disability among new cases is important (20%). Therefore, the implementation of a Prevention of Disabilities and Physical Rehabilitation Programme ("PIRP") has become a priority of the National Leprosy Program. PIRP includes primary prevention (early detection, MDT, detection and therapy of the nerve damage) and also secondary prevention (physical rehabilitation).

Methods: Due to the few number of leprosy patients health workers treat, they now have difficulties to maintain their skills. Therefore, implementation of the program has been done in two steps: first a 'pilot' approach based on the availability of experienced Health Centres, and then a second step aiming at national coverage.This strategy involves three levels in the health pyramid: Basic Health Centres are responsible for the diagnosis and monitoring of treatment; The First Level Orientation Centres (COR1 in French) confirm the diagnosis, then start MDT, assess the nerve function and implement an ambulatory standardized corticotherapy protocol if necessary; The second Level Orientation Centres (called COR2) can hospitalize patients for more appropriate treatment for severe neuritis, plantar ulcer care, minor surgery, physiotherapy and prosthesis.

- The first step originally relied on the COR2 as "centres of excellence" with strong activity, technical expertise and logistical resource, and are often run by private confessional operators. Furthermore, around each COR2, General Basic Health Centres were designed to be COR1. Implementation required :
- Awareness of leprosy and "PIRP", for population and medical staff; · Training for neurological diagnosis at COR 1 and COR2 level with support from the National Programme Team. (A major focus was to develop steroid therapy as an alternative to surgical decompression in places they were undertaken as a "routine" response to neuritis); · Implementing logistics necessary for therapy, nutritional support and social rehabilitation; · Investment in structure and housing including availability of shoe shops; · Monitoring and evaluation with external expertise.
- Phase of extension was driven by geographic need, integrating the NLP action plan with institutional stakeholders, requiring more technical skills and investment and monitoring logistics.

Results: Positive point • With 17 COR2 opened : the number of neuritis cases treated increased from 68 in 2006 to nearly 500 in 2012;
• Surgical decompression rate decreased from 12% in 2006 to less than 1% in 2012 as a result of successful corticotherapy ;
• More than 600 pairs of shoes are made and repaired every year.
Madagascar's Motor Rehabilitation Centre has been identified as a national reference for leprosy palliative surgery interventions where surgeons are trained and supervised.
To be improved • Referral of patients from COR 1 to COR 2 remains insufficient; the system relies on an auto referral of patients according to the notoriety of the COR2.

Conclusion: The PIRP is now an integrated strategy of the NLP, but this integration is unfortunately limited at the moment due to weak capabilities of health workers to ensure a neurological assessment, but the large territory would require an extension of this program.

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Presentation Time: **Wednesday 18/09/2013 at 14:00 – 15:30**
Symposium Session: **Les Progrès Récents**
Presenter: Christian Johnson

SPATIALISATION DE LA DISTRIBUTION GEOGRAPHIQUE DE L'ENDEMIE LEPREUSE AU BENIN DE 1995 À 2008

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Introduction: Maladie mycobactérienne causée par *Mycobacterium leprae* (*M Leprae*), la lèpre expose à des invalidités sévères et des handicaps permanents si elle n'est pas dépistée et traitée précocement. Le taux de prévalence annuel au Bénin selon les statistiques de 2008 est de 0,26 cas pour 10 000 habitants. Avec ce résultat le Bénin reste toujours en-dessous du seuil d'élimination qui est de moins d'un cas pour 10 000 habitants.
Le présent travail intitulé Spatialisation de la distribution géographique de l'endémie lépreuse au Bénin de 1995 à 2008 vise à étudier la distribution géographique de cette maladie au Bénin de 1995 à 2008.

Methods: A l'aide du logiciel Arc View 3.2, la spatialisation de la prévalence de la lèpre par département et par commune a été réalisée sur 14 années. Pour ce faire, un fond de carte du Bénin au 1/4 000 000 subdivisé en communes a été utilisé. Les taux de prévalence par communes ont été ensuite enregistrés sous forme codifiée dans la table des thèmes de Arc View GIS 3.2 (1 = inférieur à 0,5 cas pour 10 000 habitants; 2 = de 0,5 cas à 1 cas pour 10 000 habitants et 3 = supérieur à 1 cas pour 10 000 habitants). Ces taux enregistrés ont été traduits par des couleurs (rouge dégradé). Ainsi, les cartes ont été coloriées en fonction du taux de prévalence (forte saturation de couleur = fort taux de prévalence).

Results: Le nombre de communes au dessus du seuil de l'élimination de l'OMS est passé de 31 communes en 1995 à 5 communes en 2008. Les communes encore au dessus du seuil de l'élimination en 2008 se trouvent dans les départements de l'Ouémé/Plateau (Pobè : 2,21 cas pour 10 000 habitants et Kétou : 1,33 cas pour 10 000 habitants se situant au niveau du Plateau), du Zou/Collines (Agbangnizoun se situant dans le Zou avec une prévalence de 4,77 cas pour 10 000 habitants) et de l'Atacora/Donga (Boukoumbé : 1,20 cas pour 10 000 habitants et Cobly : 1,04 cas pour 10 000 habitants se situant dans l'Atacora). Il est à signaler que toutes ces communes précitées étaient également au dessus du seuil de l'élimination en 1995.

Conclusion: Grâce à la mise en oeuvre du programme national de lutte antilépreuse au Bénin, d'importants progrès ont été obtenus. malgré les acquis importants de la lutte antilépreuse, il persite des communes au dessus du seuil de l'élimination de la lèpre comme problème de santé publique. Il est necessaire d'intensifier la lutte contre la lèpre dans ces communes ciblées en en vue de consolider les résultats de la lutte antilépreuse au Bénin.

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Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **ENL Reaction 2 and Dermatology**
Presenter: Sunil Dogra

ROLE OF DERMATOLOGISTS IN LEPROSY CONTROL

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Introduction: Leprosy control programs, including multi-drug therapy for leprosy, have undergone significant changes over the last few years. With the process of integration of leprosy into general health services, dermatologists are more responsible for the care of leprosy patients than ever before. The dermatological services will continue to play an important role in diagnosis of the incident and remaining leprosy cases worldwide. The 7th WHO Expert Committee on Leprosy mentions the need for assigning a role to dermatologists for the elimination of leprosy. It stresses the need to include leprosy as a part of the curriculum of dermatology and to encourage dermatologists in ensuring that standard WHO MDT regimens are implemented and new cases are reported. Integration is considered more cost effective and feasible within national resources, thereby ensuring sustainability of leprosy services. Although experiences are diverse, several countries have shown that such integration is feasible and effective. In the changing scenario, when role of allied medical and surgical specialists like neurologists, ophthalmologists, physiotherapists, plastic surgeons, and even pathologists is being increasingly recognized, contributions of dermatologists can not be underestimated. Traditionally dermatologists have been involved in imparting clinical skills and training about leprosy to health care providers. Their role is even more pertinent in current scenario when leprosy is diagnosed based on skin lesions alone. The integration of leprosy into mainstream services offers opportunities for developing improved links between dermatologists and central leprosy clinics and regional health authorities. Sufficient interest, skills and experience should be generated and maintained among general health services staff to deal adequately with varied aspects of leprosy. Leprosy programmes could become more effective by involving dermatologists in training for examination of skin lesions, impart knowledge on leprosy mimicking common dermatoses, neurological assessment, recognition of earliest signs of reaction, providing monofilament evaluation, physiotherapy, and footwear for patients with established nerve damage. Frequent dermatological training workshops will be essential to ensure that leprosy is not taken as a 'forgotten disease' and to sustain the knowledge and skills for early diagnosis and treatment of leprosy till disease is pushed to its last verge from the world.

Methods: not applicable

Results: not applicable

Conclusion: not applicable

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Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **ENL Reaction 2 and Dermatology**
Presenter: Abraham Selvasekar

WIDENING THE FOCUS OF AN EXCLUSIVE LEPROSY REFERRAL CENTRE TO INCLUDE GENERAL DERMATOLOGY : A NEW WAY TO IMPROVE LEPROSY CASE DETECTION. EXPERIENCES FROM NEW DELHI, INDIA

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Introduction: Leprosy most often manifests primarily as a skin condition such as a pale anaesthetic patch, with patients reporting to a dermatologist for treatment. It is a great mimicker, often resembling psoriasis and fungal infection. At times it is a challenge even for an experienced dermatologist to make a diagnosis.
The Leprosy Mission Community Hospital New Delhi, established in the year 1984, started as a small urban Multi Drug Therapy drug delivery point; later grew into exclusive leprosy referral hospital. Now in response to the needs of the community surrounding it, it is transformed into a community hospital attracting general dermatological cases

Methods: This is an observational, retrospective study in which consolidated data from all patients reporting for dermatological conditions during 3 years from 2010 to 2012 were extracted from the Hospital Information System of TLM Community hospital and analysed.
The new cases of leprosy with obvious cardinal signs and those leprosy suspects reporting to the OPD had been meticulously subjected to thorough physical examination. This constituted screening and examination for patches and nerve involvement, slit skin smears, Voluntary Muscle Testing, and Histopathological examination for those without adequate demonstrable cardinal signs. Women counsellors / staff nurses helped to screen female patients when needed.

Results: The total number of patients with dermatological conditions reporting to the hospital during the 3 year period (2010-12) was 82,012. The common dermatological conditions diagnosed were 15,380 (19%) cases of Acne vulgaris; 12, 222 (15%) cases with Vitiligo; 11,484 (14%) with Eczema; 10,515 (13%) with fungal infections; 7,316 (9%) with Psoriasis; 5,800 (7%) with seborrhoeic dermatitis; 4,892 (6%) with Urticaria; 3,247 (4%) with scabies; 3,025 (4%) with Melasma; 2,180 (2.5%) with cellulitis, abscesses & ulcers; 1,955 (2%) with Alopecia; and 1,347 (1.5%) with warts and 2,415 (3%) with Leprosy. In 2012, there was 15% rise in new leprosy cases reported on comparing the 5 year average (2008-12), 19% rise on comparing that with of 2011.

Conclusion: In the post integration era transformation of an exclusive Leprosy referral hospital into community hospital, expanded areas of services which led to increase in detection of new leprosy cases compared to previous years. Many leprosy cases, especially those which were difficult to diagnose or mimicking various dermatological conditions were detected. Quality time is needed to certify somebody free from leprosy; hence it is a task for the health care team to methodically screen and pick leprosy cases from various general skin conditions. Widening the skills of the OPD team (comprising of counsellors, physiotechnicians, doctors, lab technicians, and nurses) to see a variety of skin conditions has helped to sharpen their skills, thereby differentiating and diagnosing leprosy cases more confidently. There is also a significant reduction in stigma as general patients report in large numbers to an erstwhile leprosy hospital.

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Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **ENL Reaction 2 and Dermatology**
Presenter: Saba Lambert

RCT ASSESSING CICLOSPORIN IN ENL REACTION TREATMENT, IN ETHIOPIA

D. Lockwood [1], S. M. Lambert [1, 2,*], P. Nicholls [3], S. D. Nigusse [4], D. Tsegay [4], J. Hussein [5], M. H. Idriss [5], L. K. Yamuah [6] and CiReCT

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Introduction: Erythema Nodosum Leprosum reactions are a significant complication of lepromatous leprosy. High dose and long term immunosuppression with corticosteroids is often required to treat ENL, causing significant morbidity in patients. An alternative treatment is urgently needed. Ciclosporin, a potent immunosuppressant, has been used successfully in a few informal patient series. We assessed Ciclosporin systemically for safety, tolerability and efficacy in ENL.

Methods: A double blind controlled pilot study randomizing patients with new acute or recurrent ENL to treatment either with Ciclosporin/prednisolone combination or Prednisolone alone. Treatment period was 16 weeks and final follow up at 32 weeks. Clinical response through ENL symptoms and signs, nerve function and additional treatments were measured as well as recording adverse events, haematological, renal and hepatic functions and quality of life. Outcome measures were: time to control of ENL; time to relapse of ENL after initial control; numbers and severity of ENL relapse episodes; amount of extra prednisolone needed to control symptoms and frequency and type of adverse events.

Results: The study was completed in January 2013 and data is being analysed. 32 eligible patients were recruited and 28 completed the study successfully. One serious adverse event was the death of patient treated with only prednisolone. Data on the frequency and severity of ENL episodes and adverse events in the two groups will be presented.

Conclusion: Ciclosporin has not been associated significant adverse events and it is a promising safe second line steroid sparing drug in the management of complicated ENL.

Funded by: Homes and Hospitals of St Giles

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Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **ENL Reaction 2 and Dermatology**
Presenter: Stephen Walker

ENLIST – THE FORMATION AND AIMS OF THE ENL INTERNATIONAL STUDY GROUP

S. L. Walker [1,*] and the Erythema Nodosum Leprosum International STudy (ENLIST) Group

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Introduction: Erythema nodosum leprosum (ENL) is accompanied by significant disease-associated and iatrogenic morbidity and mortality. There is increasing recognition of this amongst leprosy researchers but little published data exists to support attempts to draw wider recognition from international agencies, national leprosy programmes and research funding bodies.
The Erythema Nodosum Leprosum International STudy (ENLIST) Group was formed in 2012 following a workshop on ENL. The purpose of the workshop was to bring together leprosy workers interested in improving the understanding of and outcomes in ENL.

Methods: The workshop on ENL took place at in Cebu City, Philippines in early 2012. It was organised by the American Leprosy Missions, the Leonard Wood Memorial Center for Leprosy Research and the Leprosy Group at the London School of Hygiene and Tropical Medicine.
28 scientists and clinicians from a variety of disciplines and organisations attended. Thirteen countries in Asia, the Americas, Australasia, Africa and Europe were represented.
The aims of the workshop were to critically review the published evidence on treatment of ENL, identify research topics which could improve patient outcomes, identify studies needed to improve the understanding of the pathogenesis of ENL, highlight improvements in the design of future clinical trials of treatments for ENL and to develop an ENL research network.

Results: It was agreed at the workshop that there is a pressing need to identify affordable and effective treatments of ENL to improve outcomes for patients who only have access to prednisolone or in whom thalidomide is contraindicated. Thalidomide is an effective drug in managing many aspects of ENL but is not widely available in many leprosy endemic countries due to teratogenicity. The effectiveness of thalidomide in the management of ENL associated neuritis is unclear and it may even cause peripheral neuropathy. Thalidomide has other adverse effects (particularly in the doses required in the initial management of ENL) and consequently some patients are unable to take it.

A better understanding of the natural history of ENL is needed in order to assess treatments and determine prognosis for patients. Studies are required to improve understanding of ENL pathogenesis, to identify predictors of ENL and facilitate ENL monitoring.
The group agreed to collect prospective data on the clinical features of ENL. The objectives of this exercise are to describe the clinical features and natural history of ENL, determine current management practices and features of severity.

Conclusion: The Erythema Nodosum Leprosum International STudy (ENLIST) Group aims to improve the understanding of the mechanisms which cause erythema nodosum leprosum (ENL), improve the evidence to guide treatment decisions of individuals with ENL and improve access to effective treatments.
The members of the ENLIST Group are seeking funding for collaborative ENL-related research but despite the fact that no funding has yet been secured the initial data collection project to prospectively describe the clinical features of ENL has started in Brazil, Ethiopia, India, Nepal, the Philippines and the UK thanks to the enthusiasm of the members of the ENLIST Group and the participation of the patients at the various centres.
We welcome interest from leprosy researchers wishing to find out more about the ENLIST Group.

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Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **ENL Reaction 2 and Dermatology**
Presenter: Irmadita Citrashanty

SERUM TNF-A AND CORTISOL IN VARYING SEVERITY SCALE OF ERYTHEMA NODOSUM LEPROSUM TREATED WITH CORTICOSTEROID

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Introduction: Nowadays leprosy remain as a problematic issue in Indonesia. New case findings are dominated by multibacillary (MB). Nevertheless, MB patients tend to develop reaction before, within or mostly after treated with Multi Drug Therapy (MDT). In borderline leprosy (BL) and lepromatous leprosy (LL) type, type 2 reaction or Erythema Nodosum Leprosum (ENL) commonly occur. The characteristic of ENL is the high secretion of pro inflammatory cytokines TNF-α, IL-1, IL-6, IL-8, IL-10, and also supported by the production of Th-2 cytokines IL-4 and IL-5. Previous studies have shown that the increasing of TNF-α is proportionate to its reaction severity, thus TNF-α is stated as a sero-marker of ENL. TNF-α is also mentioned as a primary cytokine which has a pleitropic effect, so that it can induce the release of many other cytokines. The secretion of *adenocorticotropin hormone* (ACTH) is habitually increased due to the release of inflammatory cytokines, thus ACTH will induce the release of adrenal glucocorticoid as a negative feed back mechanism of action. Regardless this theory, if this cytokines stimulus occur in high level and chronically exposing, adrenal cortex will suffer from exhaustion so that it is resistant to further stimulus and will decrease the serum cortisol. Corticosteroid is commonly admitted to treat medium to severe ENL, since anti TNF-α is strictly prohibited in Indonesia. Highly problematic issue in treating ENL with corticosteroid is due to its side effects and recurrence. It is mentioned that cortisol less than 10 µg/dL is a state of adrenal insufficiency, so that exogenous corticosteroid should be applied. Objective of this study is to measure serum TNF-α and cortisol, based on the varying severity scale of ENL which is determined with scoring system of Reaction Severity Scale (RSA).

Methods: Twenty-one MB patients with ENL suffer from deterioration during the tapering off of corticosteroid were included in this study. These patients did not suffer from diabetes, tuberculosis nor other chronic infection. Subject were also not pregnant and not consuming hormonal therapy. All the subjects were taken blood samples on 8-9 am for the measurement of serum TNF-α and cortisol. They were also clinically examined to determine the reaction severity, using RSA.

Results: Most of subjects in this study suffered from ENL with severe severity scale, which is 9 (42,9%) from 21 patients. Mean TNF-α in mild ENL severity scale is 3,033 (SD 0,3) ρg/mL, in moderate ENL severity scale is 3,658 (SD 0,5) ρg/mL, and in severe ENL severity scale is 6,133 (SD 1,3) ρg/mL. Mean serum cortisol in mild ENL severity scale is 3,35 (SD 4,3) µg/dL, in moderate ENL severity scale is 11,75 (SD 7,0) µg/dL, and in severe ENL severity scale is 9,32 (SD 5,2) µg/dL. Mean serum cortisol in normal range of serum TNF-α (0,550 – 2,816 ρg/mL) is 1,25 µg/dL, in high level of TNF-α (> 2,816 – 5,90 ρg/mL) is 7,14 (SD 6,0) µg/dL, and in very high level of TNF-α (≥ 6,0) is 12,15 (SD 4,9) µg/dL.

Conclusion: These findings suggested that ENL severity scale tends to increase concordance to the escalating of serum TNF-α. Cortisol level also increased with the escalating of serum TNF-α. ENL patients in this study tend to have a low serum cortisol which lead to a condition of adrenal insufficiency. Adrenal insufficiency in ENL patients treated with corticosteroid might occur due to chronic exposure of pro inflammatory cytokines and long term of exogenous corticosteroid. Further research is required to confirm this phenomenon.

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Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **ENL Reaction 2 and Dermatology**
Presenter: Armi Maghanoy

A RANDOMIZED, DOUBLE-BLIND, PLACEBO CONTROLLED PROSPECTIVE TRIAL ON THE EFFECT OF EXTENDED CLOFAZIMINE ON ENL IN MB LEPROSY- AN INTERIM REPORT

A. A. Maghanoy [1,*], M. F. Balagon [1], P. Saunderson [1] and American Leprosy Mission

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Introduction: Since 1998, the recommended treatment duration of WHO-Multidrug therapy (MDT) for MB leprosy has been reduced to 12 months. Since then, an increasing occurrence of erythema nodosum leprosum (ENL) among patients with high bacteriologic index (BI) has been noted. However, no scientifically designed trial has been conducted to support this observation. We hypothesize that this observation could be due to the shortened coverage of clofazimine which is believed to have an anti-inflammatory effect suppressing ENL.
This study was designed to evaluate the effect of an additional period of Clofazimine after 12 months of MDT, on the occurrence and severity of ENL in MB patients.

Methods: With the approval of an LWM Ethical Regulatory Committee, newly diagnosed, high BI (> 4+) patients who consented to the study were recruited. Patients were randomly allocated to two drug regimens; Regimen A consisted of One- Year MDT +Clofazimine 100mg daily for 12 months; Regimen B consisted of One-Year MDT + placebo daily for 12 months. During and after treatment, the occurrence and severity of ENL was carefully monitored. The total observation period was 2 years from MDT completion.
Mild ENL was considered if there were less than 20 papulonodules without systemic signs and symptoms; moderate ENL was considered if there were more than 20 papulonodules and/or constitutional symptoms, joint pains, edema, nerve involvement, ulceration,etc. Severe ENL was considered if there was a prolonged (> 20 weeks) or recurrent episode of moderate ENL.
For this interim report, to maintain blinding, a clinical monitor not directly involved in patient evaluation will provide an updated, statistically analyzed data in accordance with treatment regimens patients are assigned.

Results: A total of 82 LL patients were recruited. However, because the study is still in progress, only the first 40 recruits who completed the extended regimen will be included in the discussion. Of the 40 cases, Regimen A enrolled 20 patients, mean ABI is 4.6+; 7 (35%) experienced ENL with 4 (57 %) having the more severe type; total prednisone intake for all ENL cases was 23.2 g with a mean of 3.31g (range: 0.21 -7.18 g) Regimen B enrolled 20 patients, mean ABI is 4.59 + ; 7 (35 %) experienced ENL with 5 (71%) having the more severe type, total prednisone intake for all cases was 29.73g with a mean of 4.25g (range:0.5-8.49g). Thus far, no significant adverse events related to drug intake were noted.
The rest of the patients will complete the regimen over the next few months so that more data (about 70 cases) will then be available for the congress presentation.

Conclusion: Although the study is still in progress, early findings suggest that an extended period of clofazimine does not necessarily prevent the occurrence of ENL but may reduce ENL severity and steroid requirement in a relatively small number of high risk patients. As more data are collected, further analysis is required to confirm this tentative finding.

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Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **History of Leprosy 2**
Presenter: Ms. Patricia Angarita

THE HISTORY OF LEPROSY IN COLOMBIA AND THE FAMILY'S PERCEPTION OF ITS STIGMA

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[1]IDEA, [2]Corso-Hansen, Agua de Dios, Colombia

Introduction: In Colombia, leprosy has existed for the past 500 years. At the beginning of the 20th century, my grandmothers and my mother were confined to the leprosaria at Contratacion and Agua de Dios. They were directly affected by the disease and separated from their families, isolated from society and forced to live in a place very similar to a concentration camp. This inhumane condition left our family with deep emotional scars difficult to erase. Other members of my family such as uncles and cousins also developed the illness. I am the third of five children and was born in Agua de Dios.

Methods: As the history of leprosy in the world is recorded, it is very important for the children of people who have had leprosy to know and understand this history and participate in its interpretation. For this reason, I have researched this history, am involved with the Museum at Agua de Dios and have also conducted oral history with my mother.

Results: The first outbreak of leprosy started in Cartagena, the port of entry for all conquistadors and slaves. Between the years 1610 and 1640, the "San Lazaro Hospital" was built and became the first leprosarium in Latin America. By 1791, people affected by the illness were isolated from society and forced to be transferred to the island of "Tierra Bomba" at a place called "Cano del Loro". As time went by, there were outbreaks of the illness in different regions of the country, so in 1833 the Colombian government mandated the reorganization of the leprosarium. By this time, leprosy began to evolve as a very serious public health problem. People began to openly reject persons with the disease and they were cruelly persecuted. As a result, the Government passed a decree in September, 1861, which ordered the creation of the leprosarium called "Lazareto de Contratacion" in the department of Santander. With the decree of Law 6 of 1864, the "Leprosarium of Agua de Dios" in the department of Cundinarmarca was created. In parallel with this administrative process, the Government bought a land site named "Agua De Dios e Ibanez", title deed No. 114 of January 22, 1867. Therefore, Colombia ended up with three leprosaria which saved the country from economic and social chaos resulting from fear of contagion.
In September, 1950, the Government ordered the transfer of all of the residents of "Cano del Loro" to "Agua de Dios" and later on "Cano del Loro" was bombarded for five consecutive days by the government air forces to make sure it was totally wiped out. On December 25, 1961, Law 148 ordered the establishment of the municipalities of Agua de Dios and Contratacion. After a long struggle by people affected by leprosy to recover their social and civil rights, this decree by the Government finally put an end to the leprosaria's condition of being a place of banishment. Agua de Dios has been home to farmers, craftsmen, writers, journalists, musicians, painters, all of whom have left their cultural legacy in Agua de Dios.

Conclusion: Today, Agua de Dios is an oasis of peacefulness and tranquility. It is a free community of friendly people, cheerful and proud who have managed to endure all types of injustices. They have overcome discrimination, sadness and confinement due to the fear of contagion, the ignorance of society and mistakes made by medical scientists. Living with my mother and the community of Agua de Dios has offered me the opportunity to understand the importance of knowing our history, accepting it, and amending our errors in order to be able to ensure a better future.

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Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **History of Leprosy 2**
Presenter: Anatoly Jushchenko

ON HISTORY OF THE DEVELOPMENT OF ANTICONTAGIONISM IN LEPROSY IN RUSSIA

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Introduction: Recent years are marked with great attention to the questions of history of leprosy (ILA Global Project on the History of Leprosy), including the development of opposition between contagionists and anticontagionists in leprosy in different countries in the XIXth century (S.S.Pandya, 1998 and others). This investigation is aimed at addition to historical knowledge and understanding about leprosy of Russian physicians about leprosy dating from the XIX century.

Methods: Study of publications and archive documents on leprosy dating from the XVIIIth and XIXth centuries.

Results: Long among inhabitants of leprosy endemic regions of Russia, including Astrakhan, the Northern Caucasus and some areas of Siberia (Yakutia) there have been notion that leprosy is a contagious disease, that's why small houses (cabins) were built for patients in order to isolate them from healthy household members. But among practical doctors of the XVIII-XIX centuries in Russia, as in other countries, there were quite a number of supporters of anticontagionism of leprosy who considered that leprosy was a hereditary disease or some response of organism to unfavorable environmental factors. In 1841, six years before the appearance of widely known works by D.C.Danielssen and C.W.Boeck (1847,Norway), in Moscow a small (on 136 pages) monograph was issued in Russian by Doctor of Medicine G.Plakhov (1810-1842) under the title "On tuberosa prokaza (Elephantiasis graecorum", in which the author, based on clinical and epidemiological studies of 27 patients and 7 autopsies, came to a conclusion that leprosy was not contagious and, hence, isolation of leprosy patients was not necessary. A.Hansen's description of leprosy bacillus (1874) was for the first time discussed in Russia at the session of the Society of practical doctors in Santé-Petersburg in March of 1881 after the publication of Hansen' s article in "Virchow Archive" (1880). A speaker, Doctor of Medicine D.Shulgowsky supported the infectious nature of leprosy. He expounded Hansen's work and then presented the results of his own investigations confirming Hansen's data. Among those who spoke at the session the supporters of the hereditary nature of leprosy predominated. In the last quarter of the XIXth century when contagiousness of leprosy was cast a light in special literature and mass media discussions in the connection with the results of the activity of special commissions of English doctors in India (1862-1891) and with discussion of this problem in French Academy of Sciences (1885-1887), in Russia a "great dispute" between contagionists led by a known infectionist and pathoanatomist Professor G.N.Munkh (1836-1896) and anticontagionists headed by the founder of dermatological school in Russia Professor A.G.Polotebnov (1838-1907). Besides some articles of both authors published in scientific medical journals, in 1890 Prof. A.G.Polotebnov issued a book entitled "Is leprosy infectious?", and Prof G.N.Munkh criticized it in his work under the same title (1891).That dispute continued after the 1st International Leprosy Congress (Berlin, 1897). So, in 1902 there appeared a book by Prof. A.G.Polotebnov "Are there any reasons to consider leprosy as an infection?".

Conclusion: In order to add more to our knowledge about history of leprology in Russia it is necessary to further study of documents (publications and archive materials) dating from the XVII-XIXth centuries.

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Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **History of Leprosy 2**
Presenter: Ms Anwei Law

NEW PERSPECTIVES ON KALAUPAPA'S HISTORY AS REFLECTED IN HUNDREDS OF LETTERS, PETITIONS AND NEWSPAPER ARTICLES TRANSLATED FROM HAWAIIAN

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Introduction: Between 1866 and 1969, an estimated 8,000 individuals -- at least 90 percent of whom were Native Hawaiians -- were sent to Molokai's remote Makanalua peninsula, commonly known as Kalaupapa, because they were believed to have leprosy. The history of Kalaupapa has been told and re-told hundreds of times, however traditional histories have been based exclusively on English-language sources. The people sent to Kalaupapa have often been described as "lawless and immoral" and the passive recipients of charity rather than important contributors to this history. The overall history has been primarily characterized as one of rejection and shame.

Methods: More than 350 letters and petitions written in the 19th century were translated from Hawaiian to English. Most of the original documents are located in the Hawai'i State Archives in Honolulu. These include letters to the Board of Health from the earliest residents of Kalaupapa, some of which are from the first group of 12 individuals sent there on January 6, 1866. Also translated were petitions to the Hawaiian Legislature, also located in the Archives. Numerous letters written to the Hawaiian language newspapers can be found on-line and many of these were also translated. Chants, poetry and songs composed by the people of Kalaupapa have also been translated.

Results: Letters and petitions translated from Hawaiian show that the individuals sent to Kalaupapa were from many backgrounds. They were lawyers, teachers, judges, ministers, composers, musicians, and members of the Legislature. They were also mothers, fathers, daughters, sons, grandparents, brothers and sisters. Throughout the translations, there is a consistent theme of love, shown in numerous requests to have family members accompany a relative to Kalaupapa as a kokua (helper). The shame associated with leprosy, so prevalent in Western histories, is not reflected in the 19th century Hawaiian cultural response to this disease. The translations also reveal an expectation of justice on the part of those individuals sent to Kalaupapa. They insisted that since they had been taken from their families, it was the duty of the Board of Health to see that they were properly fed and cared for. Otherwise they should be returned home to be cared for by those who loved them. Their writings showed that they established a church within the first six months of the settlement's existence and created a community structure where they sought to assist those whose despair at being taken from home and family could lead to behavior that hurt themselves and others. Poetry, musical compositions, letters to Queen Liliuokalani and signatures on the Petition Against Annexation by the United States also reveal that being sent to Kalaupapa did not mean that individuals gave up their support of their Queen or their interest in preserving the Hawaiian Kingdom.

Conclusion: Translation of Hawaiian language sources adds a completely different perspective to the history of Kalaupapa. They do not reflect shame but rather the belief that great love was always more important than fear. The Hawaiian language sources also reveal that the people sent to Kalaupapa were unwilling to simply accept the loss of their families, homes, and citizenship. They sought justice in a situation they felt to be unjust. They left a powerful testimony of their lives in the form of letters, petitions, music, memoirs, and oral history interviews and, in so doing, the people of Kalaupapa have ensured that they will be accorded their rightful place in their own history.

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Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **History of Leprosy 2**
Presenter: Kathleen Vongsathorn

UNTANGLING LEPROSY: UGANDANS, BRITONS, AND SHIFTING ATTITUDES TOWARDS LEPROSY IN TWENTIETH-CENTURY UGANDA

K. Vongsathorn [1,*]

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Introduction: Throughout the course of Christian history, leprosy has been considered as a disease apart from all diseases, bound in a long tradition of myth and stigmatisation. For the last several decades, scholars have offered various explanations as to why leprosy has inspired a fear that is out of proportion with its low rates of morbidity and lower rates of mortality.

Methods: In this paper, I will draw on my doctoral research, which examined the role of missionaries, the colonial government, and leprosy patients in the formation of leprosy settlements in colonial Uganda, to analyse the motivations for the fear and acceptance of leprosy among the Bakiga of southwest Uganda in the mid-twentieth century; to contradict the popular myth that the stigmatisation of leprosy patients was universal; and to offer a culturally specific examination of the factors that led to a growing fear of leprosy in Uganda. Further, I will examine the ways that the preconceptions that British missionaries had about leprosy, and the way that they applied those preconceptions to the treatment of leprosy in Uganda, changed the way that Ugandans thought about leprosy, and the way that leprosy patients perceived their own identity.

Results: Before contact with Christian missionaries, the Bakiga accepted leprosy sufferers as victims of vengeful ancestral spirits, except in some cases of extreme physical disability. It was only when British, Anglican missionaries from the Church Missionary Society began treating leprosy in Uganda in the 1920s, that fear of the contagion of leprosy and the isolation of its sufferers grew among the Bakiga. When these missionaries arrived in Uganda, they carried with them mythical ideas about the ostracism and isolation levelled upon 'lepers' in the Biblical and medieval times. Presuming that Ugandan leprosy sufferers endured the same trials as past 'lepers' were supposed to have done, mission doctors and nurses attempted to save them, and thus travelled around southwest Uganda to seek out leprosy sufferers, and brought them to a single, geographically isolated island settlement.

Conclusion: However, instead of decreasing the emotional suffering of Bakiga leprosy patients, missionary actions unconsciously led to an increase in the stigma and isolation of leprosy victims. This, in combination with the role that the missionaries expected of their leprosy patients, as 'civilised' African 'lepers', whose joy in Christianity outweighed the physical suffering that they endured, meant that sufferers of leprosy in Bukiga had to negotiate a new identity for themselves, which drew not only on their own heritage, but also a Biblical and medieval European heritage.

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Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **History of Leprosy 2**
Presenter: William McCoy

WE ARE THROWN AWAY: THE LANGUAGE OF LEPROSY AND THE FOUNDING OF SWAZILAND'S NCABANENI LEPROSY SETTLEMENT

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Introduction: The Ncabaneni leprosy settlement in the small British colony of Swaziland existed only for a short period of time between 1934 and 1948; indeed, it was never meant to be a formal part of the strategy of the British colonial government for dealing with leprosy. But the story of its founding, and particularly the role of Madolwane Maziya, a Swazi woman suffering from leprosy, reveals the ways in which Swazi leprosy patients advocated for themselves and refused to be defined solely by the stigmas and stereotypes of Western outsiders.

Methods: This paper employs historical methodologies of archival research, complemented by oral testimony, collected during a 7 month field research visit to Swaziland in 2010. It leans most heavily on a collection of letters written over a two year period between Madolwane Maziya, a Swazi leprosy patient living in South Africa's Westfort Leprosy Hospital, and various officers of Swaziland's colonial government. These letters and many of the other materials in the paper are housed in the Swaziland National Archives, but they are also supplemented by additional archival materials housed at Swaziland's Raleigh Fitkin Memorial Hospital and mission archives in the United States, as well as oral interviews conducted in Swaziland and the United States. Its theoretical framework is constructed along the lines of models employed by social historians and in microhistory, in that it derives larger conclusions and themes from the story of one particular incident centered around the lives of ordinary people.

Results: The paper argues that it was precisely the persuasive letter writing campaign of Madolwane Maziya and her fellow Swazi leprosy patients at Westfort that compelled the colonial government in Swaziland to respond to their needs by creating the Ncabaneni settlement. Maziya did so by offering point by point rebuttals of arguments made by the colonial government protesting their inability to aid these patients, arguments that were clearly rooted in erroneous Western stigmas about leprosy patients as debilitated victims of their disease and serious dangers to public health.

Conclusion: Contrasting Maziya's language about leprosy with that of colonial officials as well as Christian missionaries living in Swaziland at the time demonstrates the reality that her lived experience of the illness gave her knowledge of her condition that was at least the equivalent of what the best scientific assessments of the time period could offer. The story of Ncabaneni illustrates the agency of leprosy patients in advocating for themselves as human beings who can not be defined only by a medical condition.

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Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **History of Leprosy 2**
Presenter: Charlotte Roberts

DISPELLING MYTHS ABOUT THE GLOBAL HISTORY OF LEPROSY: BIOARCHAEOLOGICAL PERSPECTIVES ON THE TREATMENT OF PEOPLE WITH LEPROSY BY PAST COMMUNITIES

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Introduction: The evidence for leprosy was studied in human remains from archaeological sites for much of the 20th century, and continues to be of interest to bioarchaeologists. Vilhelm Møller-Christensen's initial research defined the diagnostic criteria used for skeletal remains which have been used, with some refinements, since his ground breaking work on the skeletons from the late medieval leprosy hospital cemetery at Naestved in Denmark. This presentation presents a global view on the evidence for leprosy in skeletal remains and considers the evidence in cultural context to understand how those affected were viewed socially, and particularly at death.

Methods: Data on skeletons diagnosed with leprosy using established criteria (Møller-Christensen, Andersen and Manchester) in published journal papers, monographs, and book chapters, and in unpublished outlets, were collated. Equally important was the collection of archaeological information about the context of the burial, and whether the person with leprosy had been buried any differently to the norm for the community in which he or she lived. Data collected included position in the cemetery, the method of burial, and whether grave goods were provided. Both sets of data were used for analysis and interpretation.

Results: Skeletal evidence for leprosy was recorded in three of the seven continents of the world (Africa, Asia, and Europe), and was particularly common in Europe where most countries had evidence, particularly Denmark, Hungary and the UK. The earliest evidence is in the 3rd millennium BC (India, Scotland, Turkey), but most data falls into the late medieval period of Europe (12th-16th century AD). The majority of the burials were excavated from non-leprosarium contexts, and often in 'normal' parish cemeteries. Some burials were set apart from the rest of the cemetery by the inclusion of grave goods or elaborate grave 'furniture'. Few burials were marginalised.

Conclusion: Leprosy has been a part of people's lives for several thousand years. The bioarchaeological and archaeological data support the idea that people with leprosy in the past were not ostracized and marginalised from their communities, in death, and likely in life. This is contrary to a continuing popular belief, stemming from apparent biblical references, in many academic and public circles, and supports recent research by historians such as Rawcliffe.

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Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **Molecular Biology 2**
Presenter: Philip Suffys

FIRST INSIGHTS INTO MOLECULAR EPIDEMIOLOGY OF LEPROSY IN FORTALEZA, NORTHEAST BRAZIL

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Libania, State Health Office, [4]Department of Pathology, Federal University of Ceara, [5]Department of Pathology, State Health Office, Fortaleza, Brazil, [6]Department of Microbiology, Immunology and Pathology, Colorado State University, Fort Collins, [7]Department of Global Community Health and Behavioral Sciences, Tulane School of Public Health, New Orleans, United States, [8]Department of Community Health, Federal University of Ceara, Fortaleza, Brazil

Introduction: In the last decade, new tools have been developed for genotyping *Mycobacterium leprae*, that add to definition to the lineage level (SNPs) and to the strain level (Tandem Repeats). This kind of analysis allows both evaluation of geographic distribution of major genetic groups and aids to track transmission routes, re-infection and drug resistance.

Methods: We performed a case-control study for better understanding of the clinical and epidemiological characteristics of leprosy in the city of Fortaleza, the capital of Ceara, a state in the Northeast region of Brazil with a high incidence of leprosy. A prospective study was designed with a detailed epidemiologic questionnaire and georeference from all new cases reported at the Reference Center on Dermatology D. Libania in Fortaleza, and nasal swab and a skin biopsy was collected for genotyping of *M. leprae*. At Fiocruz, Rio de Janeiro, automated MLVA of eleven microsatellites including AT17, GGT5, GTA9, AC8b, AC8a, AT15, AC9, TTC21, TA18 and TA10 and six minisatellites 6-7, 27-5, 23-3, 23-1, 18-8 and 12-5.

Results: During a one year period, 419 leprosy cases and 231 controls were included evaluated and we received biopsy samples from 160 MB cases of which 159 gave complete genotypes. When using the highest stringency for definition of clusters (all 16 markers identical copy numbers), we observed three clusters, being three cases of two patients, rendering an overall cluster level of 3.8%. However, comparison of the genotypes of *M. leprae* isolates from biopsy samples with those from nasal swabs demonstrated that four of the loci (AT17, AT15, TA18 and TTC21) gave different copy number in a considerable number of cases. We therefore lowered stringency of definition of cluster by excluding these four markers and under such conditions, we observed 96 cases in cluster (60.4%), including two large ones with respectively 23 and 19 isolates, one of six, two of five, one of four, six of three and eight of two isolates. After performing a X2 analysis of clinical/epidemiologic data of cases versus having clustered or non-clustered isolates, we observed a tendency of for clustered cases having larger time periods between diagnosis and notification and, surprisingly, an inverse relation with having lived in the same house. In addition, a significant association ($p < 0.05$) was observed between working together or being BAAR-positive with clustering.

Conclusion: This is the first molecular epidemiology study with such a high coverage of new cases being investigated by genotyping of *M. leprae* with detailed epidemiologic and clinical data available for definition of risk factors for transmission of disease in Fortaleza. We present preliminary data on association of patient characteristics and clustered parasite genotype and the strong influence of stringency of cluster definition on the number of cases with identical genotypes. The presence of two groups of about 20 cases with identical cases is highly suggestive of some two dominating *M. leprae* strains in Fortaleza but more analysis is needed to define better the relation between genotype and strain definition. We are currently evaluating the possible relations between cases in individual clusters and analyzing localization of the genotypes within the city using Google maps.

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Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **Molecular Biology 2**
Presenter: Pushpendra Singh

WHOLE GENOME SEQUENCING OF MYCOBACTERIUM LEPRAE STRAINS DIRECTLY FROM LEPROSY SKIN BIOPSIES

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Introduction: Comparative genomics of *Mycobacterium leprae* strains from different regions is a valuable tool in refining our understanding of phylogeography and evolution of leprosy. Such an approach at the genome level is much more informative in comparison to currently practiced PCR based approaches that provide limited information but require significant amount of *M. leprae* genomic DNA. As leprosy bacillus still remains uncultivated in-vitro, purified *M. leprae* DNA is a very scarce resource in itself. Recent advances in the sample preparation methods for the whole genome sequencing has made it possible to utilize nanogram amounts of DNA for sequencing microbial genomes. However, target DNA needs to be sufficiently free of the contaminating host DNA. With this as the key objective of our present study, an array based enrichment of *M. leprae* DNA was followed by whole genome re-sequencing directly from skin biopsies.

Methods: A DNA capture array with 60 bp oligonucleotide probes spanning the entire *M. leprae* TN reference genome was designed with a tiling density of 4 bases. We selected 12 worldwide strains for DNA capture representing the SNP-genotypes of *M. leprae* that are so far not represented in whole-genome comparison studies. The indexed libraries were prepared using DNA that was directly extracted from skin biopsies of leprosy patients. After hybridization capture on the array, the enriched libraries were sequenced using Illumina sequencing platform.

Results: Upon aligning the reads onto the *M. leprae* TN reference genome, 6 strains could yield over 15X average coverage of over 85% of the TN genome. This comparison revealed fewer than 700 SNPs with no structural variations or big insertions/deletions. This further confirms the exceptional stability of *M. leprae* genome, making it ideal candidate for re-sequencing projects and mapping. Genome-typing of *M. leprae* strains in present study also revealed three additional pseudogenes due to premature stop codons mediated by SNPs. Two strains also exhibited Dapsone resistance mutation (Thr53Ile) in their *folP1* gene.

Conclusion: This approach provided comprehensive information about phylogeny and evolutionary dynamics of *M. leprae* strains. Greater representation of diverse strains for genome-wide comparison, as carried out in the present study, would further help in refining the existing molecular epidemiological assays. Successful use of the array capture approach directly on the clinical specimens suggests that wherever feasible, the existing PCR-based genotyping and molecular drug susceptibility assays should be replaced by genome-typing, as the later approach provides deeper insights into the biology and evolution of *M. leprae*.

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Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **Molecular Biology 2**
Presenter: Paula Mello

A COMMON SNP IN PRE-MIR-146A (RS2910164 G>C) IS GENETICALLY AND FUNCTIONALLY ASSOCIATED WITH LEPROSY: INSIGHT INTO TNF PRODUCTION

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Introduction: MicroRNAs (miRNA) are small RNAs that control gene expression at post-translational level and their differential pattern of expression has been described as novel regulators of innate and adaptive immune response. Recently, some miRNAs have been analyzed in leprosy skin biopsies and miR21 and miR146 were differentially expressed in lepromatous and tuberculoid patients. A SNP has been described in miR-146a as associated with lupus and cancer. The aims of this study were 1) to test the genetic association of miR-146a SNP using a case-control and a family-based study; and then 2) to understand how this risk variant is influencing miR146 and TNF gene expression.

Methods: We performed a genetic association study of miRSNP-146a testing 1095 individuals in a case control and 426 Brazilian individuals in a transmission desiquilibrium test (TDT). Differentiated THP-1 and primary Schwann cells were infected with live or irradiated *M. leprae* (MOI 10:1 and 100:1) for up to 48h. The miR-146a expression levels from cells and clinical samples (nerve and skin specimens) were determined by stem-loop RT-qPCR. Peripheral blood mononuclear cells (PBMC) were isolated and stimulated for 24h with BCG Moreau strain (MOI 10:1), TNF secretion was evaluated by ELISA.

Results: The case-control study showed that miR-146a C allele carriers have a striking susceptibility effect to leprosy *per se* (GC OR= 1.9, $p=1.10^{e-06}$; CC OR= 2.95, $p= 7.24^{e-06}$) and an allele-dose effect ($\chi^2= 34.64$, $p= 3.011^{e-08}$). The TDT indicated that C allele was more transmitted to affected offspring than G allele (p=0.003). Then, miR-146a expression was more elevated in skin paucibacillary (PB) biopsies than multibacillary ones (p= 0.04). Also, stratification by the risk allele carriers evidenced that the C allele carriers produce higher levels of mature miR-146a (p=0.009) irrespective of the clinical form. Furthermore, nerve biopsies from pure neural leprosy patients present augmented levels of this miR-146 than biopsy samples from patients exhibiting others neuropathies (p= 0.001). The analysis of miR-146a gene expression according to host genotype confirmed the previously observation that C-allele carriers produce high levels of miR-146a (p=0.04). Live, but not irradiated, *M. leprae* (MOI 100:1), induces miR-146a expression only in THP-1 cells at 24 and 48 hours post infection ($p< 0.05$). Also, stratification according C-allele carriers among *M.leprae*-infected peripheral blood mononuclear cells from healthy individuals secreted lower TNF levels subjects carrying C-allele when compared with GG genotypes (p= 0.04).

Conclusion: The case-control and TDT family-based study confirmed in the same direction the miRSNP-146a C-allele risk association with leprosy. Our functional results suggested a state of lower activation status of the immune response for carriers of this allele, which is consistent with the attributed miR-146 in auto-immune diseases where an uncontrolled auto-immunity has been reported in miR-146 knockout mice. In fact, a genotype-phenotype correlation indicated that C-allele carriers produced higher levels of miR-146. Finally, we can conclude that individuals with the risk variant produce less TNF levels, it means that the higher miR-146 expression the lowest TNF production, providing hard evidences that miR-146 definitely plays pivotal role in leprosy outcome.

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Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **Molecular Biology 2**
Presenter: Ravindra Turankar

REVERSE TRANSCRIPTION-PCR BASED DETECTION OF VIABLE M. LEPRAE FROM ENVIRONMENTAL SAMPLES IN THE INHABITANT AREAS OF ACTIVE LEPROSY CASES: A CROSS SECTIONAL STUDY FROM ENDEMIC POCKETS OF PURULIA, WEST BENGAL

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Introduction: Leprosy is chronic infectious disease caused by *Mycobacterium leprae*. *M. leprae* being an obligate intracellular parasite cannot be cultured in any artificial culture media but it has been shown to reside in wild armadillos in North America. Many studies suggested that *M.leprae* could be found in the environment and may have a role in continuing transmission of the disease. The exact role of the environment in the transmission dynamics is still speculative. The present study was undertaken to find out the presence of viable *M. leprae* around patients' environment like soil and water which may be an important factor that may be attributed to the transmission of the disease.

Methods: Technique such as reverse transcription PCR has the potential to detect RNA, which indirectly indicates the viability status of the organism. In order to trace the possible reservoir for transmission of leprosy in a leprosy endemic area of Purulia (West Bengal, India), environmental samples were collected from leprosy patient areas which include 700 soil and 400 water samples and 200 soil sample and 80 water samples from control area, screened for the presence of *M.leprae*. DNA based detection (PCR for *rlep* region of *M.leprae*) which revealed 218 samples from soil and 73 samples from water to be positive from patient areas. RNA was extracted from these positive samples and Reverse Transcriptase -PCR targeting 16S rRNA gene region was performed to detect viable *M.leprae*.

Results: We observed high PCR positivity in soil samples (218 out of 700; 31%) and water samples (73 out of 400; 18.2%). These samples when further screened for viability, it was observed that 106 soil samples (48.6%) and 34 water samples (46.5%) showed presence of 16S rRNA. We further classified the soil samples based on the various inhabitant areas of the active leprosy cases and identified that moist places like bathing places, areas near the drain water and washing places showed significantly higher RT-PCR positivity when compared to that of the drier areas like entrance of the house and sitting places indicating that *M.leprae* may survive better in moist places. Samples from the control area where no active leprosy case resided in the last 5 years revealed 4 (2%) PCR positivity for *rlep* in soil samples and water samples were completely negative.

Conclusion: This study suggests that leprosy patients discharge or shed viable *M.leprae* into their surrounding environment (soil and water) which may act as potential reservoir for *M.leprae* that may play a role in the focal transmission of the disease

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Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **Molecular Biology 2**
Presenter: Ida Maria Dias baptista

LEPROSY IN RONDONÓPOLIS, MATO GROSSO, BRAZIL: SPATIAL, CLINICAL AND ETHNIC CHARACTERISTICS AND MYCOBACTERIUM LEPRAE STRAIN TYPE PROFILES IN A HIGHLY ENDEMIC CITY.

L. R. De Lamano [1], W. Li [2], L. Fachin [1], A. B. Fontes [3], A. F. F. Belone [1], C. Ghidella [4], S. Ura [1], M. Moraes [5], M. Mira [6], M. Virmond [1], P. Brennan [2], P. Suffys [5], V. Vissa [2], I. M. F. Dias-Baptista [1,*]

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Introduction: The municipality of Rondonópolis, in Mato Grosso is highly endemic for leprosy despite the existence of qualified services for diagnosis and monitoring of cases and the implementation of multidrug therapy. To address this paradox, a comprehensive molecular epidemiology study was initiated.

Methods: Structured questionnaires including clinical, residential, demographic, and occupational details and skin samples for diagnosis and laboratory tests were collectedfor 260 patients diagnosed during the period of 2007-2010. Genotypes of *M. leprae* were determined using multiple locus variable number of tandem repeat analysis and SNP typing using DNA extracts from skin biopsies taken before starting treatment. GoogleMaps was used to localize patients.

Results: According to the World Health Organization operational classification, there were 102 paucibacillary and 155 multibacillary patients. The Ridley Jopling classification demonstrated a tendency towards the tuberculoid spectrum [TT (n=102): BT (n=85): BB (n=48) BL (n=12): LL (n=9) I (n=3), no data (n=01)]. The city is primarily urban with 200,000 inhabitants at a density of 47/sq.km. The patients could be assigned to 106 smaller units (villages), with 1·11 per unit. Neighborhoods of high endemicity encompassing adjoining villages could be detected. The self-reported ethnicity was white (n=106), Mestizo (n=140), Black (n=13) and Indigenous (n=01). There is no obvious spatial clustering of these ethnic groups. When considering the clinical presentations, there are more TT cases amongst the mestizo and BB cases amongst the white groups. Females tend to present towards the TT spectrum, while males are of the BT type. Of the 260 biopsy DNA samples analyzed across 17 VNTR loci, for each locus approximately half of the samples yielded allele information. 15 loci were polymorphic (2-23 alleles), while the loci 6-3a and 21-3 were not. The SNP type 3 is predominant amongst the subset that was typed. Uncomplete genotypes is attributed to the high proportion of tuberculoid cases but a high degree of genotype variability was observed. Nonetheless, we observed a particular population structure composed of some subgroups.

Conclusion: This is the first largest multi-year study of leprosy patients with well-defined geographic, demographic, clinical and *M. leprae* genotype data in Brazil. The bulk of the cases can be assigned to neighborhoods with the narrowest streets located in the west, north, south and east corners. Multiple VNTR strain types are found in each of the neighborhoods. Genetic diversity within and among the neighborhoods does not reveal a distinct population structure. Spatial clustering of patients is likely a consequence of socio-economic status. The maintenance of a highly endemic state with a preponderance of tuberculoid cases, alongside microevolution in VNTRs is interesting and presents opportunities for addressing the dynamics of transmission. Are these infections of remote or recent origin, and is there a mixture of local and exogenous strains due to high levels of flux in and out of Rondonópolis from regional economic forces and is there a genotype to phenotype relationship? Further investigations are in progress to formally analyze the bacterial genetic variation when superimposed with the spatial, ethnic, clinical and socio-economic attributes. Funding: DECITMS/CNPq (Grant 576051/2008-0); NIH NO1-AI-25469 and RO1-AI-04719

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Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **Promoting Early Diagnosis**
Presenter: Herman-Joseph Kawuma

PROMOTING THE EARLY DIAGNOSIS OF LEPROSY. INTRODUCING THE SYMPOSIUM

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Introduction: The early diagnosis of leprosy refers to the diagnosis made before the occurrence of consequences (disabilities). Hitherto, the diagnosis of leprosy is based mainly on clinical signs. The eliciting of the signs depends on the clinical skills of the examiner and can be very subjective. The capacity of peripheral health services to deal with diagnosis (and other essential tasks) is one of the key elements of quality leprosy services.
There are cases where diagnostic signs may not be easily elicited in which cases the final decision is based on methods demonstrating the causative organism: bacteriology (the slit skin smear examination), histopathology, immunodiagnostic tests or molecular biology (PCR). Laboratory facilities for skin smear examinations were already identified as one of the weakest link in leprosy control programmes in the pre-MDT era; these and histopathology are hardly used under programme conditions in many endemic countries.
Early diagnosis of leprosy is, at the moment, the most effective way to prevent leprosy related disabilities and to interrupt disease transmission. The symptoms and signs that should prompt suspicion of leprosy have been listed before alongside guidelines on the cardinal signs for diagnosis of leprosy. A higher than average yield of new cases is expected from systematic screening of contacts of known cases particularly in low endemic situations. However, in spite of the availability of this knowledge, analysis of the characteristics of newly detected cases seems to point to a sustained delay in diagnosis in many endemic countries.
This symposium examines the existing and potential tools for promoting early diagnosis of leprosy in the context of declining disease incidence and clinical skills but in which sensitive diagnostic tools are required in order to ensure that all cases that need treatment are diagnosed and cured.

Methods: Review of literature on innovations to improve leprosy diagnosis from clinical, public health/community and basic science perspectives.

Results: Summary of the progress made in the last few years on improving the diagnosis of leprosy will be made. During the symposium on going initiatives will be described. New innovative approaches to promote early diagnosis of leprosy will be presented.

Conclusion: There is need to maintain community awareness of the early signs of leprosy in the leprosy endemic countries. The methodology for awareness raising must be appropriate for the times e.g. using newer communication channels like the social media and exploiting the opportunities provided by community mobilization interventions targeting other health problems. Good quality services *per se* will attract more people with suspect symptoms to go for examination. Measures should be taken to ensure that clinicians in endemic countries continue to keep leprosy on the list of possible diagnoses.

Health systems should have inherent referral mechanisms that permit suspect cases to gain timely access to the level where the diagnosis can be determined. Special emphasis should be placed on the role of dermatologists and dermatology services in sustaining essential clinical skills. The work of basic scientists must be accelerated to develop more sensitive tools to diagnose leprosy infection and disease at peripheral levels; the more peripheral services especially in high burden countries should be made available to collaborate in field-testing of new diagnostic tools.

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Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **Promoting Early Diagnosis**
Presenter: Diana Lockwood

DIAGNOSIS OF LEPROSY IN THE UNITED KINGDOM

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Introduction: Leprosy is an important imported disease and can be difficult to diagnose, especially in a non-endemic setting.

Methods: We reviewed 145 patients treated for leprosy at the Hospital for Tropical Diseases, London, between June 1995 and December 2012, looking at clinical presentation, demographics and referral pathway.

Results: Mean age at diagnosis was 39 years and 72% were male. Patients had migrated to the UK from 31 leprosy-endemic countries, most commonly India (29%), with the Indian Subcontinent (India, Nepal, Sri Lanka, Bangladesh and Pakistan) accounting for 52% of patients. The next most endemic countries were Nigeria (11 patients) and Brazil (nine patients). Seven patients were born in the UK and acquired their leprosy overseas; 4 were of African descent and moved Nigeria or Uganda for between 11 and 26 years. Three were Caucasians who acquired their disease after long stays in Bangladesh, India and Indonesia respectively.
The mean time to onset of symptoms to diagnosis was two years (range one month – 15 years). 42% of patients had a late diagnosis. The commonest reason for delayed diagnosis was misdiagnosis as a granulomatous skin lesion, notably sarcoidosis and lupus.
All types of leprosy were seen with 48% having borderline-tuberculoid (BT) leprosy. Nerve function rates were high, Motor and sensory function in 43% and 51% of patients respectively at diagnosis and 28% of patients had peripheral nerve damage at diagnosis. ENL was seen in 36 patients

Conclusion: Dermatologists, neurologists and rheumatologists should remember leprosy in their differential diagnosis of skin lesions and peripheral neuropathy.

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Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **Promoting Early Diagnosis**
Presenter: Mariana Hacker

LEPROSY IN CHILDREN UNDER 15 YEARS OF AGE: A CHALLENGE FOR LEPROSY CONTROL

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Introduction: Leprosy detection rate in children under 15 years of age is an important indicator of the transmission in the community and the efficiency of control programmes. Defining the differences between children diagnosed from passive and active case detection programmes may provide important information for establishing strategies for timely detection.

Methods: The profile of all new untreated leprosy patients and of contacts under 15 years of age registered at the Souza Araujo Leprosy Outpatient Clinic in Rio de Janeiro during 1987-2010 was evaluated. Children diagnosed under the contact surveillance programme (CSP) were compared to the children referred by other centers or that arrived spontaneously (passive detection -PD). In addition, all of the child contacts of leprosy patients were evaluated to compare the profiles of the healthy (HC) and the leprosy children, clustering by index case. Chi-square test and logistic regression were applied.

Results: Out of the 2777 patients registered during the period, 341 (12.3%) were children under 15 years of age. A total of 128 were diagnosed from the CSP and 159 from PD, of which, only 23.9% had known contact with a leprosy patient. Most of the children 163 (56.8%) were males. The PD children were significantly older (p=0,010) than the CSP children (mean age 8.9±3.79 and 7.8±3.4 years, respectively). Although most of the children were paucibacillary (75.9%), a significantly higher (p=0.032) proportion of PD children (65%) than CSP children (35%) were multibacillary (MB), and had a higher (p=0.004) bacterial index (median=1.92 and 0.75, respectively). An alarming 8.8% of the PD children had already developed grade 2 disability (G2D), while only 1 CSP case (0.9%) diagnosed in 1987 had G2D (p=0,010). A total of 7174 contacts were evaluated in the Clinic during the period, out of which 2345 were children, belonging to 982 index cases (clusters). At first examination, 88 (3.8%) children were diagnosed with leprosy (coprevalent cases – CP). No difference was observed regarding gender (p=0,938), but CP were significantly (p=0,023) older (mean 8.1±3.65 years) than the HC (7.15±4.06 years). The presence of a scar from previous BCG vaccination was significantly (p<0.0001) more frequently found in HC (92%) than in CP (67%). A higher proportion of the CP (93%) than of the HC (71%) were contacts of MB index cases (p<0.001). In addition, the CP index cases had significantly higher (p=0.003) bacterial index. Interestingly, no difference was observed when comparing the frequency of G2D of the index cases between the groups (p=0.656).

Conclusion: Monitoring childhood leprosy is crucial for better control and understanding of the transmission of the disease. Contact surveillance is a primary strategy for early detection of leprosy in children but further interventions should be applied for increasing timely diagnosis in children.

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Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **Promoting Early Diagnosis**
Presenter: Marcos Virmond

"TOUCH YOUR SKIN": A NEW METHOD FOR SUSPECTING LEPROSY

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Introduction: In Brazil, the control of leprosy is still a challenge given the high detection rates in locations in north, north-east andin the mid-west regions of the country. One of the best ways to interrupt the chain of transmission of leprosy is early diagnosis and treatment of disease, which should be seen as priorities. Therefore, the aim of this study was to evaluate the applicability of a new and simple method for suspicion of leprosy by individuals in the population: «Touch Your Skin" (TSP).

Methods: A descriptive, experimental, cross-sectional study was undergone with individuals living in Rondonópolis - MT, with or without dermatological and/or neurological complaints, who attended the Health Centre Jardim Guanabara spontaneously or by appointment. Exclusion criteria included: having a diagnosis of leprosy or have been affected by leprosy, having performed dermatological examinations and/or skin sensitivity and not able to answer the main question "do you feel or have felt numbness in any part of your body"? The TSP method was demonstrated by the researcher and after it was asked each individual to touch his/her skin with the fingers, sliding them gently on each body segment except the scalp and pudendal areas. Then, they were asked to report the term of choice indicate the location of the area (s) of the skin whichthey considered as having some sort of sensory disorder. Individuals, who reported alteration, were classified as TSP positive and, in the absence of any complaint, as TSP negative. The TSP positive individuals underwent examination of sensitivity in no more than three of the referred areas. It was used a set of six nylon monofilament (SW), adopting the international standard for interpreting the results. The test was done by trained health personnel.

Results: Participated in the study 509 (100%) individuals aged 7 to 82 years (mean = 35.8 years), among them, 314 (62%) women and 195 (38%) men. Among those who reported sensory alteration, 80% preferred the term "numbness" to describe the skin sensitivity disorder. Upon examination, 383 (75.25%) individuals were TSP negative and 126 (24.75%) were TSP positive. Among the 126 TSP positive, 83 (16.3%) were also MF positive (4 individuals under 15, 62 aged 15 to 59 years and 17 over 59 years). The results of Semmes Weinstein filaments (SW) test showed cutaneous sensitivity disturbance at the level of 0.2 g in 20 individuals; 2.0 g of 18, 4.0 g of 13, 10.0 g at 11; 300.0 g of 15 and not feeling 300.0 g - 6 subjects.

Conclusion: The "Touch Your Skin" method identified 126 suspected cases of having altered skin sensitivity, among which 66% were confirmed by SW test. Since the alteration in skin sensitivity is an important sign for suspecting leprosy, the TSP method seems to be an innovative resource whose impact should be confirmed by future studies.

O-185

Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **Promoting Early Diagnosis**
Presenter: Patrick Brennan

SAFETY AND EFFICACY ASSESSMENT OF TWO NEW LEPROSY SKIN TEST ANTIGENS IN TARGET POPULATIONS: RANDOMIZED DOUBLE BLIND CLINICAL STUDY

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Nepal, [5]EMMES Corporation, [6]and EMMES Team, Rockville, MD, [7]Division of Microbiology & Infectious Diseases, NIAID, NIH, [8]and NIAID, NIH Team, Bethesda, MD, United States

Introduction: The extent of true leprosy infection will not be revealed until a sensitive and specific test is identified and developed for field use. Detection of leprosy prior to the onset of clinical symptoms would prevent disabilities by earlier implementation of chemotherapy and reduce the number of new cases by intercepting transmission. A phase II clinical trial of the two leprosy skin test antigens, MLSA-LAM and MLCwA, was implemented to assess both the safety and efficacy as early diagnostic tools for leprosy in target populations.

Methods: A randomized double blind phase II, stage C clinical trial was conducted in Kathmandu, Nepal, following a phase II, stage A and B safety study in healthy subjects without known exposure to leprosy. Stage C was divided into two parts to test the high dose (1.0 µg) and low dose (0.1 µg) of each leprosy skin test antigen; Tuberculin PPD (2 TU) served as a control. Each study enrolled 80 participants - 20 borderline lepromatous/lepromatous leprosy patients, 20 borderline tuberculoid/tuberculoid leprosy patients, 20 borderline lepromatous/lepromatous leprosy patient household contacts, and 20 tuberculosis patients. The primary outcome measure for the skin test was delayed type hypersensitivity induration.

Results: Diagnostic test performance of MLSA-LAM and MLCwA at the low dose exhibited high specificity at 100% and 95%, but low sensitivity at 20% and 25% in tuberculoid leprosy patients compared to tuberculosis patients. The positive predictive value was 100% and 83%, while the negative predictive value was 81% and 82%. The high dose of both antigens showed lower specificity (70% and 60%) and sensitivity (10% and 15%). Lepromatous patients were completely anergic to the leprosy antigens, with one exception.

Conclusion: In small scale sample sizes, MLSA-LAM and MLCwA at 1.0 µg and 0.1 µg dosages were found to be safe for human use in target populations. The sensitivity of both antigens was poor; however, specificity was high for tuberculoid leprosy patients. These native antigens represent a step forward in the critical search for an early diagnostic tool for leprosy.

O-186

Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **Promoting Early Diagnosis**
Presenter: Meenu Sethi

DISABILITY AMONG CHILDREN AFFECTED BY LEPROSY STILL A CHALLENGE - FINDINGS FROM A REFERRAL HOSPITAL IN NORTH INDIA

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Introduction: India declared elimination of leprosy more than five years ago and leprosy services have been integrated into the general health care system for over a decade. Despite free availability of Multi-drug therapy (MDT), better transportation, and widespread awareness campaigns, the high incidence of disabilities in children with leprosy is unacceptable and poses a major challenge to society and leprosy services. Urgent investigation is needed regarding how they could have been detected earlier and prompt action taken to prevent disability and provide basic guidelines for the programme. This is a challenging task and has not been given attention so far. Therefore, the incidence and background of leprosy related disabilities in children seen at a The Leprosy Mission community hospital in Delhi, India during 2009- 2012 are presented here to estimate the burden of disabilities in children and to identify measures to prevent them.

Methods: All new leprosy affected untreated children less than 15 years of age who were brought to The Leprosy Mission Community Hospital Delhi, India during 2009 to 2012, were studied through chart reviews, documenting in detail the disabilities, along with other clinical and socio -demographic information.

Results: A total of 94 children affected by leprosy reported for treatment during this period, of whom 9 (9.5%) had grade 1 disability and 23 (24.4%) had grade 2 disabilities. Disability rates increased with age, there were no gender differences and all were multibacillary (MB) cases. Most residents were from Delhi. Palmar anaesthesia was the most common grade 1 disability. 70% had hand disability and 3 had multiple disabilities (Eye, Hand and Foot). There was a high correlation with multiple skin and nerve lesions. There was no association with intra-familial contact, Bacteriological index (B.I) or reactional status at the time of reporting.

Conclusion: Regardless of the fact that this study was done in a referral hospital the grade 2 disability rates among children affected by leprosy are alarmingly high. This needs urgent action and effective awareness measures, such as early reporting and prompt treatment with MDT. This indeed is a challenge not only for the Government but every citizen. It may be worthwhile teaching not only early signs of leprosy but also early signs of neuritis, and prompt reporting in suspected cases.Such initiatives may also help understand the transmission processes better and thus might lead to faster eradication of leprosy.

O-187

Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **Social Aspects and Self Care**
Presenter: Mrs Silatham Sermrittirong

ASSESSING THE ATTITUDES AND PERCEPTION OF COMMUNITY MEMBERS AND HEALTH WORKERS REGARDING LEPROSY STIGMA

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Introduction: Although the incidence of leprosy has declined, but the proportion of newly detected cases with grade 2 disability has not. Stigma related to leprosy was partly held responsible for the delayed presentation, the main cause of disability. This study was conducted to measure the attitudes and the perception of community members and health workers towards leprosy stigmatization, and to provide baseline data for those who are interested in launching de-stigmatizing interventions.

Methods: The study was done by qualitative and quantitative methods in four sub-districts of Chaiyaphum province, Thailand. Community members and health workers were interviewed using opened-end questions and Explanatory Model Interview Catalogue (EMIC) scales. Focus Group Discussion was conducted among health volunteers. Content analysis was used for qualitative information. Frequency was used to describe the characteristics of study subjects. To look for association between EMIC score and sex, age, marital status, education level, having seen people affected by leprosy before; a logistic regression was performed. A p-value of <0.05 was considered indicative of a statistically significant difference or association. T-test was applied to compare between the mean of EMIC scores of community members and those of health workers.

Results: Both community members and health workers had negative attitudes towards leprosy, and perceived that people affected by leprosy were being stigmatized by the community. There was no difference of attitudes and perceptions about leprosy between people with different sex, age, marital status, education, and leprosy experiences.
Community members and health providers perceived leprosy as a disease with dirtiness, bad odour, oozy wound, unpleasant skin, and impairments. Most community members thought leprosy was hereditary and incurable. People affected by leprosy tried to keep others from knowing their disease. People with leprosy related disability practice self stigma by not participating in community activities, less using health service. Community members practice stigmatizing behaviour towards people with leprosy related disability by avoiding and back biting. Health providers spent time as less as possible with people with leprosy related disability.

Conclusion: The stigma against leprosy may result in the quality of life of those affected and their accessibility to health care services. De-stigmatizing intervention taking local beliefs, attitudes, and perception into consideration was suggested to be conducted by the authors.

O-188

Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **Social Aspects and Self Care**
Presenter: Mr Sathish Paul

ROLE OF STIGMA AND DEPRESSION IN INFLUENCING THE LEPROSY AFFECTED PERSON'S QUALITY OF LIFE

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Introduction: The visible impairments and disabilities cause the stigma and discrimination experienced by leprosy patients to a greater extent while they either are undergoing or have finished their treatment. The stigma arises either because of the physical changes, the psychological trauma or through the decline in social relationships. The stigma when internalized (self), anticipated (psychologically perceived) or experienced (social) leads to depression. The patient tends to lack in their aspirations because of the depression and hopelessness directly influencing the quality of life. This study tries to find out the role of stigma in influencing the leprosy affected person's quality of life

Methods: A cross sectional survey was done among n = 128 persons affected by Leprosy who visited a tertiary leprosy referral hospital in Delhi for undergoing treatment. Standardized questionnaires were administered on patients to assess the level of stigma, depression, living standards and their participation in social activities. Individual consents were taken and privacy was maintained for the patients who participated in the survey.

Results: The results validate the influence of visible deformity in causing stigma on leprosy affected persons. The patients with self - stigma were found to be suffering from depressionand restricted active social participation. The study further brought out a positive correlation between a visible

deformity and the low quality of life among patients affected with Leprosy. The results also suggest that gender has very less influence on the role of stigma among the leprosy affected people.

Conclusion: The study clearly substantiates the need to consider treating the leprosy affected patient with and without impairments in a holistic way and to address their social, psychological and emotional needs to bring a change in their quality of life.
Effective information, education and communication materials should be used to educate the community on the causes and consequences of Leprosy and also to involve the members of the community in teaching and training the patients on life style modifications, and self monitoring and reporting of their impairment status.

0-189

Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **Social Aspects and Self Care**
Presenter: Dr Raju M S

REASONS FOR DEFAULTING FROM MDT: PERSPECTIVES OF PEOPLE AFFECTED BY LEPROSY, HEADS OF FAMILIES AND COMMUNITY MEMBERS

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Introduction: Personal, social, family and community factors are known to be highly influential in public health interventions and consequently important potential targets for understanding defaulting from MDT. In response, an innovative research programme was developed which focused on community based and patient-driven approaches to prevent defaulting from MDT in leprosy. Preliminary studies in this programme found variable adherence to treatment across time, communities and individuals, and identified a need for greater understanding of stakeholder perspectives regarding the importance of adherence to treatment and the reasons for defaulting. A subsequent research project was undertaken to understand the diversity of issues and concepts related to defaulting, from the perspective of leprosy patients, family members and community members.
The objective of this study was to identify the array of factors associated with non adherence to MDT in leprosy, according to individuals who have defaulted from MDT, their head of household and local community members.

Methods: From data collected at four TLM Hospitals in Andhra Pradesh (Salur), Chhattisgarh (Chandkhuri), Maharashtra (Kothara) and Uttar Pradesh (Barabanki), across a four year period (2007-10) a list of individuals who defaulted from MDT was compiled. Semi-structured interviews were conducted with 714 respondents, comprising 277 people who had defaulted from MDT, 233 respective heads of family/household, and 205-Community Members/ Key Informants from their local community. The interviews were conducted by trained research assistants appointed within each centre by the community based project. Participant responses were recorded on the interview schedule. Based on thematic analysis of interview notes across all respondents, four major categories of response were noted and 14 sub-themes were identified.

Results: Key reasons for defaulting included Medical, Psycho-social, Economic and Health System related factors. Leprosy patients who had defaulted from MDT primarily cited medical reasons and health system related reasons whereas the heads of families mostly noted psycho-social and economic factors as influential in defaulting.

Conclusion: The nature and relative importance of reasons for defaulting varied considerably across people affected by leprosy, their family members and community members, as well as across different sites. Details of these findings are outlined and the identified sub-themes (and their relative frequencies) provide useful information for the development of community programmes and the maximization of adherence.

0-190

Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **Social Aspects and Self Care**
Presenter: Shyamala Anand

PERCEPTIONS AND ATTITUDES INFLUENCING THE PRACTICE OF SELF CARE IN LEPROSY

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Introduction: Prevention of Impairment and Disability (POID) due to leprosy is of main concern both during and after a person's treatment with Multi Drug Therapy. The practice of regular self-care is the cornerstone of POID. The consequences of neglecting self care are great, leading to loss of productivity; deformities and ulcers; stigma; and enormous physical and mental suffering for thousands of people affected by leprosy and their families.
The Leprosy Mission Trust India (TLMTI) works in 8 states in India through 14 Tertiary Leprosy Referral Hospitals, and 6 Vocational Training Centres (VTCs). In 2011, of 6658 newly diagnosed leprosy cases in 14 hospitals, 15.3% had Grade I and 22.1% had Grade II disability; together constituting 37.4% impairment and disability at time of diagnosis. In the VTCs in 2011, 182 young people either treated or under treatment for leprosy were admitted to various vocational training courses, some with already established impairment or disability; some still having reactions and neuritis and recurring ulcers.To understand the effectiveness of its POID interventions, and to recommend more effective ways of POID, of which Self Care is an important aspect, TLMTI conducted a POID Audit in 2012.

Methods: The Audit was designed by a team of resource persons with POID leprosy expertise (internal and external to TLMTI) and field tested in March 2012. The Audit was conducted in 6 hospitals and 3 VTCs in 7 states of India from April - June 2012,. Audit teams consisted of physiotherapists, occupational therapists and doctors. Data for self care teaching and practice was collected through Observations, Semi structured interviews, Focus Group Discussions, Matrix scoring participatory tools and random sampling of leprosy records.

Results: Despite efforts to teach self care, it was observed that majority of the people were not practicing self care at home. Many could tell what should be done rather than why it should be done. They had no concept of lifestyle modifications; thought they were not possible or practical, or felt stigmatized to practice them. They thought ulcers were inevitable and impossible to prevent, and that medicine is the only way for ulcer healing. People with lagophthalmos were not protecting their eyes. For most, self care was about soaking, scraping and oiling, which they were practicing sporadically if at all, as water was not always available at home. People were using blades to trim calluses; they had blisters on their anaesthetic hands from drinking hot tea. They did not know how to do ulcer dressings at home. The elderly had associated geriatric problems and were dependent on someone in the family for self care. There were many barriers to protecting anaesthetic feet from injury through the regular use of protective footwear; culture and stigma being some of them.There was a minority practicing self care and factors contributing to this were a supportive family involved in the self care; respect and status in the family and a good understanding of self care and lifestyle modifications.

Conclusion: There is a disconnect between self care taught and self care practiced. Institution based self-care teaching and methodology will not impact as much as self-care teaching and methodology developed in and for the person's own environment; inclusive of the family and community. The concept of lifestyle modifications has not become an inherent part of self care teaching. There is a level of self stigma and lack of insight contributing to neglect of self care, and self care programmes should also be addressing behaviour change.

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Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **Social Aspects and Self Care**
Presenter: Erik Post

ASSESSMENT OF SELF CARE GROUPS OF PERSONS AFFECTED BY LEPROSY, A 4-COUNTRY STUDY (INDONESIA, NEPAL, NIGERIA AND INDIA (INNI))

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Introduction: In a short survey in 2009, leading field staff of the Netherlands Leprosy Relief in Indonesia, Nepal, Nigeria and India (INNI) thought that the majority of Self Care Group (SCG) members understand routine self-care well, but practices differed. Footwear utilization ranged from less than 50% in Nepal to 89% in India. Skin condition improved in about 50% of SCG members; ulcers healing within one year ranged from 39% in India to 80% in Nepal. Asking SCG members, their "participation situation" hadn't changed much since being a member of a SCG, in contrast with anecdotal evidence. Other findings, however, suggested an improved self-image, although it is unclear if this was a result from a natural acceptance process in all people affected by leprosy, or from being a SCG member. As much energy was going into establishing SCGs, this prompted a formal assessment of its impact.

Methods: In each INNI-country 60 SCG members were compared with 60 similar persons not becoming a SCG member on the following aspects:
1. The level of self care, using a foot assessment tool
2. The number of initial and recurrent ulcers, using a wound assessment tool, complemented with photos
3. The level of stigma, using the EMIC scale (individual) and the P-scale. Two impacts will be measured: before-after and a comparison between members and non-members, after 1 and after 2 years.

A qualitative assessment will be added at the end of 2 years.

Results: In 2010-2011 a baseline was documented, and during the ILA Congress we would like to present the 1-year results, which at the moment of submission are being analysed.

Conclusion: If there is sufficient interest from other ILEP partners, a workshop could be considered to discuss more in-depth matters arising from the assessment.To obtain additional in-depth information about the impact of SCG in people's life, different techniques will be explored for use at the end of 24 months:

- In one country, some SCGs will be approached by using the Most Significant Change evaluation technique.
- In another country such qualitative information will be obtained through Focus Group Discussions.
- In a 3rd country the method of choice will be "What matters to us?", as was developed by TLMI.
- In a 4th country the photovoice method will be considered.

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Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **Social Aspects and Self Care**
Presenter: Prakash Wagle

EXPERIENCE OF LEPROSY AFFECTED PERSONS IN INCLUSIVE GROUPS

P. R. Wagle [1,*]

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Introduction: The new WHO CBR guidelines in Leprosy and CBR chapter has clearly mentioned that "Current special leprosy rehabilitation programmes should open up their services to people with other disabilities in order to tackle stigma; facilitate integration and work more efficiently as more people could benefit from existing services." Therefore, with an aim to facilitate social inclusion of persons affected by leprosy, BIKASH Nepal has started CBR programme that includes persons affected by leprosy, people with disability and non-disabled people.

Methods: BIKASH Nepal has formed five self-help groups which consist of people affected by leprosy, people with disability and non-disabled people. There are 63 members in total. Out of 63 members 28 are people affected by leprosy, 26 are people with other disability and 9 are without leprosy and disability.
A focus group discussion with all five groups was carried out in February 2013 to learn about the experience of leprosy affected persons being in the inclusive self-help group (SHG) and the attitude of other disabled and non-disabled members towards leprosy and the leprosy affected members of their group.
A focus group discussion with all five groups was carried out in February 2013 to learn about the experience of leprosy affected persons being in the inclusive self-help group (SHG) and the attitude of other disabled and non-disabled members towards leprosy and the leprosy affected members of their group. 75% of the group members were female and no children under the age of 18 were included in the group. The leprosy affected people and other members were asked to share their experience being in the inclusive groups.

Results: The leprosy affected members said they do not feel like discriminated in any matter of the group. They visit schools together to talk about leprosy and disability. They decide together and leprosy affected people are given the leadership position in the group which gives them social respect. A male member of the group who is under medication for leprosy and has a habit to drink alcohol said, the other members of the group create pressure to him not to drink alcohol. Similarly, one other member of the group said that other members of the group ask him if he is taking medicine regularly or if he has any other problem due to the disease. Other members of the groups also said that they do not feel like they are sitting with people affected by leprosy. One female member said, everybody has some sort of problem and leprosy is one among them. Therefore, we all have our own problem because of which we have come together to fight against the problem. All members suggested that all members of the society need to be informed about leprosy. Group members also said that they are happy to learn so much about leprosy and disability which they would not learn had they been in other groups like mothers group in the community.

Conclusion: Existing leprosy-only self-help groups should be stimulated to open membership for people with other disabilities as well. Alternatively, people affected by leprosy may join existing multi-disability self-help groups and disabled peoples' organisations. The empowerment of people with leprosy often needs special attention and CBR field staff as well as management should be aware of continued double discrimination of this group of people. It may be that affirmative action programmes are needed to ensure that people effected by leprosy optimally benefit from mainstream developments.

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Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **Experiences of People and Communities**
Presenter: Sang Kwon Jung

ISOLATION TO INTEGRATION

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Introduction: Infected at the age of 16, I received treatment at Sorok do, an island off the southern coast of the Korean Peninsula for three years and managed to fully recover from HD. However, I could not gain status as a normal person even though I participated in relief work to help HD patients and their children in other countries. One of my toughest challenge in my life was hiding the fact that I was not known as an ex-patient to people. This was because I was afraid that I would be discriminated against and stigmatized if it were disclosed. Revealing the history of my disease to others was only the beginning.

Methods: In 2009 some of my closest colleagues' suggested, that I could write the story of my own life revealing that I was once was diagnosed with HD and then hold a book-launching ceremony. This provided me with a good opportunity and it went over immensely well with my colleagues. The people around me gained a better understanding about HD and its patients and now eagerly join my programs. I regretted not doing this earlier. By taking this opportunity, I began to have a voice through various social groups such as IDEA International, the Seoul District Elders' Association, connecting the Business Marketplace to Christ-East Seoul branch, and others.

Results: My struggles and efforts over the past 57 years have created a world where the HD patients and ex-patients can lead a more humane life with a voice the community and general public. My social participation as an ex-patient is now giving hope and injecting a spirit of challenge to HD patients helping to eliminate both the stigma and discrimination against HD. After being cured of the disease, those affected by HD in Korea are now able to integrate into the general public and live a life with full dignity. Since I was elected president of IDEA in Korea in 1994, IDEA Korea has been working on the children's scholarship program, and improvement programs for homes and schools and church building programs in other HD prevalent countries like India.

Conclusion: The deep-rooted bias cannot be dissolved by itself even over time. This points to the need for those affected by HD to inspire social integration like the HD patients participate in throughout Korea. The greatest progress, which is to restore human dignity for those affected by HD and to eliminate both stigma and discrimination, is being made through active social participation by patients and ex-patients themselves in Korea. Currently those affected by HD can live life with dignity and are proud members of (Korean) society by being givers rather than takers or receivers. Social participation plays an essential role in tackling HD related challenges.

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Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **Experiences of People and Communities**
Presenter: Henry de Vries

SOCIAL PARTICIPATION OF DIABETES AND EX-LEPROSY PATIENTS IN THE NETHERLANDS AND PATIENT PREFERENCE FOR COMBINED SELF-CARE GROUPS COMBINED

H. J. C. De Vries [1,*], R. de Groot [2], C. L. van Hees [3], W. H. van Brakel [4]

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Introduction: Earlier we showed that neuropathic complications limit social participation of ex-leprosy patients, even in a non-endemic leprosy setting like the Netherlands.(1) Self-care groups for ex-leprosy patients can strengthen self-worth of participants, prevent further handicap, and enable the exchange of coping strategies.(2) For non-endemic leprosy settings with a very low rate of leprosy patients a self-care group excusively for (ex)leprosy patients would therefore probably be unfeasible. A combined group with patients facing comparable morbidity could be more efficient than disease specific self-care groups. Here, we studied the comparability in social constraints of diabetic patients and ex-leprosy patients. Moreover, we investigated if combined self-care groups for ex-leprosy patients and diabetic patients are feasible and desirable for possible participants.

Methods: Social participation was studied based on in-depth interviews and Participation scale information collected from 41 diabetic patients and compared with the data of 31 ex-leprosy patients from a prior study.(1) Moreover, we made an inventory of limitations and attitudes towards combined self-care groups for diabetic patients with neuropathy.

Results: The following themes emerged among diabetic patients: disease confrontation, dependency, conflict with loved ones, feeling inferior, stigma, having to abandon social activities, fear of the future, lack of information and hiding the disease. These themes were very similar to those of the previously interviewed ex-leprosy patients. Stigma and disease ignorance among Dutch health care workers were more often mentioned by ex-leprosy patients. Whereas ex-leprosy patients perceived stigma on multiple fronts, diabetes patients only mentioned feeling inferior. Diabetes patients did acknowledge the comparison with leprosy as far as their neuropathic complaints concerned. Yet only 17% of the diabetic patients showed interest in combined self-care groups. The majority preferred disease-specific self-care groups only focused on diabetic patients.

Conclusion: The physical complications and social problems in ex-leprosy and diabetic patients with neuropathy are similar. Both groups show social participation limitations, yet in contrast to diabetes patients, ex-leprosy patients perceive stigma in more domains in life. However, since diabetic patients prefer disease specific/ more homogeneous self-care groups, combined groups with ex-leprosy patients do not seem an efficient option for non-endemic leprosy settings. Further research is warranted into the acceptance and impact of self-care groups as a strategy to reduce social constraints by diseases causing neuropathy.

1. Social implications of leprosy in the Netherlands--stigma among ex-leprosy patients in a non-endemic setting. De Groot R, Van Brakel WH, De Vries HJ. Lepr Rev. 2011 Jun;82 (2):168-77.

2. Benbow C, Tamiru T. The experience of self-care groups with people affected by leprosy: ALERT, Ethiopia. Lepr Rev. 2001 Sep;72 (3):311-21.

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Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **Experiences of People and Communities**
Presenter: Rajni Singh

"IMPROVING THE QUALITY OF LIFE OF DISABLED PERSON LIVING IN LEPROSY COLONIES IN BIHAR THROUGH CHETNA PROJECT"

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Introduction: CHETANA project began in the three districts of Bihar with support of Sasakava Memorial Health Foundation in 2011. The project operational areas are three districts of Bihar i.e. Purnea, Munger and Khagaria. The project covers 4 colonies of *People Affected with Leprsoy (PAL)* i.e. 2 in Purnea and 1 each in Munger and Khagaria with more than 300 families.ubere project operational
To enhance the quality of life of the persons affected by leprosy and their families & To eliminate stigma and discrimination among the community in 3 districts in Bihar.

Methods: Four Lokdoots were selected from the same colonies after a consensus was reached upon between the families residing in the colonies, representatives of Bihar Kusth Kalyan Mahasangh (BKKM) and LEPRA India. At a very initial phase of the project "**Lok Doots**" had undergone comprehensive four day training program. They were trained on the objective of the project, and were also briefed on the disease and the preventive mechanisms that have to be followed. In starting of the project a rapid assessment was done using simple questionnaire for house to house survey by the Lokdoots. The analysis included project reports, records and interaction with the beneficiaries and inmates of 4 (Munger, Khagaria & Purnia district of Bihar) Leprosy colonies. The colonies have 315 houses with 376 disabled people. The population of the colonies is 465 and 78 having ulcer. A retrospective, record based quantitative analysis of process data was done.

Results: Within two year Lokdoots are empowered and acting on their own for the welfare of colonies. They were having regulars meeting with Govt. departments and sharing the experience with each other. Many Governments welfare scheme were brought by them such as Indira Awas Yojna for 61 families, pension benefits for 44 households, benefit of BPL card for 55 families, similarly Antodya Card for 20 and 5 received disability certificates, Education support – Higher Study – 16. Total person affected with Leprosy are benefitted – 455. 6 New cases has been detected and given treatment. 129l Ulcer has been treated.
They have organized 8 Footwear Mela, 8 training programme for Accelerated Social Health Activist (ASHA) /Aagan Wadi Worker (AWW). They have observed 4 observation day (World Leprosy day and Disability day)

Conclusion: Through these lookdoots "Chetna" project is improving the quality of life of the persons and their family member affected by leprosy – Restoring Dignity. Lokdoots are now invited by respective district health society in monitoring meetings, training and other programme. They also ensure availability of appropriate treatment and aids and appliances to persons affected by leprosy living in community and 4 leprosy colonies. Foster linkages between persons affected by leprosy and departments of health and social justice at district level for Palliative care and self-reliance. – Elimination of stigma.
This is the sustainable modal run by their own member of community. They were recognize by the District Official and invited in every planning of National Leprosy Eradication Programme and Welfare department.

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Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **Experiences of People and Communities**
Presenter: Masato Sado

EMPOWERMENT AND MEMORIALIZING HISTORY OF PEOPLE AFFECTED BY HANSEN'S DISEASE: THE CASE OF LO-SHENG SANATORIUM PRESERVATION MOVEMENT IN TAIWAN.

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[1]secretariat, IDEA Taiwan, New Taipei City, [2]Ph. D candidate, graduate institute of building and planning, National Taiwan University, Taipei, Taiwan

Introduction: Lo-sheng sanatorium was originally established in 1930 under Japanese colonial rule, reflected segregation policy of Hansen's Disease (leprosy). After WWII, sanatorium was also succeeded by new government. Whether Japanese imperialism or China Nationalist Party, the government had promoted the isolation policy for public health in the society and increased discriminations and stigmas against people affected by Hansen's Disease / people living with Hansen's disease (PWHD) in the sanatorium. Therefore, processes of preserving historical sites of Hansen's disease, empowering PWHD and eliminating social discrimination against Hansen's disease are still going on in Taiwan. Furthermore, those are intimately related each other. The advocacy of Lo-Sheng sanatorium has been emphasizing on home and history preserving to regain our lost dignity and recognize value of human rights of PWHD.

Methods: This study includes two deferent research methods and perspectives below; 1.Architectural and social history approach: From the aspect of architectural history, it can be illustrated as a typical post-colonial usage of colonial architecture. But we should also focus that itcontinually have been reformed by residents themselves, was finally made up as a self-build 'organic' architecture and environment. That also can meet criteria of to be recognized as a special historical site. 2.Sociological, historical and anthropological action research: Author is one of founding member of IDEA Taiwan, had been participated the movement for preservation from early years, and had been deeply engaged in sociological, researches of residents in the sanatorium. Specifically, collecting old documents and photographs, interviewing oral history.

Results: Unfortunately although the efforts for preservation, more than seven tenth of sanatorium was demolished. But we note significant changes in PWHD themselves and whole society in Taiwan. Residents found that their sanatorium is an irreplaceable living environment, as if it is their 'second homeland', thus re-identified their own lives and history of Hansen's disease in Taiwan. The claim for preservation became opportunity for eliminating prejudice and discrimination against Hansen's disease in the society. In the process of preservation movement, residents organized self-help group of PWHD, which was transformed as IDEA Taiwan in 2007. It also motivated international interactions and solidarity of PWHD.
Through the international interaction and experience sharing, we found that similar situations have been happening in many counties in the world. Regardless, PWHD worry about becoming 'people of the past' in these countries;facing the crisis of oblivion. Hansen's disease was already controlled in Taiwan, so that number of PWHD is decreasing year by year, some approaches for describing history of PWHD by IDEA Taiwan also are putted in practice. Besides oral history researches, we collected old photographs of life in the sanatorium, edited them as a photo book and published. On the other hand, we are also making architectural researches, such as 3D virtual-restoring of demolished buildings, successfully let residents recalled their life experiences.

Conclusion: We can show the significance of the preservation movement of Lo-sheng sanatorium as below: 1. The value of historical architectures and build environment of leprosy sanatorium. It should be interpreted from various perspectives. 2. Self-empowerment of PWHD in Taiwan and memorializing its process. 3. Remembering the history of PWHD by listing historical sites as World Cultural Heritages.

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Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **Experiences of People and Communities**
Presenter: Nchekwube Ndubuizu

ORGANIZING FOR CHANGE: FACILITATING THE EMERGENCE OF IDEA CHAPTERS IN SOUTHERN NIGERIA

L. C. Ugwu [1], N. I. Ndubuizu [1,*], J. N. Chukwu [1], A. Meka [1], D. Oshi [1], C. Nwafor [1], N. O. Madichie [1]

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Introduction: The high level of stigma and discrimination against persons affected by leprosy (PALs) has over the years discouraged them from openly advocating for improved social, political, cultural and economic participation and for the enjoyment of their rights. Over time, there was no visible collective initiative by the PALs to fight for social justice and equal rights for themselves and their families. In 1994, Integration, Dignity and Economic Advancement for persons affected by leprosy (IDEA) International was formed in Brazil to perform this role. IDEA thus is a platform through which PALs are empowered psychologically, socially and economically to fight against stigma and discrimination. IDEA presently has over 20,000 members in more than 30 countries across the world including Nigeria.
IDEA Nigeria was conceived and registered with the Corporate Affairs Commission and Federal Ministry of Women Affairs, Nigeria in 2003. For several years after registration, activities were mainly in the North. Absence of state chapters in the south hampered coordination of support activities from willing donors and stakeholders. In a bid to bridge this gap, German Leprosy and TB Relief Association (GLRA) Nigeria took a leading step to facilitate registration of state chapters in the ten ILEP project states supported by it in southern part of the country in the mid-2000s.
In 2004, the association also became a member of Joint National Association of persons with Disabilities (JONAPWDs) which is a cluster disability group. GLRA Nigeria through its various activities is promoting the Vision and Mission of IDEA in Nigeria.

Methods: Through an iterative process, the GLRA Nigeria CBR team elicited the status of IDEA across fourteen states supported by GLRA. The gaps identified were then addressed in collaboration with the PALs in the various states. Funding for registration was provided where necessary. Capacity building programmes were done for the leaders. And there is a continuous onsite mentoring of state IDEA executives during routine supervisory visits to ILEP projects by GLRA technical staff. GLRA also facilitated the linkage of IDEA state chapters with corresponding state JONAPWDs chapters.

Results: PALs in nine of the ten supported states carry out regular advocacy visits to various stakeholders at the state and local levels. Similarly, awareness creation is carried out to sensitize the communities on inclusion and participation of PALs in community activities. PALs serve both as facilitators in relevant trainings and as resource persons in some special activities like media programs.

Conclusion: The various interventions by GLRA Nigeria have facilitated the setting up of IDEA state chapters in southern Nigeria. With the various state chapters now in place, persons affected by leprosy are better positioned to engage government agencies at state and federal levels to argue for their rights.

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Presentation Time: **Wednesday 18/09/2013 at 16:00 – 17:30**
Symposium Session: **Experiences of People and Communities**
Presenter: Yun-Ming Lee Chang

LINGERING MEMORIES OF YOUNGER DAYS IN LO-SHENG SANATORIUM.

Y.-M. Lee Chang [1,*]

[1]president, IDEA Taiwan, New Taipei City, Taiwan

Introduction: Lo-sheng was established by japan colonial period, but after WWII, new Taiwan government, R.O.C continued segregation policies for a very long time. In 1966, when I was sixteen years old, the health department of my hometown arrested me and other 4 young people together, we been sent on a battle ship of navy from Kinmen, a small island for navy. Before that time I never imagined I will leave my homeland for entire life. I even can't image why I still lived here until now. I spend all my life from I was a young girl, then get married, and breed my children, now to be a grandmother. Women went inside Lo-sheng Sanatorium at first will been sent into a women's dormitory, which called Zhen-De house, we also called it "train boxes house" because it looked very similar to a train boxes for transporting patients. Here also very like a train loading all our life, our memories and our Happiness and misfortune.

Methods: About my presentation, the research method comes from my life experience, real experience for a woman affected by Hansen Disease.

Results: In early 1970's, heath department started providing specific medicines for Hansen's disease in Taiwan, fortunately I cured completely after two years. However, other patients and sanatorium officials asked me not to go back home. They told me that all the patients would not be accepted by outsiders in society because discrimination and stigma. Thus, I canceled my last hope will leave there, and gave up my dream go on my studying. Very fast, I get marriage with a man also segregated there. Worried won't have children we bring up our first daughter but she need always hide inside house avoiding beenfound by managers. Even life here had no freedom, my families very love each other .People live in Lo-sheng also always help each other and experience many Pain and sorrow. Lo-sheng became our second homeland, here like a big family. So regretted, from 2002, the Taiwan government did not allow us living in Lo-sheng flat houses send to high floors hospital, and decided to demolish here to build a new Taipei MRT depot. High floor and air-conditions unfit us to live, from 2004, we decided to wake up to against eviction and protect our cultural assets of lo-sheng.

Conclusion: Our firm aspirations attracted the echoes of Taiwan society and successfully gathered 7000 persons, students, artists, exports and social publics walk together before the square of Taiwan president wished to preserve Lo-sheng and our human rights. Therefore, in my experience, I discovered the people affected by HD should believe we have human rights and the always pursuit our dreams come true. In Lo-sheng movement, we finally preserved most land of Lo-sheng, pushed here to be a potential World Heritage of Taiwan. This is like a marathon, which efforts to the finish line is the winner, the brilliance of meteor touches the heart of the world. Last year We collected many pictures of our younger days in a book, called "Lingering Memories of Younger Days in Lo-sheng Sanatorium "and also gathered photographs with respect to the struggle in these eight years; including organizing the resident union of Lo-sheng, founding IDEA Taiwan, the process of international solidarity, protesting demonstration assisted by huge numbers of younger supporters, cultural activities in Lo-sheng like concerts or lectures and etc.

ePOSTER PRESENTATIONS

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Presentation Time: Wednesday 18/09/2013 at 10:30 – 10:40
Abstract Topic Name: Surgical Rehabilitation
Presentation Screen Number: 1
Presenter: Dr Masako Namisato

SURGICAL APPROACH TO THE DISABILITY-RELATED PROBLEMS SEEN ON EX-PATIENTS OF LEPROSY IN A COMMUNITY-BASED CLINIC

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Introduction: Our clinic was founded 8 years ago, having particular purpose to take care of ex-patients of HD (Hansen's disease) along with local citizen in a community-based clinic. The specialties of our clinic are dermatology, internal medicine and plastic surgery, having each doctor in charge of.

Methods: Based on the medical records in our clinic, we present some surgical procedures which were done to improve the QOL of ex-patients having severely impaired face or limbs. Wound care measures we usually take for the longstanding ulcers on severely deformed hands or feet are reviewed as the examples for further discussion for more effective wound care.

Results:
1) Their ages are in the range of 50ys and 80s, on the average 71.6 years old; 10 years younger than the people living in sanatoria.
2) HD-related disability rate is very high. 70%, 67.4%, 93% of their face, anterior part of eyes, upper and/or lower limbs respectively had grade1 or 2 disabilities. They frequently need surgical, ophthalmological care, or management of chronic neuritis.
3) Treatment of ulcers on anesthetic limbs usually takes long time for complete cure and neoplasm may develop on these ulcers. We must be vigilant whether they are malignant or not. Our surgical practices for tumor or tumor-like neoplasm developed on the long standing ulcers of severely destroyed feet were successful using carefully adapted devices.
4) Although they have received various kind of reconstructive surgery long before, they need another amendment along with their aging process. Plastic surgeries for redundant eye lid and transplant surgery for atrophic thenar muscle improved their QOL and acquired good appearance.
5) Now our original purpose was achieved and the treatment of people having past history of HD has been well integrated to the community-based medicine.

Conclusion: Effective plastic surgeries could decrease the difficulties and increase the activities in their daily lives. Through usual encounter in our out patients clinic, friendly communications between ex-patients and local citizens has been emerging and growing.

Supplemental report: IDEA-Japan, ex-patients' association, Buddhists' group and members of MSW etc; they have done a great cooperation with us in the 3rd Workshop on Sentinel Surveillance for Drug-Resistance in Leprosy held in Tokyo (WHO Global Leprosy Program; Nov. 2010).

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Presentation Time: Wednesday 18/09/2013 at 10:40 – 10:50
Abstract Topic Name: Surgical Rehabilitation
Presentation Screen Number: 1
Presenter: Mr Karthikeyan Govindasamy

SELECTION CRITERIA FOR RECONSTRUCTIVE SURGERY IN CORRECTION OF CLAW HAND AND THUMB DEFORMITIES IN LEPROSY

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Introduction: Claw hand and/or thumb-in-palm deformity due to Ulnar and/or Median paralysis are the common deformities in leprosy and main cause for stigma. Reconstructive surgery (tendon transfer) aims at restoring near normal appearance and functional ability of the hand. Though nerve damage may be the same, there can be wide variation in the presenting deformity due to anatomical, anthropometric and occupational variables. A mismatch of the surgical procedure to the presenting deformity may compromise outcome. Therefore, guidelines with option to select from various tendon transfer techniques to match the deformed hand to a specific surgery could maximize the outcome. This paper aims to provide selection criteria with indications and contra-indications for various tendon transfer techniques for correction of claw hand and thumb deformities in leprosy

Methods: The Leprosy Mission Community Hospital at Naini, Allahabad district in Uttar Pradesh, India treats over 200 hand deformities due to leprosy through reconstructive surgery service every year. These guidelines have been developed by the surgeon and therapist/technician based on their clinical experience. There has been more than 2500 tendon transfers are done at this hospital, based on these guidelines over a period of 1997 to till date.

Results: The selection criteria with indications and contra-indications are presented with a simple and comprehensive format.

Conclusion: These guidelines may help the surgeon and therapist to maximize the outcome by selecting appropriate procedures for correction of claw hand and thumb deformities due to leprosy.

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Presentation Time: Wednesday 18/09/2013 at 10:50 – 11:00
Abstract Topic Name: Surgical Rehabilitation
Presentation Screen Number: 1
Presenter: Artur Gosling

THE USE OF NEURODYNAMIC TESTS FOR THE ASSESSMENT OF MECHANICAL SENSITIVITY AND MOBILITY OF PERIPHERAL NERVOUS SYSTEM IN LEPROSY

A. P. Gosling [1,*], F. J. J. Reis [1], L. M. V. Saadi [1], M. K. Gomes [1], A. J. Cunha [1] and interdisciplinary Program of Leprosy - HUCFF/UFRJ

[1]FEDERAL UNIVERSITY OF RIO DE JANEIRO, Rio de Janeiro, RJ, Brazil

Introduction: Leprosy bacillus commonly invades the neural tissue causing degeneration and nerve trunk fibrosis. Neurodynamic tests are well known that assess mechanical sensitivity and mobility of nerve trunks in upper and lower limbs, moving the nerves around the interface tissues. There are tests for median, ulnar, radial, peroneal and tibial nerves, the most important affected nerves in leprosy. A positive test shows decrease range of motion in tested limb, dysesthesia sensations, symptoms reproduction or pain. These tests can show clinical nerve restrictions caused by problems directly in nerve such as fibrosis or inflammation, in interface tissues such as musculoskeletal dysfunction and in the innervated tissues by the respective nerve. The purpose of this study was to describe the findings of neurodynamic tests in patients treated for leprosy and identity a possible association between the test and sensory-motor impairments in injured nerves.

Methods: Cross-sectional study with 50 patients treated for leprosy with multidrug therapy and pain complains during at least 1 year. Neurodynamic test was used in median, ulnar, radial, peroneal and tibial nerves in both limbs to assess mechanical sensitivity and mobility of peripheral nervous system. First step was to know if the test was positive and second step was to know if the test could reproduce patient's symptoms. We use the descriptive and associative analyses for this sample. Ethical and Research Committee of Clementino Fraga Filho University Hospital approved this study.

Results: 70% of the sample have more than 5 injured nerve trunks. Ulnar nerve sensory location represents 68% of pain complains in upper limbs and 66% in tibial nerve for lower limbs. 86% have motor and 100% have sensory impairments. 68% have a positive neurodynamic test for median nerve and 64% for ulnar nerve. 56% have a positive test for both peroneal and tibial nerves. Neurodynamic test reproduced the symptoms in 24 (positive 28 tests) for tibial nerve and 21 (positive 34 tests) for median nerve, showing peripheral mechanical sensitization. Relevant association was found between neurodynamic tests and sensory-motor impairments in all nerve injured trunks.

Conclusion: Neurodynamic tests were important to identify clinical impairments in peripheral nerve mobility related to leprosy disease that could help professionals involved in leprosy care for new treatment strategies such as medications, physical therapy and surgeries to improve pain control and functional limitations. The association between the test and sensory-motor impairments reinforce the importance of used these tests in clinical practice. This is the first study assessing nerve mobility and mechanical sensitivity of peripheral nerves in leprosy.

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Presentation Time: Wednesday 18/09/2013 at 10:30 – 10:40
Abstract Topic Name: Epidemiological Surveillance
Presentation Screen Number: 2
Presenter: Dr Moldagali Seitalyev

KAZAKH LEPROSARIUM - SPECIFIC OF THE LEPROSY WORK IN KAZAKHSTAN

M. Seitalyev [1,*], G. R. Batpenova [2], V. Duiko [3]

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Introduction: The centre of leprosy in Kazakhstan is Ksyl Orda. It is located in the largest endemic territory of leprosy, at the Lake Aral.
I would like to present you the Kazakh Leprosarium with the medical, social situation and the leprosy work there. I would like to speak also of the specific work in Kazakhstan.
Kazakhstan is the ninth largest country in the world; however its population is only about 15 million.
In the last century this country became part of the Soviet Union, and yet compared with the populations of the rest of Soviet republics, Kazakhstan had the highest number of leprosy patients (in 1980 more than 1.200).

Methods: During the last few decades, the number of leprosy patients has decreased considerably. Many of them died because of high age.
There are only sporadic new cases. One of the reason for this could be, that it is extremely difficult to find the contact persons of the registered patients becouse Kazakh people are migratory people.
An example of this is the new capital Astana which – from its beginnings 15 years ago now has a population of 1 million.
In this country Leprophobia is strongly prevalent.

Results: The situation of the registered patients is much better than it was in the past.
All patients were treated with MDT. In Kazakhstan there are some leprologists who look after the patients. Almost all of the patients are disabled.

Conclusion: The check-up of contact persons is very difficult because Kazakh people are migratory people.
The medical and social situation of the registered patients has improved significantly over the past 10 years.

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Presentation Time: Wednesday 18/09/2013 at 10:40 – 10:50
Abstract Topic Name: Epidemiological Surveillance
Presentation Screen Number: 2
Presenter: Rosa Castália França Ribeiro Soares

EVOLUTION OF THE PREVALENCE RATE OF LEPROSY IN THE BRAZILIAN STATES IN THIS LAST DECADE

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Introduction: The prevalence rate of leprosy in Brazil that means the indicator to monitor the progress towards elimination of this disease as a public health problem, has been undergoing gradual reduction during the last decade. This stems from the continued reduction in the number of new cases detection rate, most notably from 2003, reducing the length of treatment with multidrug therapy (MDT) from the year 2000, and improving the quality of information, with systematic updates in databases.

Methods: The aim os this study is to describe the progress in achieving the goal of eliminating leprosy as a public health problem in Brazil by federal units (States) from the year 2000. It is a descriptive analyzes of the prevalence rate by the Brazilian states per year, based on the National System of the Notification for Infectious Diseases (SINAN).

Results: In 2011, the prevalence rate of leprosy in Brazil reached 1.54 cases/10 thousand inhabitants as a result of 29 690 patients undergoing treatment at December 31, 2011. The states of Rio Grande do Sul and Santa Catarina, in the South, already presented since 2000 prevalence rates below 1 case/10 thousand. The states of Minas Gerais, Rio de Janeiro, São Paulo, Distrito Federal, Rio Grande do Norte and Alagoas were included in the group of those who have attained the level of leprosy elimination as a public health problem, since 2004. In the years 2007 to 2009, Rio Grande do Norte and Alagoas exceeded 1 caso/10.000 inhabitants, returning to the level of elimination as a public health problem in 2010 and 2011, respectively. The Paraná and the Federal District remained elimination levels. In 2011, the level of less than 1 case per 10,000 inhabitants was maintained or achieved by nine states that concentrate 59.2% of the Brazilian population: Rio Grande do Sul, Santa Catarina, Paraná, São Paulo, Rio de Janeiro, Minas Gerais, Distrito Federal, Rio Grande do Norte and Alagoas.

Conclusion: To achieve the goal of elimination in all Brazilian states will be necessary to focus on the North, Northeast and Center-West regions of Brazil.

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Presentation Time: Wednesday 18/09/2013 at 10:50 – 11:00
Abstract Topic Name: Epidemiological Surveillance
Presentation Screen Number: 2
Presenter: Jean Norbert Mputu Luengu- B

EVOLUTION DE LA LUTTE CONTRE LA LEPRE EN REPUBLIQUE DEMOCRATIQUE DU CONGO

J. N. Mputu Luengu- B [1,*]

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Introduction: La République Démocratique du Congo, longtemps considérée comme un pays hyper endémique de la lèpre, a réussi à atteindre l'élimination de la lèpre comme problème de santé publique au 31 décembre 2007. Même si notre pays a atteint le seuil de l'élimination, la lèpre n'a pas encore disparu, elle existe pratiquement dans toutes les zones de santé mais à des degrès divers. Si l'ampleur de la lèpre n'est plus importante dans 7 provinces, les 4 restantes constituent encore des sujets de préoccupation; il s'agit des provinces du Katanga, de l'Equateur, de Bandundu et de la province Orientale. La lutte contre la lèpre est intégrée dans les services généraux de santé, d'où les résultats sont dépendants, de la couverture de service, de la motivation du personnel, de l'état de la zone de santé (fonctionnelle ou pas) et de l'existence du matériel de travail. Le financement de la lutte contre la lèpre dépend dans une grande partie de l'apport des Ong internationales de lutte contre la lèpre, or actuellement avec la crise financière internationale couplée avec le slogan démobilisant de l'élimination de la lèpre, la vision de notre programme d'arriver à un RD Congo sans lèpre risque d'être une utopie.

Materiel et Methodes: La détection de la lèpre est toujours importante depuis l'atteinte du seuil de l'élimination de la lèpre en 2007. En effet, le nombre de nouveaux cas de lèpre représente plus de 17% de nouveaux cas de la région africaine de l'OMS.Avec plus de 8257 nouveaux cas en 2006, aujourd'hui la détection de cas oscille autour de 3000 à 4000 cas de lèpre par an. La nouvelle expérience que nous venons de tirer de la campagne de dépistage organisée dans le territoire d'Ubundu au mois de février 2013, nous montre qu'avec le renforcement des capacités des prestataires de terrain et la mobilisation sociale de la communauté en faveur de la lèpre, il est possible de doubler voire de tripler le nombre de nouveaux cas dans certaines zones de santé.

Résultats: Aujourd'hui, théoriquement il y a 9 provinces sur 11 qui ont atteint le seuil de l'élimination de la lèpre. La proportion des enfants parmi les nouveaux cas oscille autour de 11%; il en est de même pour la proportion des infirmités de 2□ parmi les nouveaux cas. Les taux de guérison se sont améliorés jusqu'à atteindre plus de 80% tant pour les multibacillaires que les paucibacillaires.

Discussions: Notre pays est classé aujourd'hui parmi ceux qui dépistent plus de 1000 cas par an; en effet, notre pays dépiste plus de 17 à 18% de nouveaux cas de lèpre de la région africaine de l'OMS. Nous sommes convaincus aujourd'hui que le nombre de nouveaux cas peut augmenter pour la simple raison que la couverture de service a diminué, la sensibilisation de la communautéen matière de la lèpre est actuellement inexistante, la démotivation et la déperdition des beaucoup d'acteurs formés en lèpre.

Conclusions et Perspectives: La lèpre existe encore en RDC, les données actuelles ne représentent pas la situation réelle de l'endémie lèpreuse; en effet, la grande étendue du pays et la couverture actuelle de service accentué par des conflits de tout genre sans oublier le manque d'intervenants dans un grand nombre des provinces nous fait penser à un sous dépistage des cas. L'amélioration du dépistage par l'implication de la communauté nous montre qu'il y a moyen d'augmenter le nombre de nouveaux cas.

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Presentation Time: Wednesday 18/09/2013 at 10:30 – 10:40
Abstract Topic Name: Epidemiological Analyses
Presentation Screen Number: 3
Presenter: Marcos Floriano

EPIDEMIOLOGICAL ANALYSIS OF LEPROSY REACTIONS IN A LEPROSY CARE SERVICE IN SÃO PAULO CITY, BRAZIL

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Introduction: Leprosy reactions are an important risk of disabilities. Reports show an incidence of leprosy reactions between 10 and 50%. They may occur before, during or after multidrug therapy (MDT). The goal of this report was to evaluate the incidence of different types of reactions in a leprosy care center in endemic country and their relationship to a higher risk of disabilities, showing the importance of its early diagnosis and management.

Methods: One hundred forty-four patients with leprosy were monitored during and after the treatment with MDT in a Leprosy Care Service in São Paulo city, Brazil. Epidemiological characteristics were analyzed, as well as the clinical aspects, especially in the case of disability. The disability evaluation was made as follows: grade 0 - no disability in eyes, hands or feet. Grade 1 - decrease or loss of sensation in eyes, hands or feet. Grade 2 - other changes in eyes, hands or feet. The limitation of this project was that data were analyzed descriptively.

Results: Among the 144 patients included, 88 were male and 56 were female. Using the Ridley-Jopling classification: Indeterminate (07), Tuberculoid (15), Borderline tuberculoid (21), Mid-borderline (34), Borderline lepromatous (19) and Lepromatous (48). Twenty-five patients received MDT paucibacillary and 119 received MDT multibacillary. Leprosy reactions occurred in 90 cases (62,5%): 04 before-MDT, 52 during-MDT, 05 after-MDT, 28 during and after-MDT and one before,during and after-MDT. The reactions were: type 1 (54), type 2 (16) and types 1 and 2 (20). In 52 cases there was only skin involvement, in 16 cases skin involvement and neuritis, neuritis only in 14 cases, skin involvement and arthritis in one case, only arthritis in one case, edema of the hands and feet in 5 cases and one case was not evaluated. The patients were treated with corticosteroids in 60 cases, corticosteroids and thalidomide in 17 cases, thalidomide in 7 cases and others drugs in 6 cases. In the group without leprosy reactions the degrees of disability before-MDT were grade 0 (23), grade 1 (19), grade 2 (7) and 05 cases were not evaluated and after-MDT were grade 0 (28), grade 1 (11), grade 2 (2) and 13 cases were not evaluated. In the group with leprosy reactions the degrees of disability before-MDT were 0 (28), 1 (39), 2 (14) and 09 cases were not evaluated and after-MDT were 0 (16), 1 (36), 2 (12) and 26 cases were not evaluated.

Conclusion: In this sample we observed a high incidence of leprosy reactions (62.5%). We observed higher degree of disability before MDT. One year follow-up showed higher degree of disability in patients who developed leprosy reactions. The presence of disability after MDT was observed, although the diagnosis of leprosy reactions was done as soon as the patient looked for the health service and the treatment was immediately started. Therefore, leprosy reactions are grounds for special attention from health professionals and are featuring as medical emergency. In addition patient education is important, as knowing the main signs and symptoms of the leprosy reactions, they will look for health services as soon as possible.

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Presentation Time: **Wednesday 18/09/2013 at 10:40 – 10:50**
Abstract Topic Name: **Epidemiological Analyses**
Presentation Screen Number: **3**
Presenter: Dr Apolonio Nascimento

PATIENTS UNDER FIFTEEN YEARS OLD - RETROSPECTIVE STUDY

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Introduction: Leprosy has an incubation period of 2 to 7 years. The incidence in children and teenagers presuppose a living together among adults who are transmission active focus of the disease.
We intend to determinate the clinical and epidemiological profile of Leprosy patients under 15 years old being cured at U.R.E. Marcello Candia, Marituba-Pará, Brazil.

Methods: Retrospective and transverse study of coorte, where have been analysed all the cases of Leprosy in patients under 15 Years old, diagnosed between 2009 and 2011 at the U.R.E Marcello Candia.

Results: The under 15 years old patients corresponded to 11,63% (126) of the total (1083) number of cases notified in this period. The origin of 64,2% was from the Metropolitan Region of Belém and 99,2% was from urban zone. The examination of contacts was the detection way of 10,3% of patients. 60,4% of patients were male and 77% above 10 years old. Only 4,8% were under 5 years old. The youngest one was 21 months old and he was detected by examination his parents contacts.
The predominant clinical form was Borderline (50%). And 1,6% (2) was primary neural form. 61,9% was multi bacillary treatment and the 0 degree of disability prevailed in 83,3% of cases.

Conclusion: The predominance of multi bacillary cases indicates a later diagnosis and 16,7% of minors presented already some degree of disability.
Precocious search for detection of children and teenager patients suggests that examination of contacts should be periodic and systematic.

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Presentation Time: **Wednesday 18/09/2013 at 10:50 – 11:00**
Abstract Topic Name: **Epidemiological Analyses**
Presentation Screen Number: **3**
Presenter: Anna Maria Sales

PROGRESSION OF LEPROSY DISABILITY AFTER DISCHARGE: IS MDT ENOUGH?

A. M. Sales [1,*], D. P. Campos [2], M. A. Hacker [1], J. A. D. C. Nery [1], N. C. Duppre [1], E. Rangel [1], E. N. Sarno [1], M. L. F. Penna [3]

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Introduction: Leprosy is a major public health care issue and epidemiological burden. It is a chronic infectious disease with acute and sometimes severe clinical presentations. In addition to its characteristics as a transmissible infectious disease, it also causes neurological disorders and, consequently, physical disabilities, which may occur at any stage of the disease, even after the end of treatment and the patient is bacteriologically cured. Early detection of new cases and treatment with multidrug therapy (MDT) are the main activities in the disease control strategy recommended by WHO in 1991. One of the top priorities in the fight against leprosy is the avoidance of nerve damage.The prevention of physical disabilities begins with early diagnosis of the disease, the recognition and treatment of such complications as neuritis and leprosy reaction, the identification of patients at risk of developing secondary complications, and timely intervention. The present study evaluated the risk factors most directly involved with the worsening of physical disabilities after discharge from treatment among patients administered 12 doses of multidrug therapy (MDT/WHO).

Methods: A prospective longitudinal studywas conducted atthe Leprosy Laboratory of the Oswaldo Cruz Foundation in Rio de Janeiro, RJ, Brazil.Registered multibacillary leprosy patients who completed the WHO-recommended treatment of 12 supervised doses of MDT between 1997 thru 2007 were evaluated. A survival analysis was applied to assess risk factors for physical disabilities after treatment discharge. The Cox proportional hazards model was used to estimate the relationship between physical disabilities and the epidemiological and clinical characteristics of patients.

Results: The total observation time of the 368 patients was 1,570 person-years (PY), averaging 4.3 years per patient. The overall incidence rate of worsening of disability was 6.5/100 PY. The incidence rate of physical disability among patients who initialing had none was 4.5/100 PY. Among those who started treatment with Grade 1 or 2 disabilities, the incidence rate of deterioration was 10.5/100 PY. The survival analysis evidenced that when the DG was 1, the risk was 1.61 (95% CI: 1.02 – 2.56); when it was 2, the risk was 2.37 (95% CI 1.35 – 4.16); and when the number of skin lesions was 15 or more, an HR = 1.97 (95% CI: 1.07- 3.63) was found. Patients with neuritis showed a 65% increased risk of worsening of disability (HR = 1.65 (95% CI: 1.08 - 2.52).

Conclusion: The presence of impairment at diagnosis was the main risk factor for neurological worsening after treatment. Early diagnosis and prompt treatment of reactional episodes remain the principle strategies for disease control and prevention of physical disabilities. However, in a relatively large number of patients, neither MDT nor any of the existing treatments for reaction is sufficient to prevent the progression of physical disability, which highlights the urgent need to develop new tools to improve the quality of life of these patients after treatment.

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Presentation Time: **Wednesday 18/09/2013 at 10:30 – 10:40**
Abstract Topic Name: **Prevention of Disability**
Presentation Screen Number: **4**
Presenter: Balachandra Ankad

TITLE- CLINICAL PROFILE OF DEFORMITIES IN LEPROSY

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Introduction: Background- Leprosy is a social disease and perceived in the society due to deformities. Although the incidence of leprosy is on the downhill course, still deformities due to leprosy carry a stigma. Leprosy complicates into deformities if not diagnosed and treated early. We studied the clinical profile of various deformities in hands and feet in leprosy patients.

Methods: The study was conducted in Dermatology OPD for a period of 24 months. Fifty patients with deformities of hands and feet were included in the study after confirming the diagnosis by slit skin smear, skin and nerve biopsy. Patients without deformities and with eye involvement were excluded. Frequency of deformities was noted in various parameters such as age, sex, type of leprosy, duration of the disease.

Results: Out of 50 patients, there were 34 male and16 female. Minimum and maximum age in the study group were 8 and 76 yearsrespectively. Twenty seven (54%) patients belonged to manual

labour class. More deformities were seen in borderline tuberculoid type (60%). Lepra reactions were seen in 5(10%) patients. Interestingly increased deformities were seen in patientswith 5 years of disease duration.

Conclusion: Leprosy is a disease of antiquity and the deformities associated with it play a vital role in perception of disease in the society. Knowledge of deformities would help clinician to identify deformities early in the disease. This study highlights the types of deformities in various types of leprosy. The limitation of this study was small number of patients.

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Presentation Time: **Wednesday 18/09/2013 at 10:40 – 10:50**
Abstract Topic Name: **Prevention of Disability**
Presentation Screen Number: **4**
Presenter: Erik Post

PERSPECTIVES FOR COMBINING PEER-LED SELF-CARE GROUPS FOR PEOPLE AFFECTED BY LEPROSY OR DIABETES TO PREVENT DISABILITIES DUE TO INSENSITIVE FEET

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Introduction: Leprosy and diabetes often result in neuropathic feet, which can result in ulcers and amputations, leading to restrictions in daily activities and social participation. Prevention of disability and self-management are essential to prevent this. People affected by leprosy often learn this successfully in peer-led self-care groups (SCG). For diabetes patients this approach hardly exists. We explored the views of health professionals about the possibility to combine SCGs for both conditions.

Methods: For professionals specialized in leprosy and/or diabetes in low resource settings, a questionnaire and semi-structured interviews explored similarities and differences between leprosy and diabetes concerning physical complications, psychosocial effects, and interventions that were offered. An inventory was made of their opinions to combine SCGs.

Results: Respondents to the questionnaire (N=227) consisted of 74 leprosy specialists (32.6%), 73 diabetes specialists (32.2%), 35 specialists in both leprosy and diabetes (15.4%), and 45 other professionals involved in this line of work (19.8%). There is little knowledge exchange between leprosy and diabetes, despite clear overlaps in education to prevent disabilities prevention, in skin assessment and ·care, and in the use of appropriate footwear. Of the respondents 75% see similarities in physical aspects, and 28% in psychosocial aspects. More leprosy specialists (43%) and those specialized in both (54%) are aware of combined SCGs than diabetes specialists (15%). Professionals working with both (71%) are more willing to combine SCGs than DM specialists (36%). Implementation barriers include differences in socio·economic status of group members, leprosy·related stigma, low willingness of actual care providers, and vertically organised health services.

Conclusion: Specialists caring for both leprosy and diabetes are positive about combined SCGs, while diabetes specialists are least enthusiastic. For enhancing self·management through SCGs, it is essential to increase knowledge exchange, address existing barriers, and adapt to context specific circumstances. Opinions of SCG·members and end·users in general would add to the understanding of how this might be possible. Pilot studies to look into operational feasibility of combined SCGs would be welcome, and one such pilot has started in Indonesia.

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Presentation Time: **Wednesday 18/09/2013 at10:50 – 11:00**
Abstract Topic Name: **Prevention of Disability**
Presentation Screen Number: **4**
Presenter: Dr Abraham Selvasekar

DISABILITY TREND AMONG NEW CASES REPORTED TO A TERTIARY CARE REFERRAL CENTRE: SHARING EXPERIENCES FROM DELHI METROPOLIS

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Introduction: The National Capital Territory of Delhi is the fastest growing metropolis in the world with a population of 17 million (2011 census). It attracts a huge migrant population seeking livelihood options from surrounding states which are endemic for leprosy. The migrant's population are deprived of proper living conditions such as safe water, hygienic food, housing, sanitary toilets etc.
TLM community hospital was then established as drug delivery point in 1984; situated strategically in trans·yamuna region with a close proximity to Uttar Pradesh state border. Now the hospital has transformed into a busy community Hospital attracting variety of skin, general and sizable number of leprosy cases across the country. It is recognised tertiary care referral centre providing comprehensive care for those leprosy affected such as diagnostic facilities (smears, biopsy, molecular techniques), manage complications like reactions & ulcer, footwear and reconstructive services. TLM community hospital is the only centre where slit skin smears are available.

Methods: This is a descriptive, observational, and retrospective study in which hospital data on leprosy was analysed. All the suspects and those with cardinal signs were subjected to detailed physical examination (screening for patches and nerves), slit skin smears (SSS), Voluntary Muscle Testing (VMT) after obtaining due content from the patient; those cases that are doubtful were subjected to Histopathological Examination (HPE) as well. The smears were done from routine sites such as ear lobes, forehead, gluteal area plus one over the patch. The smears are fixed, stained, graded and reported following standard procedures. The data on new cases and their smear reports from the medical records department were analysed.

Results: The total numbers of new cases of leprosy detected over 5 yrs period (2008·12) were 1481. On an average 296 new cases have been detected annually. A total of 241 (16%) among new cases had shown WHO grade 1 disability and 191 (13%) had shown WHO grade 2 disabilities respectively. In the year 2012, there is 17 % increase in grade 1 disability and 40% reduction in grade 2 disability on comparing 5 yr average. In 2012 there is a 23% increase in disability (grade 1 & 2 together) on comparing the previous year 2011.
A subset of 680 (47%) patients had reactions at the first visit during diagnoses, of which 522 (36%) had T1R / neuritis and 158 (11%) had ENLs respectively.

Conclusion: The following observations such high disability rate among new cases, especially among children, and new cases exhibiting lepra·reactions at diagnosis would indicate delayed detection of new cases. The reason for high disability rate among new cases are due to following reasons poor awareness, delayed health seeking behaviour, hidden cases are getting detected late, mismanagement of cases during under treatment period, improper self care practices, non availability of services (such as medications, MDT/Steriods, appliances including MCR Footwear in the peripheries). Hence various gaps in system need to be strengthened. Make Prevention of impairment and disability services more effectively and efficiently.

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Presentation Time: **Wednesday 18/09/2013 at 10:30 – 10:40**
Abstract Topic Name: **Leprosy Control**
Presentation Screen Number: **5**
Presenter: Qing Zu

KNOWLEDGE AND AWARENESS ON LEPROSY AMONG VILLAGERS IN NANPING CITY, CHINA

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Introduction: In order to carry out publicity of leprosy pertinently, and to improve the awareness of villagers and to provide evidence to develop the " Plan on eliminating leprosy burden in Nanping city (2011·2020) ", the awareness of leprosy knowledge in villages at low·epidemic status in Nanping city, Fujian was carried out .

Methods: A questionnaire survey was conducted among 1471 villagers and students from 7 villages and towns, where the new leprosy patient was detected in 5 years.

Results: About 42.86% of villagers had seen related publicity materials on leprosy, but for the students the rate was only 3.70%, the difference was statistically significant (X^2=68.264, P=0.000). The ways getting knowledge of leprosy were from posters, television and leprosy leaflets in turn. The favorable ways of getting leprosy knowledge were from television and leaflets in turn. The awareness rate of leprosy for villagers were more than school students, the difference was statistically significant (X^2=24.8000, P=0.000). About 52.38% of the villagers thought the leprosy would not cause disability, 64.29% of them thought it could be hereditary. While 89.63% of the students did not know the treatment is free, 82.22% of them did not know where to get the diagnosis if suspecting leprosy.

Conclusion: Investigation showed that the previous publicity and education of leprosy was focus on the adult, but ignored the students. The ways of publicity and education on leprosy should adopt television, posters and leaflets, and the content should be based on the etiology, infectiousness, symptoms and treatment of leprosy. Giving more publicity and education for the public play a positive role for improving public knowledge and awareness on leprosy.

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Presentation Time: **Wednesday 18/09/2013 at 10:40 – 10:50**
Abstract Topic Name: **Leprosy Control**
Presentation Screen Number: **5**
Presenter: Maria Da Graca Cunha

ASSESSMENT OF ADVERSE EFFECTS TO DRUGS (MINOCICLINE, OFLOXACIN AND CLOFAZIMINE) USED IN ALTERNATIVE MULTIDRUTHERAPY FOR MULTIBACILLAR LEPROSY PATIENTS

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Introduction: After introduction of multi-drug therapy (WHO/MDT) there was decline in prevalence coefficients and new cases detections.However, records of drug resistance and relapse cases are threatening factors against leprosy control. Therefore, the importance of new alternative regimens and the monitoring of adverse effects, avoiding abandonment or irregularity to treatment, are required.

Methods: A prospective, descriptive and observational study, in multibacillary leprosy patients, including cases who developed side-effects to standard WHO MB-MDT drugs and relapse cases, carried out in Fundação Alfredo da Matta, Manaus, Amazonas, Brazil, from April 2010 to January 2012. Side-effects were recorded on every patient file, filled during the course of alternative treatment. The patients received alternative regimen with daily self-administered doses of minocycline 100mg, ofloxacin 400mg and clofazimine 50mg and a monthly supervised dose of clofazimine 300mg for 06 months, following 18 months of daily self-administered doses of ofloxacin 400mg, clofazimine 50mg and monthly supervised dose of clofazimine 300mg.

Results: During research period, 26 patients were treated with alternative regimen. However, due to the Ethical Committe requirements not to include patients older than 65 years, only 21 cases were included in this study.Among these 21 cases. mild and not persistent side-effects occurred in 33,3% of the. From the 37 side effects registered, 45,9% episodes were attributed to ofloxacin, such as abdominal pain, nausea, vomiting, headache and insomnia and 21,6% due to clofazimine; 100% of patients showed skin pigmentation related to clofazimine, however, no side-effets due to minocycline was observed. Mean duration for the development of adverse effects from the start of therapy was 15,2 days. The media interval of follow-up was 13,7 months and 23,8% of patients had already completed the 24 months therapy. All the patients ahowed good compliance to treatment and among 15 patients that completed the first treatment year, 14 took 12 doses at 12 months fof alternative regimen.

Conclusion: The alternative therapy had a similar feasibility and operational mode compared with WHO MB-MDT,, well tolerated with no severe side-effects and good compliance. The side-effects attributed to the drugs components of the alternative regimen were comparable to previous studies, however the importance of this study is supported by the assessment of the combination of this new three drugs No drug was stopped unlike registered in others standard MDT studies which had treatment interruption by side-effects of the drugs components. There was significant correlation (p<0,001) between clinical classification and histopatologic diagnosis of the cases. At the end of first year, there was clinical improvement and bacteriologic index reduction. Nevertheless, it's necessary a long follow-up and new inclusions of patients viewing to increase the sample to better evaluation of the safety for the alternative regimen and its efficacy.

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Presentation Time: **Wednesday 18/09/2013 at 10:50 – 11:00**
Abstract Topic Name: **Leprosy Control**
Presentation Screen Number: **5**
Presenter: Maria Da Graca Cunha

LEPROSY AMONG HOUSEHOLD CONTACTS OF LEPROSY RELAPSE CASES IN A REFERENCE CENTER IN MANAUS, BRAZIL

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Introduction: Relapse of leprosy is rare event among patients treated with regularity multidrug therapy, but its occurrence should be a warning to health services, being between the reasons given for its occurrence the conviviality in the residence with many people and the presence of a household contact who had or has the disease. Household contacts of leprosy patients are a vulnerable group in the chain epidemiology of the disease, and proximity to blood relationship with an index patient are one of the risk factors associated with clinical leprosy in contacts.

Methods: A descriptive transversal study with quantitative approach was carried out at Fundação Alfredo da Matta (FUAM), reference center for leprosy and other skin diseases. From FUAM database, were collected relapse cases and their household contacts registered between December 2008 and November 2010. A total of 45 cases of relapse and their 160 contacts were registered, of which 29 and their 97 contacts met the eligibility criteria to live in Manaus, and were included in this study. Later on relapse cases were contacted by phone, in person during consultation or through home visits to obtain permission for holsehold contacts examination. Dermatological examination and interview with pre-designed instrument were made at out patient clinic of FUAM or during patients and household home visits.

Results: During the period of the study, a toatal of 45 cases of relapse and 160 contacts were registered, of which 29 cases of relapse and 97 contacts met the eligibility criteria to live in Manaus, and were included in the study. The majority of relapse cases (72,4%) were male, with a mean age of 42.59 years and 93.1% were multibacillary forms of the disease. Among household contacts 53.6% were female with a mean age of 24.21 years and 47.4% of them were children. Among 97 household contacts 83 (85.6%) had not performed dermatological examination, and 28.9% said they had not been warned by relapse case about the exam. Eight (8,24%) household contacts 8 had been reported cases of leprosy and 2 (2.06%) were new cases. Of the 8 contacts who had the disease 62.5% were female, 62.5% were first-degree relatives of relapse case and 50% were diagnosed with multibacillary forms. A statistical correlation (P-value = 0.008) between being household contact with history of disease and presence of BCG scar was found.

Conclusion: The household contacts are a vulnerable group and early detection, treatment and contact tracing may be important in reducing the burden of leprosy in the community. However, due to difficulties in performing activities of contacts surveillance, it is necessary better communication between the reference centers and basic health units, in order to promote decentralization of service and increase the number of contacts examined.

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Presentation Time: **Wednesday 18/09/2013 at 10:30 – 10:40**
Abstract Topic Name: **New Diagnostic Tools**
Presentation Screen Number: **6**
Presenter: Malcolm Duthie

PREVALENCE OF M. LEPRAE INFECTION IN ARMADILLOS ASSESSED BY SERUM ANTIBODY RESPONSES

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Introduction: Leprosy is a debilitating chronic disease caused by infection with *Mycobacterium leprae*. Despite the recent reduction in the number of registered worldwide leprosy cases as a result of the widespread use of multi-drug therapy, the number of new cases detected each year remains relatively stable. It is recommended that, to limit nerve damage and the associated disabilities, leprosy diagnosis and treatment be provided as a soon as possible. Currently diagnosis is based on the appearance of clinical signs, however, requiring labor intensive and time consuming clinical, laboratory or histological evaluation. While humans are the main reservoir of *M. leprae*, in the Americas nine-banded armadillos (*Dasypus novemcinctus*) also act as a reservoir an can be used as an experimental *M. leprae* infection model to better understand the progression toward leprosy.

Methods: In this study we examined the antibody responses of using standard ELISA of several antigens previously indicated to have diagnostic potential in humans. The development of these responses was evaluated in experimentally infected animals, then the prevalence of infection in wild armadillos captured in Florida and Georgia was determined.

Results: Surprisingly, antibody responses against the *M. leprae*-specific phenolic glycolipid (PGL)-I and Leprosy IDRI Diagnostic (LID)-1 protein antigens correlated poorly and were significantly different in experimentally-infected armadillos. When sera from over 300 wild armadillos caught in the southern region of the United States were analyzed against the combined single molecule LID-NDO, the prevalence of *M. leprae* infection was found to be over 19% as determined by antigen-specific immunoglobulin responses over ELISA OD 0.3.

Conclusion: These studies provide insight into the development of antibody responses during *M. leprae* infection. Our data indicate that a combination of antigens is best suited for identification of*M. leprae* infection and indicate a very high infection rate within the armadillo population of the southern United States.

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Presentation Time: Wednesday 18/09/2013 at 10:40 – 10:50
Abstract Topic Name: New Diagnostic Tools
Presentation Screen Number: 6
Presenter: Sergey Biketov

DEVELOPMENT OF LF TEST BASED ON SYNTHETIC ANTIGENS FOR THE SERODIAGNOSIS OF LEPRAE

E. Baranova [1], E. Panfertsev [1], P. Solov'ev [1], N. Kolosova [1], G. Feduykina [1], L. Saroyants [2], V. Naumov [2], L. Kononov [3], T. Mel'nikova [3], S. Biketov [1,*]

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Introduction: Despite the WHO efforts to eliminate leprosy, areas of endemic infection remain in some countries near Russia including Tajikistan and Uzbekistan. Annually millions seasonal workers arrived in Russia from such areas that determined necessity in sensitive and specific diagnostic tests for detecting leprosy at the early stages. In recent years a serological test is considered to be an attractive alternative or supplement to traditional diagnostic methods. It was showed that IgM antibody responses against phenolic glycolipid-I (PGL-I) and IgG antibodies responses against the some proteins of *M. leprae* can serve as indicators of leprosy. Because serological performances of various *M. leprae* antigens are quite different it was showed that a combination of antigens is required to provide accurate and early leprosy serodiagnosis. In presenting work neoglycoconjugates which contains both epitopes of recombinant proteins *M. leprae* and glycolipid PGL-I were created and tested as antigens in ELISA and immunochromatography formats.

Methods: Leprosy patients and healthy donors were recruited at Astrakhan region of Russia and Mounty-Badakhshansky region of Tajikistan. DNA encoding selected proteins was PCR amplified from *M. leprae* genomic DNA. The genes were expressed in E.coli strain BL21(DE3) to produce recombinant protein. Recombinant proteins (ML0050, ML0576 and chimeric fusion protein genetically assembled from ML0050, ML0576) were purified with Ni-nitrilotriacetic acid resin. Neoglycoconjugate. On the first step we synthesized of the next saccharides:4-(2-aminoethoxy) phenyl glycoside (AEP) derivate of 3,6-di-O-methyl-glucosa) and (3,6-di-O-methyl-β-D-glucopyranosyl)-(1→4)-O-2,3-di-O-methyl-α-L-rhamnopyranose (DMG-Rha-AEP-glycosid), which both contained amino group in terminal end for conjugation with proteins.4-[2-(4-carboxyethyl-[1,2,3]triazole-1-)ethoxy]phenyl glycoside (CET-AEP-glycoside), contained carboxyl group in terminal end for conjugation with proteins;the saccharides DMG-AEP and DMG-Rha-AEP were conjugated to ML0050 and ML0576, by two step method with use diethilsquarat derivate. The saccharides DMG-AEP-CET were conjugated to proteins by EDC (NHS-sulfo).The saccharide incorporated into the proteins was measured by mass spectrometry and gas chromatography. The serological activities of the neoglycoproteins against human leprosy serum were measured by standard ELISA and immunochromatographic tests.

Results: The trials of neoglycoconjugates for serodiagnosis were conducted in the Astrakhan Institute under Leprosy Investigation with using of 60 leprosy patients sera (44MB and 16 PB), 50 healthy donors from endemic regions (EC) and 50 healthy donors who had contact with leprosy patients. Among all tested neoglycoconjugates (based on the recombinant proteins ML0050 and ML0576 conjugated with mono- and disaccharides PGL-1 of *Mycobacterium leprae*) the best results was demonstrated by fusion protein conjugated with disaccharide DMG-Rha-AEP -glycoside. For MB leprosy patients the sensitivity and specificity of LF test using this conjugate was consist 83% and 80% appropriately. For PB leprosy patients the sensitivity and specificity of LF test was consist 55% and 75%.In ELISA this antigen showed similar sensitivity and specificity.

Conclusion: We have developed neoglycoconjugates which contains both epitopes of proteins ML0050-ML0576 and glycolipid PGL-I *M.leprae*. Testing of such antigen by ELISA and immunochromatographic showed possibility to use protein-saccharide conjugates for serology detecting leprosy.

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Presentation Time: Wednesday 18/09/2013 at 10:50 – 11:00
Abstract Topic Name: New Diagnostic Tools
Presentation Screen Number: 6
Presenter: Umesh Gupta

EVALUATION OF UTILITY AND APPLICABILITY OF MULTIPLEX PCR IN THE EARLY DIAGNOSIS OF LEPROSY IN EASTERN INDIAN POPULATION

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Introduction: India has achieved level of elimination of leprosy by 31st December, 2005 but it is seen from the recent data by World Health Organization, that India still contributed 54.09 % of newly detected cases of leprosy globally. While there has been a dramatic fall in prevalence rate of leprosy, the new case detection rate has not been reduced concomitantly. It is unclear why the incidence of leprosy is still so high in some specific geographical pockets and some ethnic populations, despite effective chemotherapy.To evaluate the utility and applicability of multiplex PCR in the early diagnosis of leprosy and correlate the findings of PCR with the conventional technique like slit skin smear (SSS) and histopathology.

Methods: The study was conducted at Hansen Clinic, Department of Dermatology, Medical College Hospital, Kolkata, as an institution based cross-sectional, descriptive study with duration of 2 years. 158 consecutive new clinically diagnosed cases of leprosy attending the Dermatology Out Patients Department of Medical College, Kolkata were served as cases and biopsies were collected from these cases for Multiplex PCR targeting RLEP and TTC as described by Banerjee et al (2008) and for histopathology.

Results: The clinico histopathological correlation with H&E staining of tissue was seen in 63.3% of patients. Of the 103 MB cases, 87 of them (84.46%) showed HPE corroboration, as were 13 (23.63%) out of 55 PB patients. In the study population, PCR found positive in 89.2% and negative in 10.8% of patient. PCR was 100% positive in LL, Histoid and Indeterminate type and 84.4% in TT, 94.6% in BT, 96.2% in BL patients. It is all negative in pure neuritic patients. The sensitivity of PCR was significantly greater ($p < 0.0001$) than that of slit skin smear microscopy in both the MB (95.14% vs. 56.31%) and PB (78.18% vs. 0%).

Conclusion: Multiplex PCR because of its expenses and technical challenges may not completely replace conventional diagnostic methods; rather, it can be positioned as a very useful complimentary tool in the diagnosis of doubtful cases and early detection of the bacteria.

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Presentation Time: Wednesday 18/09/2013 at 10:30 – 10:40
Abstract Topic Name: Experiences of People and Community
Presentation Screen Number: 7
Presenter: Venkata Ranganadha Rao Pemmaraju

LOKDOOTS INTERVENTION IN ADVOCATING HEALTH AND SOCIO-ECONOMIC ISSUES OF PEOPLE AFFECTED BY LEPROSY

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Introduction: People affected by leprosy are often unaware that the disease is treatable or how to access treatment. The delay in diagnosis and treatment may lead to ulcers and irreversable deformities.Therefore advocating health and socio-economic issues among the people affected by leprosy becomes very important. People from the same community can communicate effectively. So Chetana (meaning initiatives to make things happen), was conceptualized involving people from leprosy affected families, living in the communities served by LEPRA referral centers. They were called Lokdoots (meaning messengers). The issues related to the activities of daily life of people living in the community were discussed. Some of the identified problems were addressed.

Methods: A house to house survey was done looking at the medical needs in the community.The colonies have 390 houses with 425 families with a population of 1392, of whom 365 are leprosy affected, 284 with deformities and 166 with ulcers. 6 Lokdoots from same community were identified, trained and motivated to promote information about leprosy and its exsisting service. Lokdoots worked living in the community by supporting people affected in accessing services and improving their quality of life. Support groups were also formed for self care practices in the community.

In the process of project evaluation, the improvemnts in quality of life of community inmates after Lokdoot intervention was evaluated and part of results is projected.

Results: To address the health related issues, camps were conducted in collaboration with the Govt Medical Health staff. Lokdoots assisted Chetana project in creating awareness about the health camps in people affected by leprosy. 92 (41 Male, 51 Female) out of 208 inmates were diagnosed with the hypertension and Diabetes. They were facilitated to take medicines from nearest Government hospitals. In the DPMR camps, the Lokdoots and Chetana staff taught the colony inmates about the importance of self care and usage of foot wear to reduce and heal ulcers. During the period of intervention, ulcers healed in 22 clients while ulcers reduced in 31 clients. To reduce social stigma within the community, many events involving youth from the community were conducted. To increase health awareness in the community Anti Leprosy day, World Disability day, World sight day were observed. Chetana with the help of Lokdoots identified 49 disability patients unable to walk and provided wheel chairs to 10 of them, cruches (15), walkers (4) and hand sticks (20). The Lokdoots facilitated the colony inmates to get AAY cards (271), ration cards (8), pensions (66), train passes (26), bus passes (14), medical certificates (14) and gas connections (20). To improve the economical status of the community, livelihood trainings like motor car driving, computer training, tailoring, candle making were provided which helped them to earn jobs.

Conclusion: With the involvement of inmates in planning and implemention, Lokdoots advocated the community people about the services. The project helped the disability patients to get the disability pensions by addressing the issue at concerned district level officers.Listening to the advice of Lokdoots; the clients with plantar ulcers are preventing their ulcers by using MCR footwear and practicing selfcare. The youth from colonies up graded their skills by attending various seminars and tranings.

P-350

Presentation Time: **Wednesday 18/09/2013 at 10:40 – 10:50**
Abstract Topic Name: **Experiences of People and Community**
Presentation Screen Number: **7**
Presenter: Nchekwube Ndubuizu

THE SOCIO- ECONOMIC SITUATION OF LEPROSY SETTLEMENTS IN SOUTH-EASTERN NIGERIA: A RAPID APPRASIAL

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Introduction: For centuries, leprosy was stigmatized largely because of hideous deformities that complicate late or untreated leprosy. Prior to discovery of the sulphones in the 1940s, there was no effective treatment for leprosy. Consequently, public health authorities all over the world resorted to strict segregation practices to contain the spread of the disease. In keeping with global practice at the time, the first leprosy settlement was established in Nigeria in 1928 in Itu, Akwa-Ibom state by Presbyterian Missionaries. Subsequently, government and several other Christian denominations set up additional settlements across Nigeria. They include: Uzuakoli, Oji River, Ekpene Obom, Ossiomo, Mkar and Garkida. These settlements flourished at that time owing to active collaboration between the donor missions abroad and the local authorities. Indeed, many of these settlements also served as research centres.
In addition to medical care, residents of these settlements were provided with social and vocational rehabilitation. The government and various agencies provided them with funds for feeding, drugs, shelter, clothing and basic education. In 1992, the Federal Ministry of Health announced that "leprosy settlements as such has ceased to exist". In the last two decades, government funding of these institutions has declined and in many cases ceased altogether. As a consequence, the residents rely on irregular and inadequate support for livelihood from individuals and civil society groups. This situation has resulted in an increase in the proportion of PALs who had resorted to begging as a means of livelihood.
To systematically appraise the current state of residents in the settlements, GLRA embarked on a rapid survey of three of these settlements in south-eastern Nigeria.

Methods: A descriptive, cross-sectional study was conducted among PALs in Uzuakoli, Oji River and Mile Four leprosy settlements in southeast Nigeria. Pre- tested interviewer administered questionnaires were used. A total of 150 PALs participated in the study. Data analysis was done using SPSS version 16.0 and results presented as percentages.

Results: Sources of income for PALs were: begging and charity handouts, 63.3%; monthly stipends (welfare), 12.7%; other sources such as menial jobs, 24%. The economic situation of PALs was rated as good, moderate and poor by 14.7%, 28.7% and 56.6% respectively. 81% of respondents freely participate in the social activities of the community. Healthcare, potable water and good toilet facilities were accessible to 61%, 95% and 63% of PALs respectively. Poor housing condition was reported by 44% of PALs. Almost all (99%) attributed the provision of social services to FBOs, INGOs and philanthropists.

Conclusion: The study shows most residents of the leprosy settlements resort to begging and charity hand-outs for their livelihood. We recommend that a comprehensive survey of all leprosy settlements in Nigeria be conducted and the result be used to inform policy on rehabilitation of PALs.

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Presentation Time: **Wednesday 18/09/2013 at 10:50 – 11:00**
Abstract Topic Name: **Experiences of People and Community**
Presentation Screen Number: **7**
Presenter: Kil Yong Lee

THE PAINSTAKING EFFORTS FOR HUMAN RIGHTS WITH DIGNITY IN KOREA

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Introduction: The challenges on Hansen's disease (HD) related issues generally known as leprosy are best met only by the people affected by HD with rich experience. The opportunity to face the challenges by themselves is top priority in eliminating HD itself and promoting many other problems regarding HD. Based on this productive spirit, Hanvit Welfare Association (HWA) has provided the people socio-economical rehabilitation programs such as Resettlement Village Movement. HWA in accordance with Civil Law 32 is Korea's only NGO representing persons affected by HD and our family to promote the human rights and welfare. Without our get-together organization, we could not do anything to achieve today's programs in Korea. The future will be realized when we are get together with our whole heart and positive involvement.

Methods: In 1950's those affected by HD even after cure were rejected by everybody including their immediate family members. There was no choice but being forced out of home begging for food, from door to door, for our survival even though we were physically able to work. It was thought that if we could get together and unite our effort to get something started to support ourselves, instead of begging. It could provide for support ourselves, restore our human dignity and avoid the civil complaints for begging on streets. However, there were no places for our economic activities but the deserted mountain areas isolated from the general public were only available. With a little seed money received from the Korean government, Christian communities and foreign charitable organizations, we were able to begin raising pigs or chickens. The economic programs at the Resettlement Village were managed by ex-patients only.

Results:
1. Recovery of human rights with full dignity
2. Participation in the policy-making program
3. Revising the law and improving the welfare system of the HD patients
4. Promoting public awareness program
5. Eliminating social stigma and discrimination against HD

Conclusion: Under the management of HWA together with those affected by HD, livestock-farming supported by the Korean government was evaluated as a success to achieve self-support in the world. It is estimated that desire for wealth greatly increases our spirit for life. Without the organization to represent those affected by HD, we didn't have a growth engine for seeking self-reliance with human dignity. Centering on HWA, we were able to unite and gain the cohesive power to protest our rights. It is important to pool wisdom with many members of those affected by HD in order that we may start many programs. This is why organization like HWA should be established to achieve human rights with dignity in other countries. It seems that Korea should be a role model for many HD prevalent countries in the world.

P-158

Presentation Time: **Wednesday 18/09/2013 at 10:30 – 10:40**
Abstract Topic Name: **Microbiology**
Presentation Screen Number: **8**
Presenter: Flavio Lara

BLOOD CLOT ABNORMALITY IN LEPROSY PATIENTS

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Introduction: The response to infections may be accompanied by systemic changes in lipid metabolism and the coagulation cascade. Here, we investigate the nature of a well-known lipid-like mass formed just above the blood clot during lepromatous patient serum harvesting. The main point of the present work was to understand the composition and origin of this lipid mass, herein called as leprosum mass.

Methods: We followed serum harvesting from approximately 2,000 patients and contacts that was conducted by the leprosy ambulatory Souza Araujo in Rio de Janeiro, Brazil (Fiocruz Foundation). We performed High Performance Thin Layer chromatography (HPTLC) to analyze the lipids of the leprosum mass, whereas the clot's proteins were analyzed by 2D-Eletrophoresis and Mass spectrometry. We measured IgM and IgG against cardiolipin, and dcoagulation and lipids parameters in a group of patients blood.

Results: 38 patients presented the leprosum mass in their blood, all of them belonging to the lepromatous pole of the disease, with a high incidence of erythema nodosum leprosum (ENL). HPTLC analysis showed phospholipid levels similar to the observed in normal blood clot, and a higher amount of neutral lipids: mainly cholesterol ester and triglycerides. Differential proteomic analysis demonstrates that the leprosum mass is a true fibrin clot, and its distinct appearance can be attributed to a high lipid content composed by blood HDL apolipoprotein fraction and a glycosaminoglycan (GAG), that is most likely dermatan sulfate, probably originated from tissue damage. The majority of the identified proteins are represented by fibrinogen and immunoglobulin, among others. Although coagulation parameters such as prothrombin time (PT) presents normal results in these patients, fibrinogen, D-dimers and anti-cardiolipin IgM presents alarming high levels.

Conclusion: Our results show an exacerbation of intravascular coagulation process in LL patients, especially in those that were on progression to Erythema Nodosum Leprosum (ENL). The involvement of immune complexes anti-cardiolipin is being investigated.

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Presentation Time: **Wednesday 18/09/2013 at 10:40 – 10:50**
Abstract Topic Name: **Microbiology**
Presentation Screen Number: **8**
Presenter: Renata Mayangsari

THREE DIFFERENT GENOTYPING OF M.LEPRAE IN A FAMILY

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Introduction: Background. *M.leprae* is still uncultivable up to present, therefore genomic studies of this bacilli are conducted mostly by molecular biology approach. The Variable Number of Tandem Repeat (VNTR) methods has been used for this purpose. One of these, the TTC repeats counting technique could be used for the study of different strain or sub-strain of *M.leprae*. This is a case report of multiply leprosy cases in a family with different *M.leprae* genomic types based on TTC repeats.

Methods: Case. A family, mother, 35 years old with chief complain pain erythematous nodule on almost all over her body since 2 years ago. The nodules were broken and become ulcer accompanied with pain and fever. She was diagnosed as Leprosy Lepromatous type with Lucio Phenomenon. Her husband, 36 years old were also diagnosed as Leprosy Tuberculoid type with white anasthetic patches on his right and left cheeks since 6 months ago. Her daughter, 4 years old was diagnosed as Indeterminate Leprosy due to white small patches on her left cheek, left arm and left upper leg, no complain about anesthetic sensation. ELISA, histopathology examination and PCR for detection of *M.leprae* were performed. The result of PCR were positive for all of them. After sequencing of the TTC area, it revealed that the number of TTC repeats from the mother's isolate was 16 times, while her husband's isolate was 18 times and surprisingly, the daughter's isolate showed only 13 times of TTC repeats.

Results: Discussion. Family with leprosy living in the same house. Transmission from mother as the index case of transmission to others was suspected. Based on the TTC study proving infection of *M.leprae* with different genotyping. Means there were different sources between each of them. It could be from other leprosy patients or from the environment (non-human resources of *M.leprae*). Further study is required.

Conclusion: Although household contacts in leprosy is the high risk group to be affected, the source of *M.leprae* infection in multiple leprosy cases in a family is not always due to one source of infection, but other sources of *M.leprae* infection should be considered.

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Presentation Time: **Wednesday 18/09/2013 at 10:50 – 11:00**
Abstract Topic Name: **Microbiology**
Presentation Screen Number: **8**
Presenter: Vishal Chugh

HANSEN'S DISEASE, A BIOCHEMICAL PERSPECTIVE: INSIGHT INTO THE ROLE OF ANTIOXIDANTS

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Introduction: Leprosy is one of the oldest diseases whose bacteriological aetiology was demonstrated way back in 1873 by Armaneur Hansen. Despite the rapid evolving field of science and technology, progress in understanding biology, pathology and biochemistry of Hansen's Disease has been very slow. A constellation of reactive oxygen species (ROS) capable of damaging cellular constituents are generated in excess during the chronic, inflammatory, neurodegenerative disease process of leprosy. The consequences of this leads to enhanced oxidative stress and lower antioxidant status. Study and assessment of oxidative stress can play a significant role in the arena of leprosy treatment.

Methods: The study comprised of 62 newly diagnosed leprosy patients, classified according to Ridley and Jopling criteria into five subtypes. The control group comprised of 14 age matched normal healthy subjects who were not taking supplementary antioxidants and were free from any skin diseases or any microbial infections.
Random samples of venous blood were obtained from the patients and controls.These were collected in heparin bulbs. Samples were processed to separate plasma and erythrocytes. The concentration of Malondialdehyde (MDA) was measured in plasma by method using thiobarbituric acid reaction. The SOD activity was measured by the method as described by Winterbourn and the results are expressed as units of SOD per milligram of haemoglobin. The haemoglobin was measured by colorimetric method using Drabkins reagent. The ratio of MDA/SOD was calculated for each patient before subjecting the data to statistical treatment.
Mean and standard deviation of the oxidative stress markers for statistical significance using EPI INFO software.

Results: The leprosy patients were divided into five groups comprising 16(LL), 15(BL), 9(BB), 12(BT) and 10(TT) patients. The biochemical marker of lipid peroxidation, Malondialdehyde (MDA) was measured in plasma of 62 leprosy patients. Mean plasma MDA level was lowest (3.077 ± 0.25) in tuberculoid leprosy (TT), while it was highest (4.831 ± 0.54) in lepromatous leprosy (LL) as compared to controls (3.414 ± 0.22). A progressive increase in peroxidation was detected along the leprosy spectrum from TT to LL and the increase was significant in BB, BL, LL groups as compared to controls.
The erythrocyte Superoxide dismutase (SOD) level as a measure of antioxidant status showed trend in opposite direction when compared to Malondialdehyde. The mean SOD activity was highest in TT (34.3 ± 2.06 p/mg Hb) and lowest in lepromatous leprosy LL (24.9 ± 5.68 p/mg Hb) as compared to controls. The difference in mean values of BB, BL and LL when compared to the controls were highly significant ($P < 0.001$)
The ratio of MDA/SOD may be regarded as an index of oxidative stress .This index was found to increase steadily from TT (0.193) to LL (0.089) as compared to controls (0.102) indicating increased lipid peroxidation in LL when compared to TT.

Conclusion: Oxidative stress (OS) results from an imbalance between free radical generating and scavenging systems. The end product of lipid peroxidation, malondialdehyde (MDA) serves as a marker of cellular damage. Superoxide dismutase (SOD) traps free radicals and acts as a free radical scavenging system. The excess production of ROS as seen in leprosy cases could lead to degeneration of tissues and derangement of internal organs. Intervention with antioxidant supplementation can prevent oxidative stress mediated through ROS activating the net antioxidant status

P-072

Presentation Time: **Wednesday 18/09/2013 at 10:30 – 10:40**
Abstract Topic Name: **Training in Leprosy**
Presentation Screen Number: **9**
Presenter: Dr Penvadee Pattanaprichakul

ASSESSMENT OF NON-DERMATOLOGISTS' KNOWLEDGE REGARDING CLINICAL DIAGNOSIS OF LEPROSY AND PRACTICE IN SLIT-SKIN SMEAR AS A BASIC INVESTIGATION

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Introduction: Diagnosis of leprosy can be made from cardinal signs of clinical presentation and presence of acid-fast bacilli in a slit-skin smear (SSS) which remains a conventional method for leprosy detection due to its practicable and reproducible capacities for general practitioners. The aim of this study is to evaluate the ability for making diagnosis of leprosy and identification of basic investigation by general practitioners and non-dermatological specialists who attended an annual short-course training in dermatology.

Methods: Short-course training in dermatology for general practitioners was annually conducted by the Dermatological Society of Thailand. Participants' pre-test answer sheets were retrospectively reviewed during the year 2011-2012. These tests were composed of viewing a clinical picture of leprosy with a brief patient's history. Participants were asked to answer three questions for a diagnosis, physical examinations and further investigations respectively.

Results: One hundred and seven physicians voluntarily turned in their answer sheets. Most physicians were female (75.7%). About half of the participants were aged between 26 to 30 years. Eighty-three of them (77.6%) were general practitioners and the rest (22.4%) were non-dermatologist specialists. Most of them were able to make a diagnosis of leprosy (60.7%) but only 15 (23.1%) participants could describe physical examinations completely. Only 20 (30.8%) participants documented a slit-skin smear for an appropriate investigation.

Conclusion: Most of general practitioners and non-dermatologist specialists are able to diagnose leprosy. However most of them could not perform physical examinations completely and also lack of knowledge for a slit-skin smear which is a basic diagnostic tool for making a diagnosis of leprosy.

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Presentation Time: Wednesday 18/09/2013 at 10:40 – 10:50
Abstract Topic Name: Training in Leprosy
Presentation Screen Number: 9
Presenter: Artur Gosling

THE EXPERIENCE OF ILLNESS AND TREATMENT IN LEPROSY: THE LEARNING OF MEDICAL STUDENTS FROM THE PATIENT'S PERSPECTIVE USING THE MCGILL ILLNESS NARRATIVE INTERVIEW (MINI)

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Introduction: The current curriculum of medical school of Federal University of Rio de Janeiro is based on the biomedical and hospital model. The "Des(Mancha)" Brazil Project is a university extension of the curriculum and a scientific program for the student learn about the epidemiological reality in poor communities. Brazil is the second country in the world in number of leprosy cases and students have the opportunity to know many actions of this important endemic region. One activity of the project was the implementation of MINI for the students learn about the experience of illness and treatment of patients affected by leprosy in view of person-centered medicine. The purpose of this study was to analyze the contribution of MINI performed by undergraduate students of the School Medicine in understanding the experience of illness and treatment of persons affected by leprosy.

Methods: MINI was used by students of medical school from third to tenth periods working in Des (Mancha) Brazil Project for training narrative hearing skills. The interviews were recorded, transcribed and discussed during seminars.

Results: 40 interviews were performed and allowed students to understand the complexity of the interview process with patients. Results shows an important suffering and stigma started during the leprosy diagnosis including post multidrug therapy treatment when patients are considered cured by World Health Organization.

Conclusion: The application MINI allowed the knowledge of the experience of illness and treatment of patient's perspective. It's an important tool for undergraduate students to understand the dimension and care from the patient's perspective beyond the biomedical model.

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Presentation Time: Wednesday 18/09/2013 at 10:50 – 11:00
Abstract Topic Name: Training in Leprosy
Presentation Screen Number: 9
Presenter: Pankaj Gupta

EFFICACY OF ONE MONTH TRAINING IN PHYSICAL MANAGEMENT OF IMPAIRMENT AND DISABILITY IN LEPROSY FOR PHYSIOTHERAPY STUDENTS

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Introduction: Leprosy is eliminated from India in 2005. But still about 100,000 to 120,000 new leprosy cases are reported in India. After achieving the target of elimination of leprosy, leprosy services are now being integrated into the general health services. Physiotherapy services play a very vital role in the all the levels of the intervention in leprosy services. In order to provide the physiotherapy services at various levels, a one month training programme is conducted at the TLM community hospital for undergraduate students of physical therapy.
The main objective of this study is to find out the efficacy of the one month training programme for students, which is conducted in TLM Community hospital Nandnagri Delhi-93.

Methods: All the undergraduate students of physical therapy, who attended the training from March 2009 to march 2012, were included in the study. Total of 370 students attended the training out of which 111 were males and 259 were females. A pre and post outcome measure of the training programme was assessed for the students. Pre assessment evaluation was carried out at the beginning of the training programme and same was administered at the end of the training programme. The evaluation questionnaire was consisted of the multiple choice test of 100 questionnaires, assessing the knowledge base on anatomy of hand and foot, signs and symptoms of leprosy, surgical aspects, splinting and community based rehabilitation and biomechanics. But practical test was carried out at the end of training programme only.

Results: To test the efficacy of the training programme in relation to each subject a paired sampled t test was administered to the pre and post test results. Significant difference was found in the anatomy subject, suggesting that students have improved their knowledge and skills in this subject. Significant difference was also found in pre and post scores of the biomechanics, surgical rehabilitation, splinting and community based rehabilitation. The overall total scores was found to be significant ($p<0.001$), suggesting that overall learning was significantly higher. To conclude, overall learning in the training programme is very high, specific learning in each subject may be less. Students scored an average of 70% in the post training practical exam.

Conclusion: This study was attempted to find out the efficacy of the one month training programme, results of the study shows significant improvement in the overall learning in various aspects. This difference suggests that good exposure of theoretical aspects is the baseline for development of the good practical aspects. Further from the study it can also be concluded that there is marked improvement in the performance of the students in terms of efficiency and decision making capacity. Therefore it can be concluded from the study that one month training has an impact on the learning of the students.

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Presentation Time: Wednesday 18/09/2013 at 10:30 – 10:40
Abstract Topic Name: Promoting Early Diagnosis
Presentation Screen Number: 10
Presenter: Michel Sawadogo

CONTRIBUTION OF LEPROSY ACTIVE SCREENING CAMPAIGNS IN ENDEMIC AREAS IN BURUNDI: THE CASE OF FIVE PROVINCES IN 2012

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Introduction: Bubanza, Rutana, Cibitoke, Bubanza and Cankuzo are the most affected by leprosy regions in Burundi. With the repatriation of refugees from Tanzania, some provinces recorded more cases of leprosy. This is to strengthen the detection of leprosy in these areas that the National Leprosy Control Programme, in collaboration with Damien, adopted to conduct active screening each year. The supervision of local staff by the national level can not only detect and manage leprosy cases, but also detect many other dermatological diseases cases.

Methods: Campaigns are conducted in two stages:
The first is an awareness of people surrounding health facilities areas. This awareness aims to drain the day of testing, all skin diseases to facilitate suspicion and detection of leprosy. The second stage involves the active screening. At the detection site, usually a hospital or Health facility, the screening team was divided into two groups:

- A group for the triage of cases suspected for leprosy and, only serious suspected leprosy are oriented the second group. Not leprous diseases are treated through a stock of drugs available for each team.
- The second group provides confirmation of leprosy cases and proceeds to the registration of case in leprosy register. This team provides supervised treatment and the guidance to patient necessary to continue treatment.

All group members should take turns in both groups to strengthen their capacity for diagnosis of leprosy. NTP staffs were instructed to demonstrate the practice of screening for leprosy. The mobilization team took care of the community mobilization and guided suspects identified in the field to the screening centers.

Results: In total 1423 persons suspected of leprosy were reported in the three-day campaign organized in 5 provinces for consultation. Among these suspects, 101 leprosy cases and 70 cases (4.9%) and 31 old cases (2.2%) were detected a proportion of total 6, 1% of cases. Other dermatological diseases or not, were detected and supported: Vitiligo (221 cases or 15.5%), mycosis (190 cases or 13.4%), eczema (19 cases or 1.3%), Phtiriasis Versicolore (215 cases or 15.1%), Elephantiasis (46 cases or 3.2%), parasites (76 cases or 5.3%) and other various diseases (rashes, allergies, varicose veins, vitamin deficiencies, acne). Of all cases of leprosy in the country, these five campaigns have helped to identify nearly 15% of all new cases annually (70 cases of 445 cases per year).

Conclusion: Campaigns have helped to detect leprosy which represents about 5% of the pathologies that are present. These five campaigns have helped to identify about 15% of all new cases detected annually. In addition, campaigns can help to train field health staff (nurses and doctors) in leprosy screening and treatment, and to ensure a routine detection of leprosy at every health facility and district hospitals. Leprosy control goes through the involvement and accountability at each health system level and the community.

P-332

Presentation Time: Wednesday 18/09/2013 at 10:40 – 10:50
Abstract Topic Name: Promoting Early Diagnosis
Presentation Screen Number: 10
Presenter: Yada Toutchon

PROMOTION OF HEALTH SEEKING BEHAVIOR OF COMMUNITY LEPROSY CONTACTS AT MOO 11 TUMBOL BAN SOK, KHONSAWAN DISTRICT, CHAIYAPHUM PROVINCE

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Introduction: The leprosy is a contagious chronic disease causing permanent disability in patients. Therefore, it has been a crucial problem for public health, economics and society. Disability causation in leprosy mainly is from delay treatment. Hence, this study aimed to determining the effectiveness of application of social marketing and social support for promoting health seeking behavior of leprosy contact cases.

Methods: This study was quasi-experimental research. Samples of the study were 96 persons, 48 being the experimental group and 48 being the comparison group. Analysis of community, communication channels, quality of health seeking, perceived of leprosy and collected data to plan for application of social marketing and social support for promoting health seeking behavior of experimental group. They were produced media, test media.

Results: The influential media for Leprosy awareness were people media (health volunteer) 43.10 % and Cutout media 27.59%. After intervention Leprosy awareness of target group significantly increase than before intervention(p-value< 0.001) and significantly more than control group and Leprosy patient contacted people of target group had more physical exam for Leprosy finding than control group(p-value< 0.001).

Conclusion: The result from promotion of Leprosy health care seeking behavior experiment can be used in planning of Leprosy Health education and proper media producing which go along with community life style and also persuade leprosy patient to get medical care before disability come out.

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Presentation Time: Wednesday 18/09/2013 at 10:50 – 11:00
Abstract Topic Name: Promoting Early Diagnosis
Presentation Screen Number: 10
Presenter: Rajni Singh

AN ANALYSIS OF DOOR TO DOOR CAMPAIGN FOR NEW CASE DETECTION IN BIHAR IN 2012, INDIA

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Introduction: Leprosy currently affects approximately a quarter of a million people throughout the world, with 70% of these cases occurring in India. Cases of leprosy in India have decreased dramatically from 5,000,000 cases in 1985 to 213,000 cases in 2009. This significant decrease is largely due to the effectiveness of multi-drug therapy (MDT) that was developed in 1981. The prevalence of leprosy in India is now less than 1 case in 10,000 individuals, meeting the World Health Organization (WHO) criteria for leprosy elimination. Yet the WHO criterion for elimination is not met in all areas of the country; rural areas and urban slums continue to experience up to five times the number of leprosy cases as the national average.
Integration is taken place in 2001 and ILEP has supported with Districts Technical Team in all the 38 districts of Bihar. Case detection and treatment at PHC level are very good. More than 19,000 new cases were registering every year for treatment through PHC. High No. of suspect and referral are now coming from ASHA, AWW, PRI and RMP.

Methods: A State level plan for new cases detection campaign) door to door search for three days through Accelerated social Health Activist (ASHA) has been planned and disseminated in a one day workshop with all the District Leprosy Officer of Bihar. They have instructed to make a micro plan for district with the consultation through Primary Health Centre (PHC Wise).
All the District Leprosy Officer has sent their district Micro Plan (Training, Search programme, Information Education, Communication, meeting with District Health Society, NGO, other state Holder).
All required format has been printed and checklist has been developed for all the level (PHC, District, and State). The search programme were designed in four phase to cover all state for better monitoring /supervision purpose. International federation for anti-leprosy association (ILEP) has been deputed for monitoring of the search programme.

Results: Initial report has been received from 36 districts out of 38 districts. The finding of the search programme was analyzed at State level. The population of Bihar is 106,150,623. Enumerations were done for 78350208 (73.8% of total population) and examination has made for 63678104 (81% of enumeration). Total 67657 suspects has been referred for confirmation and 37644 (55.5% of total suspect) has been reported to PHCs. 3418 has been confirmed with 1085 MB cases. 294 (Gr II – 133) disability cases, 421 child cases and 973 female cases among new cases has been reported.
The new cases will go high in coming month because 55.5% suspect has been reported at Primary Health Centre. Female % is very low, which has been concern.

Conclusion: The search programme result shows the incidences of new cases are still high in the community. This type of search was required every year at least for 5 year to break the chain of infection in the community. These types of programme also increase the awareness in the community.

P-291

Presentation Time: Wednesday 18/09/2013 at 12:30 – 12:40
Abstract Topic Name: Surgical Rehabilitation
Presentation Screen Number: 1
Presenter: Dr Atul Shah

"GRIP-AID KIT" FOR REHABILITATION IN LEPROSY

N. Shah [1,*], A. Shah [2]

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Introduction: Leprosy is one of the foremost causes of deformity. The deformities and disfigurements this disease causes are the root cause of crippling, handicap and stigma. It is estimated that about one to two million individuals world-wide are disabled physically and socially as a result of leprosy. This represents the backlog of patients from the era of monotherapy as well as those with deformities due to sensory loss. In India alone it is estimated that in the 800 leprosy colonies itself there are about 100 patients in each colony in need of rehabilitation with the 'Grip-Aid Kit'.

Methods: The Grip-Aid Kit is a plastic pouch containing the following items. The Velcro strap for application on the absorbed, amputated or shortened hands: This strap is supported by attaching "superlon" (a type of spongy rubber) to it which generally goes on the volar aspect of the hand and provides cushioning to the handles of the inserted articles. It holds a spoon, a glass, a comb, a tooth brush and even a mobile stand. Instant grip-aids are indicated where patients are unable to carry out activities of daily living, mainly eating, drinking, combing hair, brushing teeth, and talking on a mobile phone properly, on account of primary or secondary hand deformities or both, due to leprosy or trauma.

Results: More than 1200 patients have been provided with Instant Grip-Aid Kit with the benefits cited as follows. One of the most important activities of life is eating a meal. But in the absence of prehensile functions due to loss of fingers this normal activity gets reduced to the demeaning ordeal of having to lick the food sticking to the stumps of the hands. Therefore, a spoon with a flat handle which can be inserted in between the two straps of the Velcro is an essential article included in the kit. A steel glass and a steel handle for holding it: The steel handle is inserted into the slot on the grip-aid and a glass of hot tea is then inserted into the round portion, i.e., the ring of the handle. Thus, even with the stump of one hand it becomes easy to drink tea, or rather to enjoy drinking tea without any fear of getting burns. A tooth brush and tooth paste: Cleaning one's mouth before and after meals is an extremely essential daily activity. Particularly in old age, hygiene of the mouth takes precedence. Therefore, the Grip-Aid kit contains a tooth brush which can be inserted into the grip-aid strap. A comb with a short straight handle supplied with the grip-aid kit can be used for combing the hair. A novel item for insertion in the grip-aid strap is the mobile phone holder or stand.

Conclusion: The Instant Grip-Aid Kit is one such sustainable modality that is prefabricated with light-weight materials and is simple to apply and use. Not surprisingly, it was readily accepted as an innovative solution for patient-centric activities and for doing away with the dependence on others for many of the activities of daily living. Therefore a National Program of Rehabilitation with Grip-Aids has been launched by Novartis Comprehensive Leprosy care Association.

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Presentation Time: Wednesday 18/09/2013 at 12:40 – 12:50
Abstract Topic Name: Surgical Rehabilitation
Presentation Screen Number: 1
Presenter: Thanatpong Thienwuttiwong

COMPARATIVE EFFECTIVE NESS OF NEURITIS IN LEPROSY PATIENTS BY SENSORY TESTING WITH BALL PEN AND MONOFILAMENT

T. Thienwuttiwong [1,*]

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Introduction: Leprosy is a chronic infectious disease caused by *Mycobacterium leprae*. It causes impairment of motor, sensory, or autonomic function. Nerve-functions impairment is the key pathological process leading to disability and handicap. Early detection and treatment of nerve function impairment is of paramount importance in leprosy.

Methods: All data in this study are collected from 34 leprosy patients who attended the leprosy OPD Buriram hospital from 1st July 2008 to 30th April 2010. Ball pen and monofilament was applied to palm (10 points) and sole (12 points) on both sides. Data was analyzed and present by percentage and Exact Mc neemar test.

Results: Sixty-seven percent of them were male eighty-eight percents were classified as multibacillary leprosy and age-distribution were 5.88 and 76.64 percent among age group below 16 years and 16-60 years respectively. As for their occupation, 58.82 percent were farmer while 26.47 percent were labor. Results of the study reveled that impairment of sensory function of median, ulnar and posterior tibial nerve tested by monofilament were 33.35, 35.29 and 38.34 percent respectively, meanwhile ball pen test yielded 5.55, 2.04 and 8.82 percent respectively. Overall findings indicated that effectiveness of diagnosis of neuritis tested by monofilament was 2.6 times higher than that by ball pen (47.06 vs 17.60 percent) with statistically difference (p=0.02).

Conclusion: The effectiveness and sensitivity of sensory testing by monofilament is higher than ball pen 2.6 folds. Substantial levels of underdiagnosis of sensory loss with the ball pen were observed.

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Presentation Time: Wednesday 18/09/2013 at 12:50 – 13:00
Abstract Topic Name: Surgical Rehabilitation
Presentation Screen Number: 1
Presenter: Thania Cordeiro

POSTURAL BALANCE CONTROL OF THE LEPROSY PATIENT WITH PLANTAR SENSITIVITY IMPAIRMENT

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Introduction: Leprosy is a granulomatous disease that affects the peripheral nervous system, mainly sensory fibers. To evaluate the sensitivity and detection of leprosy neuropathy the Semmes-Weinstein sensitivity test (SWtest) is widely used as an essential tool to control physical disabilities caused by leprosy. The body balance maintenance and postural control refers to the functions of the sensory and motor nerves and may be affected by orthopedic, neurological or rheumatic injuries. The Body Center of Pressure (COP) constitutes the neuromuscular response to changes or accelerations of the body's center of gravity. Changes in sensitivity and proprioception caused by leprosy can affect postural control. Stabilometry can measure and quantify postural oscillations by the COP's projection for the whole body as well as for each foot, in the anterior-posterior direction (COP AP) and medial-lateral direction (COP ML). Studies that relate changes in plantar sensitivity, laterality and stabilometry in leprosy are scarce. The present study aims to observe stabilometry patters for multibacillary (MB) and paucibacillary (PB) leprosy individuals with impaired plantar sensitivity, comparing these results with individuals without leprosy (CG).

Methods: 15 MB and 6 PB leprosy subjects, and 11 subjects for the CG were randomly selected, all without mechanical impairment and no diagnoses of diabetes.
MB and PB had their plantar sensitivity checked by the SWtest (by SORRI, Bauru). All groups were also evaluated for postural balance using a baropodometer (Footwork, ISP Informatique), during standing position with eyes opened and barefooted positioned freely. The balance variations were measured by the displacement of the COP, COP ML and COP AP for right and left feet and total body projection. The Mann-Whitney and Kruskall-Wallis tests were used for the statistical analysis by Graph Prism 5.0 software.

Results: The stabilometric analysis regarding COP AP revealed no significant difference (p-value=0.15) among MB, PB and CG groups, despite the presence of impaired sensitivity in all leprosy patients. The same occurred with the COP ML (p-value= 0.86). The comparison between right and left feet for all groups resulted in a p-value =0.72 for COP AP, and a p value= 0.41 for COP ML, both with no significant difference. Just the impaired plantar sensitivity seems no affect MB and PB patients regarding the control of postural balance as compared to the CG. Probably it might be due to compensatory adjustments by leprosy patients using the vision or ankle joint proprioception as control mechanisms, since the stabilometry data was collected with opened eyes and all patients had preserved joint mobility. The present study also revealed that there were no statistical differences between the stabilometry for right and left feet for MB, PB and CG, both between groups and inside each group, as opposed to what it was expected for PB, usually with unilateral neural damage.

Conclusion: Just the reduction on plantar sensitivity is not decisive to affect the postural body balance control on leprosy patients with peripheral neural damage. Therefore further investigation concerning or suppressing the other mechanisms of postural control such as vision and mobility of the subtalar joint is required in order to elucidate the real intervention of lepromatous neuropathy on body balance control.

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Presentation Time: Wednesday 18/09/2013 at 13:00 – 13:10
Abstract Topic Name: Surgical Rehabilitation
Presentation Screen Number: 1
Presenter: Dr Premal Das

HALF FLEXOR DIGITORUM SUPERFECIALIS (FDS) LASSO SURGERY FOR CORRECTION OF CLAW HAND IN LEPROSY

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Introduction: Ulnar claw is the commonest surgical deformity seen in leprosy. It impacts the lives of the leprosy affected socially and medically. Lasso surgery has become a common procedure to correct claw finger deformities in leprosy. For several years, the full Flexor Digitorum Superficialis (FDS) tendon of the ring or middle finger was used to correct the 4 finger claw hand. Now, some surgeons use only 1 slip of the middle finger FDS tendon, divided into four slips and a lasso insertion used to correct claw fingers. There is an apprehension that removal of full FDS increases the risk of sublimis minus deformity and reduces the overall grip strength after surgery.
The aim of this paper is to determine the effectiveness of lasso surgery using half of the FDS tendon for correction of claw fingers in leprosy.

Methods: There were 261 half FDS procedures done during the period 2009 to 2012 at The Leprosy Mission Hospital Naini, Allahabad. All patients undergoing surgery for claw fingers had detailed pre and post operative assessments for motor function, appearance, joint mobility and these were compared with the results of those patients who underwent full FDS lasso procedures done during the same time frame for relevant parameters

Results: The average unassisted angle and grip strength, before surgery and post-op at final follow-up was compared. The incidence of swan neck deformity was also compared between the two groups. The preliminary assessment of results has been done and the detailed statistical analysis is in progress. The results will be presented in detail.

Conclusion: The half FDS gives comparable results in terms of function and appearance with minimal incidence of sublimus minus deformity and so is a useful tool in the arsenal of leprosy surgeons to correct the claw hand without causing any secondary deformity.

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Presentation Time: Wednesday 18/09/2013 at 13:10 – 13:20
Abstract Topic Name: Surgical Rehabilitation
Presentation Screen Number: 1
Presenter: Pankaj Gupta

SPLINTING MATERIAL USED FOR IMMOBILISATION IN A RESOURCE LIMITED SETTING

P. Gupta [1,*], A. Selvasekar [2], S. Paul [3]

[1]Physiotherapy, [2]Medical Superintendent, [3]POID Coordinator, The leprosy mission community hospital nandnagri delhi-93, New Delhi, India

Introduction: Non- governmental organizations working for the rehabilitation and treatment of patients affected by leprosy are dependent upon donations for implementation of their programmes. Their financial situation has direct impact on the quality of services and appliances which are being provided for the people affected by leprosy. Deformities of the eye, hand and foot occur in people affected by leprosy due to damage of the peripheral nerves, leading to paralysis, atrophy and contracture of muscles supplied by these nerves. These deformities need proper medical and therapeutic treatment. Splinting is one of the most important components of the treatment.

Methods: This article is based on direct observation of the current practices of splint fabrication in various organizations involved in the rehabilitation and treatment of the leprosy patients and

on the basis of interviews with therapists who are involved in the fabrication of the splints for leprosy patients.

Results: Various materials are being used for splinting in different set ups. Materials range from wood, bamboo sticks, aluminium sheets, leather, cotton felt (material used for padding), rubber bands, rivets, leather, high temperature thermoplastics, plaster of paris, low temperature thermoplastics, microcellular rubber and many others. Though these large varieties of material are available for splint fabrication the selection of the appropriate material for fabrication of each individual splint depend upon many factors. Most often it is the cost and not the efficacy which is the deciding factor in favour of particular splinting material in resource limited centre. Sometimes splints is required only for brief periods of time, like cylindrical splints which are applied daily and therefore, applied with plaster of paris. But if a splint is to be applied for ulnar neuritis then low temperature thermoplastic is an ideal material.

Conclusion: Thisreview gives an overview and insight into the judicious selection of material for splinting in a resource limited set up in terms of cost and its effectiveness. From this study it can be concluded that selection of material for splinting depend upon various factors. But in resource limited set up where patients are unable to pay for the services. selection of material depends mainly on cost and its efficacy and durability is considered secondarily.

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Presentation Time: **Wednesday 18/09/2013 at 13:20 – 13:30**
Abstract Topic Name: **Surgical Rehabilitation**
Presentation Screen Number: **1**
Presenter: Sajid Husain

ADIPOCUTANEOUS FLAP TO RESTORE FULLNESS OF IST WEB SPACE DEPRESSION

S. Husain [1,*]

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Introduction: The leprosy is a disease which mainly affects the skin and nerves. When the nerves are involved they give rise to deformity of particular part due to paralysis of muscles as well as sensory loss. In ulnar nerve palsy, the muscles adductor pollicis and Ist dorsal interosseous also get atrophied .Since these muscles give fullness to Ist web space, the atrophy of these muscles results in hollowing of Ist web space producing visible deformity. Correction of finger clawing makes the deformity more obvious when the patients opens up his hand fully or shakes hand to some one. This makes the patients more conscious about his web space deformity

Methods: The surgeons have tried silicon gel injections, autologous fat graft, and Dermofat graft to fill this depression with varying degree of success. Keeping all this in mind we planed an Adipocutaneous flap based on cephalic vein or its major tributary from radial side of lower fore arm to fill the depression of Ist web space .The graft is taken from the mid radial border of the fore arm by a small longitudinal incision and transferd to the depression of the first web space underneath the skin

Results: 49 cases were operated by this procedure in last 5 years. 46 case showed good results and improved appearance and in 1 case the deformity recurred.
While in 2 cases the parasitial absorption of the graft is noted in last 5years follow up.

Conclusion: Adipocutaneous flap based on cephalic vein or its major tributary from radial side of lower fore arm to fill the depression of Ist web space PROVES THE BETTER RESULTS THEN THE CONVENTIONAL SURGICAL METHODS.

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Presentation Time: **Wednesday 18/09/2013 at 13:30 – 13:40**
Abstract Topic Name: **Surgical Rehabilitation**
Presentation Screen Number: **1**
Presenter: Sreepuram Reddy

RESTORATION OF OPPOSITION OF THE THUMB BY FLEXOR CARPI ULNARIS TRANSFER IN CASE OF LOW MEDIAN PARALYSIS

S. A. Reddy [1,*], B. O. August [2], G. K [3], P. R. P [4]

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Introduction: Ulnar Nerve Paralysis and combined paralysis of Ulnar and Median Nerves occurs commonly in Leprosy patients. A radial palsy is relatively uncommon. In Leprosy a radial nerve palsy is often associated with median and / or Ulnar Palsy.
Many combinations of tendon transfers have been developed for the treatment of Ulnar Palsy and Ulnar median palsy.
For surgical correction of Ulnar Low Median Nerve Paralysis which is combined with Partial Radial Paralysis the number of Motor Tendons available for successful transfer is often considerably reduced.

Methods: In one such case where also the Palmaris Longus was absent, weak extensors 3+ on the MRC Scale and who had already undergone Lasso operation using ring and middle finger Flexor Digitorum Superficialis (FDS) as motor for Lumbrical Replacement elsewhere at a private hospital we at Sivananda Rehabilitation Home, Kukatpally, Hyderabad did an innovative surgical procedure using Flexor Carpi Ulnaris for Opponens Replacement using Fasciae Latae Free Graft according to Brand's anastomosis technique. Yet, instead of a ·Y· insertion for opponens replacement according to Brand Fritschi's method we used a triple insertion for the thumb correction according to Beine.A.O. 1985 which worked extremely well restoring opposition of the thumb.
The pre·operative management, anaesthesia and torniquet are the same as for the operations described for correction of claw fingers and restoring opposition of the thumb.
Post·operative rehabilitation for tendon transfer in connection with Flexor Carpi Ulnaris transfer requires the same sequence and timings as followed in Brand Frischi's procedure.

Results: Re·education for this tendon transfer is relatively easy. No secondary impairment seen at the wrist.
Good satisfaction for the patient at the end of four weeks post operative physiotherapy with good Abduction and Adduction with three finger pinch.
The whole presentation will be illustrated with pre & post and intraoperational figures.

Conclusion: The excellent result encourages us to do this type of procedure when the same above conditions occur.

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Presentation Time: **Wednesday 18/09/2013 at 13:40 – 13:50**
Abstract Topic Name: **Surgical Rehabilitation**
Presentation Screen Number: **1**
Presenter: Sajid Husain

RECONSTRUCTION OF MODERATELY DEPRESSED NOSE IN LEPROSY

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Introduction: The nasal deformity in leprosy is synonymous to the disease. It is a significant cosmetic and social problem to the patient. The mycobacterium lepare directly infiltrate the septal cartilage of the nose, the recurrent inflammation and secondary infection results in absorption of septal cartilage and collapse of the nasal bridge. The turbinate, septum and nasal spine are the Fist structure to be destroyed. The nasal bones and lateral cartilages are affected later.
The most popular method for correction of nose in leprosy is the one described by Antia et al (3). This is a two stage procedure in which a split skin graft is applied to the cavity of nose to replace the lost mucosal lining and an acrylic prosthesis is inserted into it to give a shape to the nose. At a second stage a bone graft is put in to a pocket, dissected between the outer skin and mucosa.

Methods: The second metatarsal was removed from the donor foot by longe tudinal incision in the space between 1st and 2nd toe over the dorsum of foot. The graft was shaped as required.
A semi lunar glabellar incision was given to create a pocket between two layers of the nasal skin and for the columellar support an additional incision was made in vestibule to create a pocket in columella. The straight graft was introduced in to the Pocket through the glabellar incision while an L shaped graft was positioned on the spine through the vestibular incision. The external splinting was done by a plaster cast. The nasal splint is kept for 3·4 weeks postoperatively.

Results:
Early Results: All cases had good correction of the depressed nose with minimal complication like serous collection and reaction to skin suture at nasal side while haematoma formation at the donor foot side was seen.

Long term follows up: Fifty seven cases had been operated by this procedure during 1984·2003. Only forty eight cases were available for review at various intervals (3·24 months). The 26 patients reported total satisfactory out come while 22 patients had various complaints.

Conclusion: Our procedure is one stage and simple, it satisfies the requirements of patients. Nasal contour fits with the facial outlook, no removal or cleaning is needed every day. Hence we recommend this precedence clinically subsided and smear negative cases for correction of mild and moderate saddle nose deformity which are more frequently seen these days in leprosy endemic areas.

P-300

Presentation Time: **Wednesday 18/09/2013 at 13:50 – 14:00**
Abstract Topic Name: **Surgical Rehabilitation**
Presentation Screen Number: **1**
Presenter: Pankaj Gupta

FACTORS PREVENTING LEPROSY PATIENTS WITH DEFORMITIES FROM UNDERGOING TENDON TRANSFER SURGERY .

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[1]Physiotherapy, [2]Medical Superintendent, [3]POID Coordinator, The leprosy mission community hospital nandnagri delhi-93, New delhi, India

Introduction: Deformities of the hands, feet and eyes are regrettably still a common problem in leprosy affected people. In India there is large backlog of the patients, who need medical rehabilitation through reconstructive surgeryto correct their deformity. These deformities of eye, hand and foot occur in leprosy patients due to involvement of the peripheral nerves leading to paralysis of the muscles. Most of the leprosy patients are not keen to undergo tendon transfer surgery, thoughthey have severe loss of functions and activity limitations. There could be many reasons forthis unwillingness of the patients to undergo tendon transfer surgery, which the surgeons and the leprosy programmers need to well understand. This study is intended to understand the reasonsand some of the common myths among the leprosy patients due to which they are not motivated to undergo tendon transfer surgeries. The purpose of this paper is to discuss some of the prevalent myths among the people affected with leprosy with deformity, which prevent them from undergoing tendon transfer surgeries.

Methods: The necessary data for the study was collected from (sample) patients who attended the out patients physiotherapy clinic in TLM community hospital, Nandnagri (Delhi). All the leprosy patients with deformity, eligible for tendon transfers and visited the OPD of above TLM community hospital, during the period of 1 year (1st January to 30th December 2012),were interviewed regarding the reasons for their unwillingness to undergo tendon transfer surgery. Total 111 patients were interviewed during the period. Interview was based on the predesigned format, having the closed ended questions. During the interview patients others view were also recorded. All the interviews were taken by the physiotherapists who were given orientations for the interview.

Results: Various myths were found to be prevalent among the leprosy patients regarding the tendon transfers. Myths which were found to be prevalent among the patients were, decrease in muscle power of the operated hand or foot, development of new deformity after the surgery, difficulty in doing activities of daily living after the surgery, may have impact on their current job profile, may have to change the current job, scar present after the surgery will also have impact on the social life.
Out these myths nearly 80% of patients were of the opinion that there will be decrease in power of the operated hand or foot after the surgery, and nearly 60% of the patients were of the opinion that surgery will have impact on the current job profile, nearly 40% were of the opinion that surgery will lead to development of new deformity.

Conclusion: There are various reasons due to which leprosy patients are not willing to undergo tendon transfers and patients form their opinion from the prevalent myths in the society. Patients are also apprehensive and reluctant to undergo tendon transfer considering the complications of the tendon transfer surgeries. Therefore pre-operative counselling of the patients has a very important. Further pre-operative surgical assessment and counselling by therapist and surgeon has a vital role to play in breaking these prevalent myths among the leprosy patients regarding tendon transfer surgeries.

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Presentation Time: **Wednesday 18/09/2013 at 12:30 – 12:40**
Abstract Topic Name: **Epidemiological Surveillance**
Presentation Screen Number: **2**
Presenter: Romana Drabik

CHANGES OF THE LEPROSY SITUATION IN TURKMENISTAN BETWEEN 1998 AND 2011

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Introduction: Turkmenistan is located in the north of the Lake-Aral region. In the south it borders with Iran and Tajikistan, in the east with Uzbekistan.
At the beginning of the 20th century the number of leprosy patients in Turkmenistan required a hospitalisation of approximately 100 patients. For this reason the Leprosarium Hodscha, was founded in 1928. It was located between Turkmenistan and Iran and did not belong to either of the two countries.

Methods: Comparison of the leprosy situation in Turkmenistan between May 1998 and July 2011: A description from two on-site visits.

Results: During the **first on-site visit in May 1998** 128 leprosy patients were registered in Turkmenistan by one leprologist, who took care of all patients.
Four in-patients lived completely isolated from other people in the leprosarium Hodscha.
124 out-patients lived about 700 km far away in the Lake-Aral region in Dashovus and Boldumsas.
All patients were treated with monotherapy (Dapsone). 16 patients were put on MDT in 1998.
During the **second on-site visit in July 2011**, only dermatologists looked after the patients. The only leprologist was retired in 2001.
The leprosarium Hodscha was closed in 2001 and four remaining patients were transferred to Dashovus.
In Turkmenisatan there is no leprologist who would look after the patients. The MDT from the 16 patients was not finished. It is not clear, if the other patients were treated with MDT.

Conclusion: Leprophobia is most deeply rooted in Turkmenistan than in other countries in central Asia.
Turkmenistan needs two leprologists. Their task should be to look after all patients, to examine the contact persons of registered patients, to prevent the patients from disabilities and to train dermatologists and general doctors in leprosy.

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Presentation Time: **Wednesday 18/09/2013 at 12:40 – 12:50**
Abstract Topic Name: **Epidemiological Surveillance**
Presentation Screen Number: **2**
Presenter: Tina Kituashvili

SITUATION OF LEPROSY IN GEORGIA

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Introduction: There were detected the unit cases of leprosy in some regions of Georgia in the distant past. In 1980s of last century fighting against leprosy was activated. There were conducted some organized works (creating the moving groups against epidemic, actively detecting leprosy in the important epidemic regions, examination of the people, who were contacted with patients etc.) As that there was no specialized hospital in Georgia, patients with leprosy were sent to the neighbor country Russia's leprosorium. So according to the 1990 year findings in leprosorium in Russia there were 10 inpatients, 7 outpatients and additional 3 patients were under observation. On the same year after examination of the 17 persons who were in contact with leprosy there were not detected a new cases of leprosy.

Methods: There are no new findings about the situation of leprosy in Georgia because of the last 20 years changes in political conditions and reforms in the public health service system. Foresee the thing, that the incubation period of leprosy is about 40 years it was possible to detect the new cases of leprosy during this period of time.

Results: The following new steps were made in studying the situation of leprosy in Georgia:
1. There was organized the symposium about leprosy on the world congress of teledermatology, which was held in Tbilisi on 2012.
2. In November 2012 Georgian dermatologist was sent to "Instituto lauro de souza lima" to study the diagnostics and treatment of Hansen disease.
3. There was prepared fliers for the patients and doctors about leprosy.
4. On the February of 2013 there were held two multidisciplinary conferences for doctors about the diagnostics of leprosy.
5. The screening study of the population is planned with The National Center for Disease Control and Public Health in the regions, which were the home places of the patients with leprosy.

Conclusion: Since 2012, a dedicated educational work is carried out in Georgia.

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Presentation Time: **Wednesday 18/09/2013 at 12:50 – 13:00**
Abstract Topic Name: **Epidemiological Surveillance**
Presentation Screen Number: **2**
Presenter: Mrs Zamira Nuratdinova

ACTUAL STATE OF ANTI LEPROSY SERVICES OF THE REPUBLIC OF KARAKALPAKSTAN

Z. Nuratdinova [1,*]

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Introduction: At the present time Karakalpak Republic Leprosarium is the only anti leprosy institution in Uzbekistan, which is responsible for the identification, treatment and rehabilitation of leprosy patients.

Methods: Anti leprosy network and personnel specialists leprology are saved and active in Karakalpakstan.

Results: Anti leprosy activities include:
1. regular monitoring of all focus of leprosy
2. annual inspection of the contact persons of leprosy
3. organizing seminars, lectures, prevention and early detection of leprosy
4. in-treatment, visual inspection and examination of patients
5. carried out physical and social rehabilitation of patients.

Karakalpak Republic Leprosarium capacity for 80 beds, consists of two departments located from each other at 35 km.
1. Stationary department is designed for 65 beds, it's located on the banks of the Amu Darya in the village Krantauv, 45 km from Nukus city.
2. Outpatient department with stationary chambers to 15 beds, epidemiological department and ambulatory office is in Shorkul village, 13 km from Nukus city.

There are 305 patients, 1850 contact, 1128 focus of leprosy in all.
Karakalpak Republic Leprosarium is an integrated organizational structure of medical, social and psychological assistance to leprosy patients of Karakalpakstan. However, condition of the material and technical base, provision of medical services does not meet modern requirements. Patients live in panel houses built in 1957. Medical facilities are old and require permanent repair. There is no central water supply, water from underwater sources does not correspond to health and safety standards. By time electricity, there is no gas supply too. All the buildings need major repairs.
Outpatient department is in Shorkul village, it's 600 meters from the main road. It is intended for 15 beds and needs major repair or demolition.

Conclusion: To further enhance the effectiveness of treatment activities, providing high quality care of leprosy patients and in accordance with modern requirements and standards, prompt access to medical care we propose:
1. to build medical diagnostic and research corps for 50 patients in Shorkul village, combined inpatient and outpatient departments.
2. to equip it with modern laboratory diagnostics and medical equipment.

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Presentation Time: Wednesday 18/09/2013 13:00 – 13:10
Abstract Topic Name: Epidemiological Surveillance
Presentation Screen Number: 2
Presenter: Yuriy Rybak

LEPROSY IN UKRAINE

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Introduction: Ukraine is located in east europe, sout-east of the black sea.
Until recently Ukraine was a republic of the former Soviet Union, is now an independent state. This has caused great changes in the country.

Methods: Within an area of 601,000 square kilometres, 420cases of leprosy were detected from 1900 to 2000, of which 68% were MB leprosy cases and 32% PB cases.
At the moment there are 19 leprosy patients altogether, 1 is MB and 18 are PB patients. All of them suffer from complications. About 60% of them are disabled. They live in the Leprosarium Kutschurgan about 100 km far from Odessa. The leprosarium Kutschurgan is placed near the border of Moldavia. That is the reason, why leprosy patients from Moldavia were treated also in Kutschurgan.

Results: Within the last ten years 1 new leprosy patient was found. He came along to the Leprosarium Kutschurgan from east Ukraine, because his mother was treated in Kutschurgan 20 years before. No patient with relapse have been detected.
In 1997 the MDT-therapy was introduced. All patients were put on MDT. Prior to this year the patients get a monotherapy (Dapsone). Leprophobia is very serious problem in Ukraine.

Conclusion: There is necessary to train dermatologists and general doctors in leprosy expecial in the endemic regions in Ukraine. Therefore the "New atlas of leprosy", Sasakawa memorial health foundation will be translated in Russian language and distributed in all regions of Ukraine. It would help to find existing, but unil now not dedected leprosy patients.
Further it would be very important to check the contact persons of registered patients -also of the patients died in the last decade.

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Presentation Time: Wednesday 18/09/2013 at 13:10 – 13:20
Abstract Topic Name: Epidemiological Surveillance
Presentation Screen Number: 2
Presenter: Vijay Jain

EPIDEMIOLOGICAL TRENDS OF LEPROSY IN A TERTIARY HEALTH CENTRE IN NORTH INDIA: A 10 YEARS RETROSPECTIVE STUDY

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Introduction: The study of the changing outlook and presentation of the disease is important always.

Methods: This study was done to study the changing scenario of leprosy in a tertiary health centre in North India through last 10 years. The study was done by collecting the retrospective data of patients attending the leprosy clinic in department of Dermatology, Venereology & Leprosy, PGIMS, Rohtak, Haryana (India) from 2002 to 2011. The data was analyzed according to age, sex, type of leprosy, lepra reactions, deformities and treatment and compared with the national figures.

Results: 562 patients attended the leprosy clinic with males: female ratio of 3.4:1. Majority of the patients i.e. 187 (29%) were in the middle age group (21-30 years), 57 (10%) were children aged <15 years. Borderline tuberculoid leprosy was the most common diagnosis found in 250 patients. Three patients had histoid leprosy. Contact history (family or neighborhood) was present in 36 (6%). Positive smears were documented in 48% patients. 124 (22%) patients had disability, among which 67 (12%) had grade-1 and 57 (10%) had grade-2 disability. MDT was completed by 474 (86) patients, 76 (13%) defaulted from treatment. The data analyzed showed new cases were detected throughout the study time. Significant rise; 68% in 2002 to 87% in 2011, was observed in patients completing the MDT regimen.

Conclusion: Knowledge and understanding of the epidemiological profile is an important pre requisite to assess and address public health needs in the country and to enable efficient planning, programme and management. MDT has done substantial reduction in leprosy prevalence rate (PR) but the annual new case detection rate has not shown significant decline in spite of all efforts.

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Presentation Time: Wednesday 18/09/2013 at 13:20 – 13:30
Abstract Topic Name: Epidemiological Surveillance
Presentation Screen Number: 2
Presenter: Maria Lucia Penna

ERADICATION OF LEPROSY: HOW LONG WOULD IT TAKE IF THERE WERE A PERFECT CONTROL?

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Introduction: A world without leprosy is the final objective of leprosy control. Mathematical models are tools for understanding the control of infectious diseases effects. They are based on known features of the natural history of the disease. Although there still are many doubts about leprosy transmission and the process from infection to disease, a mathematical model can help to establish more realistic targets in time.

Methods: We used a simple model to simulate the control of leprosy based only on infectious cases treatment. A simple SEIE – susceptible, exposed, infectious, and exposed – can express some main features of leprosy dynamics. The model only includes infectious cases and the assumptions were (1) persons are born susceptible; (2) susceptible are infected by contact with an infectious case; (3) once infected, i.e. in the exposed class, persons may became infectious at a constant rate for their remaining life time; (4) infectious individuals may be cured through treatment, returning to the exposed class; (5) mortality is the same among all classes.

Results: If expressed in numbers the model will not reach an equilibrium state because the population usually increases, but if the classes are transformed in proportions of a dynamic population, the model will reach equilibrium with constant point prevalence.
This equilibrium represents the endemic situation in a big population group that live a traditional way of life, meaning the model parameters do not change with time. Imagining that control measures are applied at this point of time, the cure rate being increased will begin a fall in the incidence rate and the prevalence of infectious individuals due to a change the model equilibrium. If the cure rate if big enough, the only equilibrium for the system could be trivial equilibrium, with no disease. It should be noticed that if the no disease situation is reached only by control measures, the possibility of reintroduction of disease will always require control measures.
How fast will leprosy incidence rate fall is an open question. To have some idea of the magnitude of this fall, we simulated an ideal control measure that could avoid all new infection and relapses. The rate of decrease of the leprosy incidence will be the sum of the birth rate and the disease development rate among those already infected. As the birth rate is many times bigger than the disease development rate, it would be the main determinant of the decrease velocity.

Conclusion: The simulation described above is a tool for thinking about the control measures impact. In the real world, human populations do not live the same socioeconomic environment during a century. Better living stands and food supply change the transmission parameter and the disease development rate contributing further for leprosy decrease, but we should not expect a very fast decrease.

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Presentation Time: Wednesday 18/09/2013 at 13:30 – 13:40
Abstract Topic Name: Epidemiological Surveillance
Presentation Screen Number: 2
Presenter: Dr Hiren Thanki

REDUCING ANNUAL NEW CASE DETECTION RATE (PER 1,00,000 POPULATION) OF LEPROSY WITH VERY LOW DISABILITY - A DIFFERENT EPIDEMIOLOGICAL TREND (1999 TO 2012) IN UNION TERRITORY OF DADRA NAGAR AND HAVELI, INDIA

H. N. Thanki [1,*], S. Rohit [2], M. V. Dhodia [3], P. V. Dave [4], G. Srinivas [5], R. Singh [6]

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Introduction: The Dadra Nagar and Haveli (DNH) is an Union Territory which has not achieved elimination in India. The prevalence rate was 2.93 per 10,000 population (March 2012). DNH has a total population of 358,316 (Mar 2012) with predominantly hard to reach tribal area. District nucleus team consists of one surveillance medical officer and one non medical supervisor. There are 6 Primary Health Centers, 1 Community Health Center, 1 district hospital, 50 health sub·centers and 3 dispensaries. This region continues to register a high number of leprosy cases. The trend analysis of DNH leprosy eradication programme indicators (1999 · 2012) has been presented in this abstract.

Methods: The National Leprosy Eradication Programme (NLEP) indicators of the DNH were analysed from March 1999 to March 2012 to compare the epidemiological situation over a period of 15 years. This trend analysis included parameters like annual new case detection rate (ANCDR), proportions of MB · child case · grade 2 disability · female cases and absolute number of PB·MB and total leprosy cases.

Results: The point prevalence of the NLEP indicators for the month of March 2012 and March 1999 are as mentioned below. The new case detection was 326 in 1999 which reduced to 237 in 2012. The ANCDR reduced to 66.1 (2012) from 187 (1999) per 1,00,000 population. The MB proportion reduced to 36.3 (n= 86 in 2012) from 48.8 (n= 159 in 1999) whereas PB cases remained almost static over the same period of time (n= 167 in 2012 and n= 151 in 1999). The Female proportion was 51.8 (n= 169 in 1999) and 54.9 (n= 130 in 2012) in comparison to the national indicator (37 as on March 2012). The child proportion was 11 (n= 36 in 1999) which then increased by two times to reach 20.3 (n= 48 in 2012) whereas nationally it was 9.7 (2012). The child proportion was 14.8(n=18) in March 2009 before annual active case detection drive. However, there was only one case of grade 2 disability recorded (2011) for the same period despite the active case detection drive (special activity plan) of house to house survey (for 10 days) carried out in the last 2 years. The disability proportion was in the range of 2% to 3% for the nearby blocks and districts of Gujarat and Maharashtra state.

Conclusion: The ANCDR trend analysis suggests that disease endemicity is showing a decreasing trend over the period of 14 years. MB proportion trend analysis shows early diagnosis. Female proportion trend analysis shows higher gender access for health services. A very different epidemiology of a very low disability has been observed over a period of 14 years. However, an increasing child proportion suggests recent active transmission. Persistence of high child proportion should be further explored. The interpretation of this trend analysis is: 'A good General Health Care System is working in Dadra Nagar and Haveli region for early diagnosis of leprosy cases despite being a hard to reach tribal area'.

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Presentation Time: Wednesday 18/09/2013 at 13:40 – 13:50
Abstract Topic Name: Epidemiological Surveillance
Presentation Screen Number: 2
Presenter: Rajni Singh

"AN ANALYTICAL REPORT OF NEW CASES TREND IN IN SCHEDULE CAST/ SCHEDULE TRIBES AND CHILD % IN BIHAR"

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Introduction: Leprosy is one of the oldest diseases known to mankind. The word leper comes from a Greek word meaning scaly. In India, leprosy is known since ancient times as Kushta Rog, and is attributed to a punishment or curse of God. It is a chronic infectious disease caused by *Mycobacterium leprae*; an acid fast, rod·shaped bacillus. It is a highly infectious disease, but of low pathogenecity. It mainly affects the skin, peripheral nerves, and occasionally the mucosa of the respiratory tract. All systems and organs can be involved in leprosy except the Central Nervous System. It is associated with grave social stigma and ostracism, which compels the patient to hide the disease and results in manifestation of deformities.

In India Multi Drug therapy (MDT) arrived in the year 1981, and was tested successfully in two pilot projects. The National Leprosy Control Program (NLCP) was then re·designated as the National Leprosy Eradication Program (NLEP), and was launched in 1983, having MDT as the core enabler. On 1 April, 2004, vertical services of leprosy were integrated with the General Health Services and emphasis was given to the capacity building of the general health workers, to identify the cases and to treat them. As on December 2007, the prevalence rate in India was 0.72/10,000 population. Still India has 55% of the global case load. Bihar has implemented MDT in 2 districts in 1983 and full state has been covered with MDT in 1996·97. Bihar is still registering nearly 20000 new cases each year since last 6 year.

Methods: Internal analysis has been made of 5 year Annual report of Bihar from 2007 to 2012, which has been submitted to Govt. of India. Data and records were verified according to the indicators.

Results: Analysis of the data and record verification revealed that there was a decrease in the prevalence rate of leprosy, but it had not reached the elimination status in the State. The MB ratio had decreased. The disability ratio had also decreased in five years. MDT was available for more than 3 months for all the cases at any point of time. But the child proportion among new cases remained consistent for the last five years, which are more than 16%. Annual New Case Detection Rate among Schedule cast and Schedule Tribe are more than 265 of total cases, where ever population are only 16% of total population.

Conclusion: The National Leprosy Elimination Program had a favorable impact, but at the same time to reach the elimination status there was a need for more stringent Information, Education, and Communication (IEC) activities to be promoted in the community. Active surveillance should be initiated so that hidden cases are not missed in the community. Special action plan is required for Schedule Cast /Schedule tribe population. School survey / Quiz programme in school will help to detect early cases with children.

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Presentation Time: Wednesday 18/09/2013 at 13:50 – 14:00
Abstract Topic Name: Epidemiological Surveillance
Presentation Screen Number: 2
Presenter: Abraham Selvasekar

EPIDEMIOLOGICAL ANALYSIS OF 5 YR TREND OF NEW LEPROSY CASES DETECTED (2008-12) AT TLM COMMUNITY HOSPITAL NAND NAGRI. NATIONAL CAPITAL TERRITORY OF DELHI

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Introduction: NCT of Delhi is the fastest growing metropolis in the world with a population of 17 million (2011 census). The city attracts a huge migrant population seeking livelihood from the nearby weaker states such as Bihar, UP, Jharkhand etc, which are endemic for leprosy. The migrant's population are subjected to harsh living conditions, deprived of basic amenities like safe water, hygienic food, housing, sanitary toilets etc. They are exposed to harsh climatic conditions. TLM community hospital was established in the year 1984 and recognised as tertiary care centre for leprosy services. The only urban centre of its kinds focusing on Leprosy services attracting huge number of different leprosy cases.

Methods: This is a descriptive, observational, and retrospective study in which hospital data on leprosy was analysed. The data on new cases reporting to the Out Patient Department was analysed meticulously. Details of physical examination (screening for patches and nerves), skin smears, Voluntary Muscle Testing, and Histopathological Examination were recorded. Previous patient 's data was retrieved from Hospital Information System of TLM Community hospital. Thedata was interpreted with the following variables at the time of diagnosis: new cases by sex and age, history of contact with leprosy case, grouping, and presence of nerve involvement, reactions, disability and smear positivity from the routine sites.

Results: The total numbers of new cases of leprosy detected over a 5 yr period (2008·12) are 1457. Of which 1264 (87%) were multi·bacillary (MB) leprosy. The adult female is proportion is disproportionately low at 29%. The age distribution was 181 (12%) < 15 yrs, 789 (55%) between 16·35 yrs, 320 (22%) between 36·50 yrs and 158 (11%) were > 50 yrs respectively. 462 (38%) patients had positive skin smears and show a rising trend over the past 5 years. 680 patients had reactions at the first visit, when they were diagnosed, of these 522 (36%) had T1R / neuritis and 158 (23%) had ENLs respectively. At diagnosis 1025 (70%) were WHO Disability Grade 0, 241 (17%) were Grade 1 and 191(13%) were as Grade 2 respectively. In 2012, there is 5% rise in new leprosy cases reported on comparing 5 yr average (2008·12), 19% rise on comparing that with of 2011. Majority of cases originated from district where referral centre is located 758 (52%), 142 (10%) from nearby districts, 557(38%) from outside state.

Conclusion: There is no significant fall observed from the new leprosy cases trend hence its necessary to test variety of new case detection strategies suitable for the post integrated scenario. The strategies that are successful need to be replicated in large scale. To campaign periodically

using new innovative IEC methods ensure early voluntary reporting. To target new case detection methods among special groups like rickshaw pullers, construction labourer, security guards, house maids etc. Ensure the entire medical fraternity is oriented and trained in early detection, effective management of leprosy related complications.

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Presentation Time: **Wednesday 18/09/2013 at 12:30 – 12:40**
Abstract Topic Name: **Epidemiological Analyses**
Presentation Screen Number: **3**
Presenter: Aparna Srikantam

IDENTIFICATION OF LEPROSY MULTI CASE FAMILIES THROUGH THE LEAD OF TREATED LEPROSY CASES

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Introduction: India is one the high prevalent countries for leprosy and still continues to have new cases detected despite successful implementation of MDT for more than three decades. India recorded 127,000 cases during 2011-12. Leprosy control in general has the inherent limitation due to the paucity of sufficient evidence on factors such as transmission and reservoir of *M. leprae* infection. However, it is demonstrated in several studies that some of the leprosy patients are identified with one or more their family members having diagnosed with leprosy. This led to various interesting concepts of biological research including *M. leprae* typing to establish better evidences for leprosy transmission. Generating information on families with multiple cases of leprosy has potential implications on epidemiological research pertaining to the leprosy transmission. In the light of the above a study was initiated to identify families with more than one case of leprosy, based on the lead of patients released from MDT (RFT).

Methods: A cohort of 482 RFT cases (2005-10) of leprosy selected from 12 PHCs of 4 districts, 2 each from Odisha and Andhra Pradesh States of India were followed up to their families to identify if any other leprosy cases are present in the families. Details of the family contacts of RFT cases along with other clinical information are collected in a structured format. A similar study based on newly detected leprosy cases is on progress.

Results: Families of 482 RFT cases were contacted. Number of family members for each RFT ranges from 0-21, making the total number of contacts screened to 2274, excluding the RFT cases.
112 out of 2274 contacts are having either ongoing or already treated leprosy. All together, 90 families (18.7%) out of 482 screened are found to be having more than one case of leprosy 70 (14.5%) have one more case than RFT, 18 families (3.7%) have two more and 2 (0.5%) families have three more cases. Out of total 175 cases of RFT in AP, had 749 contacts cumulatively, out of which 53 are leprosy cases; Odisha had 307 families, with 1525 contacts cumulatively had 59 cases. Two new leprosy cases were detected in Odisha, one each during the interview of two RFTs.

Conclusion: The data indicates that there is a greater risk of additional cases in the close family contacts of leprosy patients. Active screening of all family contacts for leprosy could hence be a better case detection strategy.

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Presentation Time: **Wednesday 18/09/2013 at 12:40 – 12:50**
Abstract Topic Name: **Les Progès Récents**
Presentation Screen Number: **3**
Presenter: Cauchoix Bertrand

ETUDE DE DIFFÉRENTES STRATÉGIES PERMETTANT D'AMÉLIORER LE DÉPISTAGE PRÉCOCE DE LA LÈPRE À MADAGASCAR ET DE MIEUX APPRÉCIER LES DONNÉES D'INCIDENCE ET PRÉVALENCE.

B. Cauchoix [1,*], R. Andriamira [2], G. Detoeuf [1]

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Introduction: Pour beaucoup de maladies infectieuses (VIH/SIDA, Tuberculose, Paludisme etc.), lorsque l'on parle du poids de la maladie, on se rapporte à des estimations d'incidence ou de prévalence. Or, pour la Lèpre, on rapporte généralement les données d'incidence et de prévalence sur les cas réellement pris en charge. A Madagascar on constate, malgré l'élimination, une prédominance de cas MB et un fort taux d'infirmité. Il nous est apparu nécessaire dans ce pays, où la Lèpre est considérée comme éliminée, de relier ces chiffres d'incidence et prévalence, à des critères d'accès au système de santé.

Methods: A Madagascar, nous avons dans un premier temps essayé de moduler les chiffres d'incidence en fonction des données statistiques nationales d'accès au soin. Puis dans un deuxième temps, nous avons procédé à l'étude de stratégies de dépistage, intégrant des critères améliorant l'accès aux soins.

Ainsi trois stratégies ont été testées :
- une première consiste à intégrer le dépistage passif de la Lèpre dans des stratégies d'équipe mobile travaillant pour un dépistage et un traitement avancé de la Tuberculose, dans des zones peu couvertes par le système de soin.
- une deuxième a consisté à s'associer, dans une zone de faible prévalence de la Lèpre, à une enquête domiciliaire de santé publique basée sur des interrogatoires des familles, et proposant un dispensaire mobile afin de motiver les enquêtés à répondre à des questionnaires. Nous avons simplement assuré la présence d'un personnel compétent en dermatologie/lèpre dans ce dispensaire mobile.
- la troisième consiste à effectuer un dépistage avancé, en ciblant des zones rurales où auparavant plusieurs cas de Lèpre avaient été dépistés ces dix dernières années, et de rechercher d'éventuels nouveaux cas chez les contacts.

Results: Les données préliminaires montrent que lorsque l'accès au soin est amélioré par des stratégies d'offre de soin plus proximales, tant en zones de faible endémicité qu'en zones de forte endémicité, le dépistage de la Lèpre est sensiblement augmenté, et parfois plus que doublé. Certaines stratégies demeurent néanmoins peu efficientes et sont difficiles à retenir, tandis que d'autres, bien intégrées, peuvent s'avérer rentables, dans un processus d'élimination ou de dépistage précoce visant à la réduction du taux d'infirmité lié à la Lèpre.

Conclusion: Il nous parait important de moduler les données d'incidence et de prévalence observée sur la Lèpre, en fonction des critères: géographiques; physiques; et financier; d'accès à un système de soin de qualité.
La stratégie passive de dépistage de la Lèpre parait peu efficace dès lors que:
- les personnels de santé ne sont plus confrontés à suffisamment de cas pour maintenir une compétence minimale pour le dépistage;
- les malades et leurs familles manquent de motivation et d'accès aux soins pour une consultation de dermatologie pour laquelle le ressenti de morbidité est faible.

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Presentation Time: **Wednesday 18/09/2013 at 12:50 – 13:00**
Abstract Topic Name: **Human Rights and Discrimination**
Presentation Screen Number: **3**
Presenter: Mahamath Cisse

A LONG WALK TO THE CHALLENGE OF INTEGRATION

M. Cisse [1,*]

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Introduction: The LEPROSY VILLAGE has 36 former leprosy patients and their families, has been founded in 1936, like the other leprosy village, to accommodate people affected by leprosy. Leprosy, particularly contagious, controlled at the time gave rise to the fear and mistrust between communities. The closure and separation wall erected around reflected salience of prejudice. Relying on progress in treatment and social support, actors, through multi-sectoral action officers (IEC, advocacy, empowerment, etc) have been reducing the barrier of prejudice and begin the phase of integration.This experience, almost unprecedented deserves that it stops there for out the highlights.

Methods:

- a PRA (participatory research method active) and a perception study of attitudes which showed the existence of social prejudices against cultural Pals
- Comparative study of poverty levels (infrastructure, economic, social) who found the extreme poverty of Pals and their families from the middle
- Setting eouvre action information, education and communication to the populations of two communities
- advocacy and involvement of local authorities and admionistratives
- Spatial planning and allocation of land title
- Implementation of projects inclusive and unifying

Results: social and cultural development: improving social relations between the two communities Redevelopment physical space with pathways dropping all environmental barriers, which has increased the attractiveness of the town economic: income improvement through projects funded (bank, cereals, poultry projects, millet mill)
Institutional: improving the perception of the authorities towards the inhabitants of the village and is now recognized as a part of the city.

Conclusion: The experience's shows the need for a preparation of the population and the construction of a consensus before the redevelopment of the physical space. The experience has also highlighted the need to anticipate the impact of social transformations as carriers of new needs and new aspirations. About the entities marked by decades of mistrust and mutual fear, they accompanied the wall fence and separation established to bear witness to the significance of prejudices. Thanks to the progress made in the treatment and social support of patients, and especially, thanks to support and training of populations, the reluctance have been overcome, allowing the opening of the integration with communities

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Presentation Time: Wednesday 18/09/2013 at 13:00 -13:10
Abstract Topic Name: Human Rights and Discrimination
Presentation Screen Number: 3
Presenter: Maria Eugenia Noviski Gallo

THE BRAZILIAN GOVERNMENT ACKNOWLEDGES THE VIOLATION OF RIGHTS REGARDING THE ISOLATION OF PERSONS AFFECTED BY LEPROSY

L. R. Maciel [1,*], M. E. N. Gallo [2], M. L. W. D. R. Oliveira [3], M. R. Ledur [4], W. Nogueira [4], S. Dias [4], G. G. Silva [4], F. Silva [4], D. Cruz [4], A. Souza [4]

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Introduction: The official compulsory isolation of persons affected by leprosy from Ministry of Health (MOH-Brazil) was triggered in 1933 and ended in 1962. However, despite the National Program of Leprosy norms regarding ex-colonies reforming and out patients treatment recommendations, many cases were referred to the old colonies due to" social reasons". Also, many isolated patients did not want to leave from the community area of their colonies, which is defended by the patients mouvement (MORHAN). As a result the MOH norms from 1986 were considered a date of real change in this policy.
A working group was created in November 2006 with the aim of drawing up an inventory of the situation and needs of residents in ex Sanatoriums. Instituted to the Interministerial Commission Assessment (ICA) and, through Law No. 11.520/2007, granting special monthly pension, to lifetime people affected by leprosy who underwent isolation and compulsory hospitalization until 31/12/1986. The assignment of the ICA is to issue an opinion on the requests submitted prior to obtaining a pension.

Methods: The ICA is coordinated by the Human Rights Secretariat of the Presidency of the Republic and consists of members of the Ministries of Health, Social Development, Social Security and the Organization and Planning. Meetings are held every 15 days, and include the presence of an observer member of the social movement - MORHAN. The members in charge of analyzing the application process the special pension presents and describes in detail the documents attached to the case file and displays its decision on the grounds for the final conclusion. The other members of the Commission present at the meeting, deliberate and agree or disagree with the conclusion of the membersor given new approaches to better procedural instruction.

Results: The meetings began in September 2007 and continue to be held every 15 days at the offices of the Human Rights Secretariat of the Presidency of the Republic in Brasilia. Until December 2012 one hundred eighty four (184) were reported, voted and granted 8,500 and 2,185 cases dismissed. In case of dismissed the applicant may appeal the decision of the Commission directing a request to review and appen new documentary evidence.

Conclusion: The premise of the ICA is to search for evidence in order to ensure the right people affected by leprosy, hospitalized and isolated compulsorily, that the state of Brazil, a pioneer, acknowledges the violation of rights by instituting payment of special pension benefits.

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Presentation Time: Wednesday 18/09/2013 at 13:10 – 13:20
Abstract Topic Name: Human Rights and Discrimination
Presentation Screen Number: 3
Presenter: Chariya Soinumtip

THE ASSESSMENT OF HEALTH SERVICES FOR PERSONS AFFECTED BY LEPROSY IN LEPROSY COLONIES UNDER THE HEALTH INSURANCE SCHEME : UNIVERSAL COVERAGE.

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Introduction: According to the health insurance policy which had been implemented since the year 2000, persons affected by leprosy had to attend the primary care service nearby their places, and will be referred to specialized service in case of complications. After the policy implementation, it was found that the persons affected by leprosy had not attended health care service nearby their houses. They directly attended Raj Pracha Samasai Institute (RPSI), specialized unit, at central level
However the health insurance policy was important and had to be carried out continuously. Therefore, it is necessary to evaluate health service for persons affected by leprosy livingin leprosy colony. This study was done to assess thehealth care services persons affected by leprosy livingin leprosycolonies under health insurance policy.

Methods: CIPP Model of Daneil L. Stufflebeamwas adjusted as an evaluation framework. It consists of 4 evaluation aspects; context, input, process, and product. Thenumber of 383 study subjects were decision makers, service providers, health care clients, persons affected by leprosy who were living in leprosy colonies and their families. The study was conducted between 2011 and 2012.

Results:
1.) Context aspect:it was found that health care provided by local health services covered target group and responded to the needs of persons affected by leprosy who lived in leprosy colony. Local health providers awared of the health problems of persons affected by leprosy.
2.) Input aspect: administrators understood the situation of persons affected by leprosy who lived in leprosy colony.Some persons affected did not understand their rights in attending health care under universal coverage policy. Most of community members did not stigmatize and were willing to help persons affected by leprosy. Local health services were ready to provide care and build confidence of the clients.
3.) Process aspect: local health services were able to provide coverage care to their clients particularly persons affected by leprosy.Leprosy referral system was available and efficiently responded to the clients' needs.
4.) Product: The reasons for directly attending the health care at RPSI were the good reputation of the RPSI in terms of the leprosy expertise, providers' understanding in their disability and needs, the possibility of long hospitalizing until they were completely cured.This was different from the local hospital under health insurance where long hospitalizing was impossible because of overcrowded clients. After discharging from local hospital, persons affected by leprosy had to travel from home to primary health service for ulcer care on daily bases until completely cure. This was difficult for them who were old poor and had disability.

Conclusion: Although it was found that local health service under insurance health policy were ready to provide care for persons affected by leprosy, but the clients was still prefer to directly attend the service of RPSI because of its reputation, expertise and understanding RPSI providers, and long hospitalizing.The findings should be taken into consideration to formulate plan of action in order encourage people affected by leprosy to attend local health service under insurance health policy.

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Presentation Time: Wednesday 18/09/2013 at 13:20 – 13:30
Abstract Topic Name: Human Rights and Discrimination
Presentation Screen Number: 3
Presenter: Mr David Jaganathan

IMPACT OF SELF ADVOCACY GROUPS IN ACCESSING RESOURCES

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Introduction: A survey done in the district of Tiruvanamalai in 2002 highlighted the deplorable condition of people affected by leprosy and general disabilities, who account for 2% of the total population of the district. Previously this was an Leprosy endemic district in Tamil Nadu and those with disabilities had no or limited access to mainstream education, health and other services.
The Disability Rights through NGO (Non Governmental Organisation) Networking Project was initiated in 2009 by the Leprosy Mission Trust India in Tiruvannamalai District of Tamilnadu, India to promote equal opportunities and participation for people affected by leprosy and other general disabilities. Through the Project Interventions, individuals with disabilities have been facilitated to form Federations at the village/Block and District level. They were empowered to participate in the developmental activities which were promoted.

Methods: 15 villages in each block were selected based on the number of persons affected with Leprosy and Disability in the block and intervention was planned. The project period was 2009 – 2012.
During the intervention, persons with disability were empowered through periodical training to take up issues at the panchayat level and to take the unsolved issues to the block and district level. The Leprosy Mission project staff played a facilitating role.
A predesigned questionnaire regarding the available rights and entitlements that were accessed and the impact created was, designed and administered by trained volunteers. The data obtained was analysed.

Results: 90 % of the Persons with Disability were empowered to access the needed entitlements independently through the Village level Advocacy groups. Now the District level Federation is registered as "Tiruvannamalai District Federation for the differently Abled". The Persons with Disability have internalised their rights and entitlements and learnt to participate in all the activities of the Community. This has brought a change in the attitudes of the community in the target area. The Panchayat leaders in Tiruvannamalai District were influenced by the members of these groups, by their attendance at Grama Sabha meeting and discussions with the Panchayat president. The District Level federation has become visible in the District and is being sought after by district administration for data and other assistance regarding people with disability.

Conclusion: The Village self advocacy groups have become empowered to take up issues and to solve them by approaching the concerned authorities. They exercise their rights and do not wait on the mercy of the authorities and thus they live with dignity; this project model can be used in other areas with similar problems.

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Presentation Time: Wednesday 18/09/2013 at 13:30 – 13:40
Abstract Topic Name: Human Rights and Discrimination
Presentation Screen Number: 3
Presenter: Dr Sadanand Bag

IMPACT OF LEPROSY RELATED DISCRIMINATORY LAWS ON THE SOCIO-ECONOMIC AND POLITICAL LIFE OF THE PEOPLE AFFECTED LEPROSY

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[1]CALL, [2]Community Development, The Leprosy Mission Trust India, NOIDA, India

Introduction: Although leprosy has been proved to be curable with Multi Drug Therapy (MDT), millions of people and their family members still suffer from psycho-social discrimination, which has been culturally prevalent, and effects the economic and political situations of the people affected by leprosy. While any prevalent cultural practice often has traditional legal support, in India, there are about 58 national and State level laws with direct/indirect discriminatory provisions against people affected by leprosy and these laws allow leprosy as a ground for divorce, restricting from travel by public transport facilities and obtaining driving licenses, etc. thus preventing the leprosy affected persons from enjoying their common civil facilities.
It is therefore felt essential, prior to take up any action against the existing anti-leprosy laws, to understand the nature and degree of discrimination experienced by the leprosy affected and it's association with the existing laws. In order to understand the impact of anti-leprosy laws on the socio-economic and political life of the people affected leprosy, a qualitative study of leprosy affected individuals has been carried out.

Methods: Considering the high prevalence of leprosy two states viz. Uttar Pradesh and Chhattisgarh of India were selected as the universe of the study. A total of 3850 individuals affected by leprosy, from 11 districts of both the states were interviewed using an-depth interview schedule.

Results: It was found that around 71.14% people affected by leprosy in both the states (78.51% from Uttar Pradesh and 62.29% from Chhattisgarh) were not aware about their rights relating to health, employment, education, voting and contesting in election. Around 79.50% people in both the States were not aware about any laws and policies related to leprosy and more than 90% people did not know about any laws and policies that protect and promote their rights. Around 91.48% people from both the states were also found to be not aware about the laws, policies and Government Orders that discriminate against persons affected by leprosy.

Conclusion: The most difficult challenge faced by people affected by leprosy today is not from anti-leprosy laws, rather how to meet their day-to-day needs since they are poor, illiterate and incapable to work. Majority of them are not aware about any discriminatory law related to leprosy. However, there is a greater need to make them understand their rights and entitlements and to dispel their own personal fear and stigma associated with leprosy. At the same time, efforts need to be undertaken on the parts of the civil society organisations to make them aware about anti-leprosy laws; build up their leadership qualities to raise their voices to repeal/amend all the discriminatory legislations that stand on the way of their equality and dignity as individuals of this country. Because any one with malafide intension may make use of these laws and harass them.

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Presentation Time: Wednesday 18/09/2013 at 13:40 – 13:50
Abstract Topic Name: Human Rights and Discrimination
Presentation Screen Number: 3
Presenter: Dr Sadanand Bag

COMMUNITY PERCEPTIONS AND ATTITUDES TOWARDS PEOPLE AFFECTED BY LEPROSY.

B. Sadanand [1,*], R. Sandeep [1], A. Patra [1], K. Rebecca [2]

[1]CALL, [2]Community Development, The Leprosy Mission Trust India, NOIDA, India

Introduction: Success of any health programme depends on people's participation in the programme and also in the case of National Leprosy Elimination Programmes (NLEP). Perceptions and attitudes of the community are the most prominent factors that determine the participation of the people, which need to be well understood to promote positive behavioural change of the community members towards successful participation in the NLEP. In order to find out peoples' perceptions and attitudes towards people affected by leprosy in India, a qualitative study has been taken up.

Methods: A total of 870 individuals, comprising of village leaders, government officials, teachers, panchayat members, legislators, NGO workers, etc. have been interviewed from Uttar Pradesh (UP) and Chhattisgarh (CG) States of India. This study was undertaken as a baseline assessment for an interventional project intended to reduce social and legal discrimination faced by people affected by leprosy and promote changes in the existing anti-leprosy laws in India.

Results: Highlights of the findings show that 37.59% (46.20% from UP and 26.63% from CG) are of the opinion that people affected by leprosy should not be allowed to marry, whereas 15.63% (26.08% from UP and 2.35% from CG) argued that people affected by leprosy should not be allowed to cast his/her vote. About 29.54% (44.97% from UP and 9.92% from CG) mentioned that people affected by leprosy should not be allowed to participate in social functions.

Conclusion: That the stigma associated with leprosy has started fading from the minds of the common people as there is some awareness relating to the disease-leprosy, although the process is very slow. There is a greater need for using innovative methods involving community to accelerate the process of social change towards stigma reduction.

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Presentation Time: Wednesday 18/09/2013 at 13:50 – 14:00
Abstract Topic Name: Human Rights and Discrimination
Presentation Screen Number: 3
Presenter: José Ramirez, Jr

THE STAR: A VOICE FOR THE UNSEEN

J. Ramirez, Jr. [1,*]

[1]USA Coordinator and Managing Editor, IDEA and 40&8, Houston, United States

Introduction: The STAR is a publication started by persons affected by Hansen's disease (HD) in 1931. The inital intent of the publication was simply to inform the residents of the leprosarium in Carville, Louisiana of scheduled activities. This one page document evolved into an international journal that kept the world informed of the latest treatment modalities, as well as the injustices that occurred because of the diagnosis of HD.

Methods: The STAR was operated entirely by patients living at the United States Public Health Service Hospital in Carville, Louisiana. With assistance from the hospital's administration and funding from generous donors, including veterans organizations, the publication woudl be sent to subscribers world-wide once per month.

Results: Starting with the first Editor, Stanley Stein, The STAR became the voice for millions of persons affected by HD. Until recently, it was unknown that many of the issues of The STAR were translated into many languages, including Chinese, Japanese, Portugese and Spanish. The STAR was known for the many articles on research and treatment, examples of injustices and human rights violations, outdated practices that included segregated housing, and insulting labels. The STAR became a symbol for advocacy and resulted in reversing many policies and practices that violated basic human rights, dignity and respect.

Conclusion: The STAR has had seven editors in 82 years and many changes have been initiated because of their dedication to the symbol of "radiating the truth about HD." Unfortunatley the extraordinary journey taken by these editors, four managing editors and hundreds of others who worked on The STAR has not ended. The road to dignity and respect needs constant repair. The practices of separation and grotesque labeling has not stopped. The STAR will never cease to make efforts to change attitudes that many have towards persons affected by HD>

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Presentation Time: Wednesday 18/09/2013 at 12:30 – 12:40
Abstract Topic Name: Prevention of Disability
Presentation Screen Number: 4
Presenter: Shivakumar Mugudalabetta

MOBILISING COMMUNITY THROUGH CIVIL SOCIETY ORGANIZATIONS TO SUPPORT LEPROSY SERVICES IN BIHAR, INDIA: EXPERIENCE FROM A PILOT PROJECT

A. K. Pandey [1], P. Paul [1], A. N. Wagh [1,*], S. Mugudalabetta [2], S. K. Muthusamy [2]

[1]Damien Foundation India Trust, Patna, [2]Damien Foundation India Trust, Chennai, India

Introduction: Bihar is one of the three states in India yet to achieve the goal of elimination of leprosy and every year contributing around 15% of the new leprosy cases. There is slight decline in new case detection from the year 2010. Implementation of Disability Prevention and Medical Rehabilitation (DPMR) services is still a major challenge. There is a need to intensify the efforts for further reduction of leprosy burden and support leprosy services with greater involvement of community.

Methods: Damien Foundation India has initiated a pilot project to support leprosy services in Gaya and Nalanda districts of Bihar in partnership with nine local Non Government Organizations (NGO). These NGOs are mainly involved in rural development, women empowerment through self help groups, education of school drop outs and child laborers. Field coordinators selected the NGOs, trained them in self care and suspect referral, and established coordination with government health system. The field coordinators supervise and monitor these local NGOs. They are responsible for the collection of monthly reports. The intervention includes updating the list of persons affected by leprosy with disabilities; follow up and counsel the patients to practice self care; refer suspects and patients with complications to Primary Health Centre; support patients

under treatment; identify, provide and monitor the livelihood support of needy affected persons and facilitate to receive government entitlements. Retrospective data was collected from local NGOs and General Health System and interviews with the civil society partners were done to understand the challenges perceived by them.

Results: The local NGOs were able to update the list of persons affected by leprosy with disability. From the initial list of 1138 persons affected by leprosy with disabilities, after addition (292) and deletions (200), the final list had 1230 persons with leprosy related disability.The new case detection has been increased by 6.6% (126/1918) when compared to the data six months before the implementation, the female cases increased by 15.4% (114/740) while there was 12.7% (48/378) rise in detection of child cases. About 35% of total persons affected by leprosy with disability were practicing self care regularly. The proportion of persons with plantar ulcers has declined by 7%. Out of 308 suspects referred to PHC by the local NGOs, about 90 were confirmed leprosy. After involvement of local NGOs in the field there is remarkable change in the attitude and perspective of the other general population towards the leprosy affected persons.

Conclusion: Even with the weak infrastructure and network of these local NGOs, the short term results are encouraging. The strategy need to be critically examined for its sustainability and long term impact on leprosy services.

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Presentation Time: **Wednesday 18/09/2013 at 12:40 – 12:50**
Abstract Topic Name: **Prevention of Disability**
Presentation Screen Number: **4**
Presenter: Eliane Ignotti

PHYSICAL DISABILITIES BY LEPROSY: A SYSTEMATIC REVIEW OF THE DETERMINING FACTORS

H. Batista [1], E. Ignotti [1,*]

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Introduction: The physical disabilities in leprosy characterize a large portion of the burden of the disease. The analysis of determinants and its importance on the disabilities as described in the literature are reported in this study. To review the scientific literature related to the occurrence of physical disabilities in leprosy and its determining factors in the year 2011.

Methods: A systematic review in electronic databases scientific, by descriptors relating to disabilities resulting from leprosy and its determining factors. The combination of words in their respective databases (Scielo, PubMed, LILACS, PAHO, WHOLIS, ADOLEC, BDENF, EQUIDAD, MEDLINE), were: a) " Incapacidade Física Bacilo de Hansen " (Physical Disability *Mycobacterium leprae*), b) "Incapacidade Hanseníase" (Leprosy Disability, Incapacidad Lepra) d) "Hanseníase Diagnóstico Tardio Incapacidades Físicas" (Late Diagnosis of Leprosy Phisical Disability, Diagnóstico Tardio de La Lepra Incapacidad Fisico), e) "Hanseníase Sequelados" (Leprosy Sequelae, La Lepra Secuela), f) "Hanseníase Incapacidades Físicas Grau II" (Leprosy Physical Disability Degree II, Lepra Incapacidad Fisico Grado II) We identified 558 articles, of which 34 deal with exclusively on the topic of study.

Results: Were conducted searches in portuguese, english and spanish. The studies were carried out in Brazil (22), China (01), Thailand (01), Ethiopia (01) Nepal (02), India (07). Of a total of 34 (thirty-four) original articles included in revision 1 (a) study shows the correlation between the quality of life with five factors: late diagnosis, multibacillary, reactions, disability grade II in the diagnosis and prejudgement, 19 (nineteen) articles present the percentage of incapacity of grade II in different stages of treatment or after discharge, 12 (twelve) articles present the percentage of degrees 0 and I of disability in patients with leprosy. For the most important risk factors for disability at the time of diagnosis were, in descending order: male, dimorphous clinical form, more than one affected nerve, age greater than or equal to 15 years, classification multibacillary, no schooling, tuberculoid form, socioeconomic factors, detection mode through the examination of collectivity, race, 1 to 3 years of studies, late diagnosis, occupation labor, smear-positive presence of more than 5 skin lesions, civil status.

Conclusion: A patient male, presenting more than one affected nerve, adults, multibacillary, with no schooling, and late diagnosis, would have major probability of development of physical disability in leprosy. It is recommended that the identification of the risk factors associated with the presence of disabilities constitute an important approach at the time of diagnosis of the disease, because it allows planning and prioritizing actions directed to the treatment and monitoring the patient that presents a high risk to develop the physical disability.

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Presentation Time: **Wednesday 18/09/2013 at 12:50 – 13:00**
Abstract Topic Name: **Prevention of Disability**
Presentation Screen Number: **4**
Presenter: Sudhakar Bandyopadhyay

REACHING THE UNREACHED: DPMR SERVICES IN A TRIBAL AREA

S. Bandyopadhyay [1,*], M. P. Mahato [2]

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Introduction: Disability Prevention and Medical Rehabilitation is an important area of Leprosy Elimination Program in India and efforts and priority are given since last one decade. The introduction of MDT has reduced considerable degree of impairment and deformity. Yet the existing deformity is multifarious, in terms of physical, social and psychological aspects. The degree of stigma depends on the degree of deformity/disability. DPMR program indicates prevention in all the steps. Since DPMR activities are the priority area of Gandhi Memorial Leprosy foundation, Balarampur, Purulia, a retrospective study was conducted for 10 years from 2003 to 2012. The Unit operates in the hilly, forest and rivers surrounded Tribal area, covers around 400,000 populations in 341 villages in 3 rural blocks, 112 villages on the hills with meager communication facilities. The initial prevalence rate during the monotherapy era was 230/10,000 in 1978 which was subsequently been brought down to 6.6/10,000 in 2003 and subsequently it was 5.4 / 10,000 in 2012.

Methods: The interventions aimed at detection of early cases without deformity, to improvise the early deformities (G1) that not leads to G2, to stop further deterioration of the G2 deformed cases and to improvise & to make functional of G2 deformities/disabilities. Specific interventions designed and undertaken in community, individual and Family levels with specific reasons of development of deformity/disability and remedy thereof, Individual Patient education/ counselling, self care demonstration and practices, education of patients' family members to ensure their participation and acceptance. The activities were undertaken in coordination with the Government system, local self Government and community leadership. Information disseminated for Pre –primary, Primary, Secondary and Tertiary levels for usefulness and process of exercise, timing and tapering of Steroids, care of hands, Feet and eyes and Reconstructive surgery. For variant cultural aspects, awareness programs, family and individual interactions were conducted with cultural inputs, folk media and local-dialects.

Results: During the 10 years period, total 2589 (MB-929, PB-1660) new cases detected, average 259/year, Total G1, G2 among new cases 133 (G1-107, G2-26), average 13/year. Total G1, G2 cases served including backlog were 8,837, total cases improved 1237 (14%), remained static 7436 (84.2%), and worsened 164 (1.8%). Total 107 patients had undergone reconstructive surgery. The physical, Psycho-social and economic factors for worsening of deformities/ disabilities were documented including hard labour for income generation and livelihood, poverty, frustration and carelessness, concealment due to stigma and self stigmatisation. The combination of medical and social intervention helped the affected persons to trust on the program and the services were accepted by them.

Conclusion: DPMR program has to be conducted to meet the specific needs of the individual patients, education of family members to ensure familial cooperation and acceptance, community as a whole for new- case detection without deformity. Livelihood of the patients below poverty line is of utmost necessity to avoid hard labour, begging and undue movement which are the hindrances to DPMR activities. Deformity in Leprosy has social, Psychological and financial implications and adversely affects the social – psychology. Hence, methodical and successful DPMR activities also contribute to social change.

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Presentation Time: **Wednesday 18/09/2013 at 13:00 – 13:10**
Abstract Topic Name: **Prevention of Disability**
Presentation Screen Number: **4**
Presenter: Akshaya Mishra

PREVENTION OF IMPAIRMENT AND DISABILITY (POID) THROUGH EARLY CASE DETECTION AND TREATMENT: FAIRMED'S (FM) PILOT PROJECT IN ANDHRA PRADESH (AP)

A. K. Mishra [1,*], V. Simonet [2], T. Von Stamm [3], T. Gass [4], J. K. George [5]

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Introduction: Following elimination of Leprosy at the country level in 2005, the priority of the National Leprosy Eradication Program (NLEP) has shifted to Prevention of Impairment and disability (POID). With this revised mandate of NLEP, FM implemented the POID project with focus on strengthening primary health care (PHC) system and early diagnosis.

Methods: The 3 years pilot project was implemented in two high burden districts of Andhra Pradesh (East Godavari, Guntur) from 2010 in collaboration with Government of Andhra Pradesh and 2 FM supported local Non-Government Organization (NGO) partners. Besides other capacity building initiatives for the PHC staff, the Accredited Social Health Activists (ASHA) workers were provided orientation in order to identify the "Leprosy suspects" and refer them to the PHC. A line-list of all the cases was generated for each PHC and cases were monitored for deformity with appropriate treatment being provided. A special emphasis was given to Nerve Function Assessment (NFA) for all the new cases every month. Two mobile teams with counsellor and physiotherapist visited all the PHCs in every quarter to counsel the patients, train them on self-care, screen for disabilities, refer the needy patients for ulcer care, RCS or reaction/neuritis management and ultimately build the capacity of the PHC staff in the provision of the POID services. The Leprosy affected persons were also screened for cataract that was appropriately managed.

Results: Total 200 PHCs have been covered. During the initiation of the project there were around 7,000 old leprosy patients with disability and during the last 2 years around 2,800 new confirmed cases have been diagnosed and treated with multidrug treatment (MDT). Among the new cases, a total 71 (2.6%) cases were with grade-1 disability and 114 (4.1%) cases with grade-2 disability, taking the overall disability rate to 6.6% in both the districts. The remaining 93.4% of the cases were with grade-0 disability. Overall in both the districts, the proportion of confirmed new cases referred by ASHA workers increased from 25% to 40% in the last 2 years. By the end of 2nd year there has been a decline in grade-1 disability rate at both the districts. In East Godavari district it has come down from 1.18% to 0.62% and in Guntur district from 5.16% to 2.5%. Similarly the grade-2 disability rate in Guntur has come down from 6.6% to 4.5% and that in East Godavari district it is almost at the same level in the last 2 years (2.55 – 2.77).

Conclusion: The POID project has been instrumental in strengthening and complementing the delivery of NLEP services in the project districts. Besides the project also addressed a few important areas like eye care, improving accessibility for social welfare benefits provided by Government and NGOs and promoting community based rehabilitation through formation of integrated Self-Help Groups (SHG). The key factors for success in the project are the involvement of the ASHA workers and the district level monitoring through linelisting of all the cases. This pilot project has been moulded in such a way that it can be promoted as a sustainable and replicable model in all the districts of the country for prevention of impairment and disability among leprosy patients.

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Presentation Time: **Wednesday 18/09/2013 at 13:10 – 13:20**
Abstract Topic Name: **Prevention of Disability**
Presentation Screen Number: **4**
Presenter: Dr Surendra Pati

STRENGTHENING DISABILITY CARE IN GENERAL HEALTH SYSTEM THROUGH REFERRAL CENTRES IN ODISHA

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Introduction: Referral Centres conceived and initiated are expected to address some gap areas of leprosy control in GHS. One of such weaker area is absence of a strong referral chain to manage various complications of leprosy. District level Referral Centres (RCs) are designed to play a pivotal role in functioning as a link between primary health care and teaching / pioneer institutions known as primary & tertiary care centres. This three tier system constitutes the DPMR programme introduced in 2007 to provide quality leprosy services in integrated set up. In addition, to retain expertise in leprosy, they will also fill the gap, if any, as critics sometime feel that integration is premature. The present study is to find out to what extent the RCs, established & managed by ILEP as Technical Resource Unit & Strengthening Referral system project meet the expectations in the state of Odisha, India.

Methods: A total of ten RCs have been established to cover 30 districts at district hospitals & Lepra projects to cater to the referral needs. Each centre has a medical officer, a physio-technician and a shoe-technician recruited on the basis of their experience and skill to cope with the needs of leprosy cases with complications referred from PHCs. The centres are functioning at district hospitals/Lepra projects and equipped with full fledged physiotherapy and shoe unit to provide suitable footwear for G-1 & G-2 disabilities. The problems for which the patients are referred are diagnosed and appropriate POD related & other care provided if required with consultation of other specialities in the district hospitals. RCS is facilitated by trained Govt. surgeons at eight centres in the state for increased accessibility. RCS is also supported by a strong follow up system. All relevant records are maintained. Capacity building of peripheral workers also is a critical activity of RCs.

Results: The total number of patients registered in ten Referral Centres during 5 years is 30,081 making an average of 600 patients per centre per year. The number of patients attended at different peripheral clinics is 17,867 which comes to an average of 350 patients per RC per year. A total of 2688 new and 8438 old reaction cases attended in 10 clinics. Ulcer care was provided for 4784 new cases and 13,652 old cases. Splints were provided to 5091 patients and MCR footwear were provided to 15,019 patients. Eight referral centres were strengthened in the state in which 1081 RCS performed by 14 surgeons trained in RCS by the project. 5527 post op cases were followed with good result in 80% of cases.

Conclusion: This system of Referral Centres provided an effective system of services for all aspects of POD care through building the capacity of GHC staff and mainstreaming the referral mechanism.

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Presentation Time: **Wednesday 18/09/2013 at 13:20 – 13:30**
Abstract Topic Name: **Prevention of Disability**
Presentation Screen Number: **4**
Presenter: Dr Atul Shah

MANAGEMENT OF PLANTAR ULCERS

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Introduction: Over the years a systematic approach has been developed by Novartis Comprehensive Leprosy Care Association to manage the problem of plantar ulcers in the field area. In the camp, where cases with ulcers are brought for treatment, those not amenable to self-care are identified and referred for surgery. Others are given specially designed "self-care kit" developed and pioneered by NCLCA.

Methods: Self-care Kit consists of scrapper to scrape and clean the plantar skin, antiseptic solution as add on for soaking the feet, antiseptic cream to apply to wound, moisturizing cream for the rest of the feet and leg to retain hydration, sterile gauze piece and bandage. All patients are taught the use of the materials and demonstration as group therapy.

Results: In a study conducted in the field area within four months the complete healing has been observed to occur in about 40% of cases. In 24 % cases >75 % healing was observed. In all improvement was noticed in 85 % cases. Since the use of moisturising cream on the leg and feet improved the tugor of the skin in 85% cases, authors believe that just dressing does not help. The surrounding skin has much to contribute in the healing process.

Conclusion: Our intention is to demonstrate the fact that given the materials and if educated about the procedure of self-care patient himself can be his doctor and does not have to rely on visits to leprosy clinics for repeated dressings. All patients are given a plastic tub for soaking and at the end of session an MCR footwear is supplied to take off the weight from the ulcerated area. Excellent results have been achieved and it has been accepted by government and more than 43000 kits have been distributed.

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Presentation Time: **Wednesday 18/09/2013 at 13:30 – 13:40**
Abstract Topic Name: **Prevention of Disability**
Presentation Screen Number: **4**
Presenter: Evgenii Shats

ACTUAL ASPECTS OF REHABILITATION OF LEPROSY PATIENTS IN RUSSIA

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Introduction: Leprosy is a disease known from the ancient times but, unfortunately, till now it continues to grasp its victims and hurts them both physically and mentally. Rehabilitation of leprosy patients begins from the very admittance of them to medical institutions and includes timely and adequate medical, physiological, social and economical measures. At present the rehabilitation of leprosy patients with complications remains one of the main tasks. This problem is of special urgency in the countries with sporadic prevalence of leprosy, such as Russia, where leprosy cases are few, and among them individuals with long history of the disease, who suffer mainly from complications of leprosy and concurrent illnesses, prevail. Medical rehabilitation of leprosy patients based on MDT therapy (sulfone, rifampicin, clofazimine) in the combination with pathogenetic treatment.

Methods: clinical and statistic analisis

Results: Now in Russia about 350 leprosy patients are registered, a half of them are inhabitants of Astrakhan region. In the period of 2001-2011 9 new leprosy cases were discovered in Russia, so in Astrakhan region – 3. When specific therapy was given at early stages of the disease, disabilities did not develop. 75% of them are at the age of more than 60 years. Among inpatients of Leprosy Research Institute 70% have disabilities of I and II degree, due to damaged peripheral nerves, osteomyelitis, eye problems. Most of the patients suffer from concurrent diseases.
Early diagnosis and adequate therapy permit to escape damages of peripheral nerves and, hence, resulting complications. In order to prevent lesions of involved peripheral nerves from the very first admittance to the hospital all the patients are administered, alongside with specific drugs, vitamins of B group, angioprotectors, and agents improving nerve conduction. In case of damaged peripheral nerves additionally corticosteroid hormones, massage, mechanical therapy and exercises are given. Special attention is given to orthopaedic aid.
New methods of diagnosis and treatment of neurotrophic complications are being developed. At Leprosy Research Institute a method of scenar-therapy for treatment of chronic neuritis, and

trophic ulcers and burns in leprosy patients has been developed making treatment more effective and shortening of patients' stay at the hospital. Scenar (Self- Controlled- Energoregulator) devices are portable autonomous electric apparatus operating in the mode of biological feedback circuit with a patients. The operation of the device is based on a physical factor representing an individually modulated electric signal similar to nervous impulse in its form. Advantages of scenar-therapy include non-invasiveness, a wide spectrum of indications, and absence of age limitations.
For patients with neurotrophic ulcers and burns we are using Russian technology of wound local dressing "Locus", "Voscopran" and for patients with chronic septic ulcers, complicaited osteomyelitis, – surgical treatment, combined with injection of "Perftoran".

Conclusion: The government renders assistance to cured patients improving their conditions of life and providing with pensions. Nevertheless, a lot of problems of life-support for leprosy patients remains to be solved, and a system of social rehabilitation needs to be improved according to the epidemiological and economic changes in Russia.

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Presentation Time: **Wednesday 18/09/2013 at 13:40 – 13:50**
Abstract Topic Name: **Prevention of Disability**
Presentation Screen Number: **4**
Presenter: Dr Apolonio Nascimento

ORTHOPEDIC ADAPTATION FOR GREAT DISABILITY IN LEPROSY - A CASE REPORT

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Introduction: Leprosy is a chronic and infecto-contagious disease, with a great incapacitating potential. Even though this is a healing disease, the risk of developing disabilities is possible in persons presenting neural damage. When sequels are already installed, specially in legs, cause a great restriction in daily activities.
In the case we present here we intend to give an exemple of delayed diagnosis that led to a severe disability.
We think this is the main problem of delayed diagnosis in Leprosy.
We intended also to smooth the patient locomotion and increase his independence.

Methods: Male, age 51, Brazilian, having ended MDT. During physical examination teh patient had locomotion only in wheelchair. He had been sumitted to a surgical procedure with a transtibial amputation in right leg, in the left side he had a dropping foot and amputation of forefoot. In superior arts he had claw hands with reabsorption. After evaluation of sequels, it has been indicated the following adaptations for legs: transtibial prosthesis with orthopedic boot for right leg and modelled boot with polypropylene orthosis for left foot. All products are manufactured at the URE Marcello Candia's Othopedic Workshop in Marituba, Brazil.

Results: The patient succeeded to step and walk with the adaptations without worsening of sequels.
This patient should be always followed by a Physiotherapist and an Orthopedist.

Conclusion: Cases of persons with serious sequels of Leprosy, the adaptations are fundamental to improve quality of life with rehabilitation.
Despite this he has also the need to be rehabilitated from the social and psichological point of view.

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Presentation Time: **Wednesday 18/09/2013 at 13:50 – 14:00**
Abstract Topic Name: **Prevention of Disability**
Presentation Screen Number: **4**
Presenter: Larissa Viveiro

POSTURAL CONTROL IN HANSEN'S DISEASE

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Introduction: Hansen's Disease (HD) is an infectious disease, which is considered a public health problem that damages the visual, cutaneous, and nervous systems. Brazil had about 34 thousands new cases in 2011, becoming the second country worldwide in cases of HD. Nervous changing occur due to action by *Mycobacterium leprae* on the nerves, which causes peripheral sensory loss. The maintenance of balance requires proper integration of visual, somatosensory and vestibular systems to produce adequate motor strategy to perform the tasks. Therefore, the knowledge of postural control of HD patients becomes crucial since a sensory neuropathy may worsen this control. The objective of this study was to analyze the postural control of individuals with HD compared to healthy individuals.

Methods: The study comprised 48 individuals divided in two groups: Hansen's Disease Group (HG) with 24 leprous individuals (43.88±11.96 years) and the Control Group (CG) with 24 healthy and age-paired adults (43±11.72 years). We excluded from HG who had amputation of upper or lower limbs (LL); neurological diseases, and/or wounds on the plantar region. The CG participants had no abnormal sensitivity in LL. The HG were selected from Unidade de Atendimento Ambulatorial de Fisioterapia do Hospital das Clínicas da Faculdade de Medicina da Universidade de São Paulo, Brazil. Individuals from the CG were recruited among relatives of the students and workers of the hospital. All participants signed a consent form. Subjects stood barefoot on a force plate (Pro Balance Master 8.1.0, Neurocom®, Inc, Oregon, EUA). Verbal instructions were given to subjects to remain motionless. Three 20-second trials were collected under four different sensory conditions: (1) eyes-open on a stable plate (2) eyes-closed on a stable plate (3) eyes-open on a mobile plate and (4) eyes-closed on a mobile plate. Data was transferred from the force plate to a computerized program that transformed the primary data in the center of pressure displacement (COPd) through the duration of the data acquisition. Four variables were acquired from COPd in each sensory condition: mean velocity of COPd in anterior-posterior (a-p) (MVy) and medio-lateral (m-l) (MVx) directions and root mean square of COPd in a-p (RMSy) and m-l (RMSx). Quotients were calculated to quantify the sensory (visual, proprioceptive and vestibular) contributions to postural control: visual quotient (VQ), the ratio between variables of condition (2) and (1); proprioceptive quotient (PQ), ratio between variables of condition (3) and (1); vestibular quotient (VestQ): ratio between variables of condition (4) and (1). Statistical analysis was performed using Student's t-test to compare each quotient value between groups. Significant level was adopted as $p<0.05$.

Results: No differences were found between groups when comparing VQ variables [MVy (p=0.399), MVx (p=0.328), RMSy (p=0.633) and RMSx (p= 0.286)] and VestQ variables [MVx (p=0.117), RMSy (p=0.551) and RMSx (p=0.223)]. A significant difference was found in PQ MVy (p=0.028), RMSx (p=0.026) and in VestQ MVy (p=0.023). Compare to CG, HG showed a higher PQ for MVy (2.24±0.49) and RMSx (2.39±1.21) and also higher VestQ for MVy (5.24±1.55).

Conclusion: Subjects with Hansen's Disease appear to demonstrate an impaired postural control due mainly to somatosensorial input when compared to healthy individuals.

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Presentation Time: **Wednesday 18/09/2013 at 12:30 – 12:40**
Abstract Topic Name: **Leprosy Control**
Presentation Screen Number: **5**
Presenter: Erik Post

FEASIBILITY AND EFFECTIVENESS OF A COMMUNITY DERMATOLOGY APPROACH TO LEPROSY CONTROL IN NIGERIA

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Introduction: A preliminary study found that people with skin problems use a variety of 1st-port-of-call providers: traditional healers (TH), patent medicine vendors (PMV), and busy health facilities (HF). On the basis of this, a pilot project aimed to establish to what extent primary and secondary health providers can diagnose and manage common skin diseases with an acceptable level of accuracy, and without harmful effects. The project also looked at the effectiveness of a referral system between the two levels.

Methods: A flow chart was introduced to diagnose and treat the majority of common skin diseases in northern Nigeria. Of each patient one flow chart per patient was filled in and several photographs taken, which was used for verification by two dermatologists.
TH and PMV were trained in one day to use the flow chart. Staff at referral level was trained in a tailor-made course of 6 weeks. Training impact was evaluated during the training and after 6 months.

Results: Training impact evaluation results were good, whereas testing after 6 months indicated that refresher training might be useful.
In total 4147 skin patients were seen, 1292 by traditional healers (N=12) and 2855 by patent medicine vendors (N=19). TH predominated in rural areas, and PMV in the urban. Tinea capitis was by far the most frequent diagnosis at 61.4%, followed by pityriasis versicolor, scabies and pyoderma, all easy-to-treat conditions. Leprosy was suspected 62 times: 4 new cases and another 4 with complications after MDT.
Diagnosis was correct in 79% of all patients (both PMV and TH) and 82% was correctly treated (both PMV and TH). Potentially harmful actions occurred in only 4% of all patients (PMV 4.4% and TH 3.0%).
Referral arrival rates were 57% (PMV 65% and TH 30%, possibly due to a urban-rural bias), a rate higher than anticipated. Referrals were based on correct use of the flow chart in 83% of the cases (PMV 88% and TH 65%). Diagnostic and treatment performance at the referral levels was very good at 93%.

Conclusion: In this pilot project, done under routine field conditions, the diagnostic and treatment skills of both PMV and TH are adequate after only a one day training, with less than 5% potentially harmful diagnoses. Referral practices were adequate, with very good case management at referral levels (after a training of 6 weeks in total). These findings suggest that such an approach might

be feasible on a larger scale, with likely positive spin-offs for leprosy case detection, HIV detection and AIDS care. For Nigeria it would mean a new strategy for mainstreaming leprosy control.

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Presentation Time: **Wednesday 18/09/2013 at 12:40 – 12:50**
Abstract Topic Name: **Leprosy Control**
Presentation Screen Number: **5**
Presenter: Roderick Poblete

PUBLIC PRIVATE PARTNERSHIPS TO ADVANCE NEW APPROACHES IN TIMES OF LOW LEPROSY ENDEMICITY. THE PHILIPPINE EXPERIENCE

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Introduction: While the Philippines have successfully achieved a national prevalence rate of less than 1 in 10,000 population, there are still areas in the country with relatively high prevalence rates of the disease. The current challenge, therefore, is to revitalize and continue to sustain the fight against leprosy to avoid its reemergence as the health system is undergoing the process of integration and health sector reform. The experience of public–private partnerships to address health issues have shown considerable success in addressing diseases that have put a burden in development like, tuberculosis and HIV and AIDS. The Philippines Department of Health together with the Novartis Foundation for Sustainable Development have partnered to develop and implement a comprehensive leprosy strategy as part of the broader National Leprosy Control Program using innovation and collective action to generate continued interest in an old curable disease with a perplexing natural history and social dimensions.

Methods: A descriptive study obtained through review of proceedings, records and literature and key informant interviews using a standard questionnaire involving stakeholders from the public and private sector regarding their experience, insight and recommendations in pursuing public –private partnerships as a strategy to sustain leprosy control in the period of low endemicity and health sector reform.

Results: Public private partnerships created an opportunity for stakeholders to discuss issues, share valuable experiences and new approaches with other programme implementers and experts from diverse fields to integrate leprosy interventions in health and development responses across sectors at the local and national level.

Conclusion: Public- Private Partnerships facilitate innovation and is significant in sustaining integrated and inclusive responses to leprosy in the time of low endemicity.

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Presentation Time: **Wednesday 18/09/2013 at 12:50 – 13:00**
Abstract Topic Name: **Leprosy Control**
Presentation Screen Number: **5**
Presenter: Rajni Singh

"IMPACT OF DISTRICT TECHNICAL SUPPORT TEAM (DTST) IN BIHAR AFTER WITHDRAWAL"

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Introduction: MDT is fully implemented in Bihar in 1996-97. Bihar was the last state to implement fully with Multi Drug Thrapy (MDT) in the India compare with other State in India. LEPRA Society has been worked in the District Technical Support Team (DTST) mode from 2001 to 2007 in nine district of Bihar. The goal was DTST was to support the NLEP program in terms of capacity building in Planning, Implementation, Monitoring / Supervision, Documentation, drug channelization and evaluation the programme. In 2007 (March) DTST support were withdrawn from District.
This study has been taken to know the impact of District Technical Support team (DTST) after its withdrawal in Bihar.

Methods: Community health projects were launched by LEPRA society in the 4 district to empower the community to asses existing health services provided by Government Health System. During the implementation of Integrated Disability control Programme (IDCP) in 4 districts of Bihar (Samastipur, Begusarari, Bhagalpur and Munger) the impact of DTST program were assessed in 41 PHC in 4 said district during March 2012. The team was interacted with Incharg Medical Officer of Primary Health Centre, verification of records & report. New and old cases were also examined by Team. Accelerated Social Health Activist (ASHA) /Aagan Wadi Worker (AWW) / Panchayati Raj Institution (PRI)/Rural Medical Practioner (RMP) were also interviewed for their knowledge, attitude and practices in their area.

Results: Referral of suspects from rural was very high and ratio of confirm cases were good. Since 2005 the care detection rate are similar in each year. Wrong diagnosis was observing only 1.7%. MDT stock was adequate for more than three months with long expired. Report and record were prepared and submitted timely. It was also observed the knowledge of suspect /referral was very satisfactory among Accelerated Social Health Activists (ASHA)/Aagan Wadi Worker (AWW) /Panchayati Raj Institution (PRI). The awareness regarding leprosy disease, treatment and programme was 76% in the community.

Conclusion: Case detection rate were high and high level of referral coming from field. Still index (MB with highly positive) cases and child cases were coming from difficult /hard to reach area and child proportion are high compare to national average. Special action will be needed in those areas in each district. Schedule Cast and Schedule tribe new case detection are more than general population. Special action plan will be needed for these populations.
The integration are very successfully in Bihar. The entire centers are working on their own without external support. Doctor are diagnosing on their own in all working days. This modal can be replicate in other national programme.

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Presentation Time: **Wednesday 18/09/2013 at 13:00 – 13:10**
Abstract Topic Name: **Leprosy Control**
Presentation Screen Number: **5**
Presenter: Dr Aparna Srikantam

AWARENESS ABOUT LEPROSY IN GENERAL POPULATION OF TWO DISTRICTS IN ANDHRA PRADESH, SOUTH INDIA

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Introduction: In India, there is stigma related to leprosy and heredity is thought to have a role in the disease transmission, but the extent of which are not known. Stigma could affect the social status, employment opportunities, jobs, marriage and family life of people suffering with leprosy. The lack of understanding and knowledge increases misconceptions about disease transmission and treatment. The study addresses few such issues related to leprosy by assessing the awareness of General population dwelling in Krishna and Adilabad districts, Andhra Pradesh, India.

Methods: LEPRA India-BPHRC made a study on quality leprosy services provided at 12 PHCs in Krishna and Adilabad districts with the support of Indian council of Medical Research (ICMR). The study period is 3 years from June 2011-December 2013. In Krishna 6 PHCs with a total population of 4,25,820 were selected. In Adilabad 6 PHCs with a total population of 1,85,671 were selected. A study was conducted on 2139 people differing in age, religion, caste, gender, education and occupation. The data was collected using well structured instrument. Analysis was done using MS Excel, part of which is discussed in results.

Results: Out of 2139 people only 44.50% knew that bacteria causes leprosy and others thought it was due to food, polluted water and 15.7% of them believe that it is due to god's curse. In the study population, 54.1% know skin patch with loss of sensation is a sign of leprosy and 56% knew that the disease affects skin and nerves. In the study, 51% of them were aware of availability of leprosy treatment in government hospital and only 6% knew MDT was the name of treatment. 35% of the people think hereditary has some role to play in leprosy transmission. 45.06% of the people say leprosy can be controlled by early detection of disease where as 33% people believe that it is not curable. In the study, 77% of the people told they neither attended nor invited the affected people for any functions. 33% of people feel isolation of patients affected is needed.

Conclusion: The study shows that there is lack of community awareness programs, which needs to be restarted. The community awareness has to stress on - cause for leprosy, mode of transmission, availability of free treatment in government hospital and local PHCs and curability of the disease. Development of skills to detect early symptoms which lead to control of the disease should be focused. Awareness programs should help in eliminating the stigma and discrimination for the people affected with leprosy in the community as well as in the government health care staff.

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Presentation Time: Wednesday 18/09/2013 at 13:10 – 13:20
Abstract Topic Name: Leprosy Control
Presentation Screen Number: 5
Presenter: Dr Aparna Srikantam

ASSESSMENT OF KNOWLEDGE ABOUT LEPROSY IN 490 ACCREDITED SOCIAL HEALTH ACTIVIST (ASHA) WORKERS

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Introduction: One of the key components of the Indian National Rural Health Mission (NRHM) is to provide every village in the country with a trained female community health activist Accredited Social Health Activist (ASHA). Selected from the village itself and accountable to it, the ASHA will be trained to work as an interface between the community and the public health system. ASHA worker will create awareness on health and mobilise the community to lead healthy life. ASHA will provide information on nutrition, basic sanitation & hygienic practices, healthy living and working conditions, information on existing health services to the community.ASHA plays very important role of advocating people on leprosy services provided in Government hospitals and PHCs. ASHA is also responsible for reffering the suspected leprosy cases for local PHCs. This study was designed to determine the knowledge of ASHA workers about leprosy.

Methods: LEPRA India – Blue Peter Public Health Research Centre (BPHRC) is conducting a study on quality leprosy services provided at 12 PHCs in Krishna and Adilabad districts with the support of Indian Council of Medical Research (ICMR). The study period is 3 years from June 2011-December 2013. In Krishna 6 PHCs with a total population of 4,25,820 were selected. In Adilabad 6 PHCs with a total population of 1,85,671 were selected.
A study was conducted on 490 ASHA workers employeed in different PHCs of Krishna and Adilabad districts. ASHA were interiewed about cause, treatment availability, and curability of leprosy. Their training and capacity to refer patients to PHCs were also elicited.The data was collected using well structured instrument. Analysis was done using MS Excel, part of which is discussed in results.

Results: Out of 490 ASHA workers, 30.8% have below high school education. 74.7% had field experience of 6-10 years.74.3% of ASHA workers had not received any training on leprosy. 18.2% knew MDT was the name of treatment. 12 out of 131 trained ASHA still think that leprosy is not curable. 22.45% think patient need to be isolated. 21.4% ASHA feel hereditary has some role to play in leprosy transmission. 75.3% knew that the disease affects skin and nerves.68.2% had not seen even a case of leprosy in last 1 year and only 19.2% of ASHAs had referred cases to PHC on suspicion of leprosy. Only to 5.7% of ASHA received Incentives for referral of suspected leprosy cases to PHC.

Conclusion: ASHA workers lack training on leprosy. The training should include discussion on causes of leprosy, mode of transmission, availability of free treatment in government hospital and local PHCs and curability of the disease. Many are not aware of case detection and hence the number of cases referred to PHCs on suspicion was less. The incentives for referral and leprosy case holding in PHC area were either not given or less. There seems to be a need to strengthen the referral mechanism by active involvement of capacitated ASHA in the post leprosy elimination and integration scenario. PHCs with poor services for leprosy are to be identified and improved to meet the referral demand.

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Presentation Time: Wednesday 18/09/2013 at 13:20 – 13:30
Abstract Topic Name: Leprosy Control
Presentation Screen Number: 5
Presenter: Nimal Kasturiaratchi

WHICH PUBLIC HEALTH MODEL IS SUITABLE FOR LEPROSY CONTROL?

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Introduction: A scan through the public health models that exist reveals that the underlying foundations of such models could be classified into three: those based on theoretical concepts such as environment, health promotion, economics etc, those inherited through political processes such as welfare states and those that have been construed on organizational development principles. Given the low infectivity, stigma, undetected development of disability, relatively prolonged treatment and clinical management and the fact that the victims come from poor communities demands that the leprosy health managers review the public health models that they use to curb this disease. It may be that it is the gaps in such models that prevent leprosy workers making effective control measures to control Leprosy where the disease is still endemic.

Methods: A comparison across the different public health models that are in use currently and matching them with special needs of the disease condition is expected to reveal the limitations of the models and the relevance of the methods of control used.

Results: This paper will highlight the relationship between the prevention-oriented public health model that has been inherited on the basis of the welfare state and the present state of leprosy control taking Sri Lanka as an example. It also describes the relative merits and demerits of the model and attempts to identify gaps through comprehensiveness creeps out, making the programme less effective

Conclusion: Given the limitation of the existing model, this paper proposes a model based on quality of life, health rights, integration and the possible threats for the introduction of such a system

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Presentation Time: Wednesday 18/09/2013 at 13:30 – 13:40
Abstract Topic Name: Leprosy Control
Presentation Screen Number: 5
Presenter: Shivakumar Mugudalabetta

SITUATIONAL ANALYSIS OF LEPROSY CONTROL IN BIHAR, INDIA

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Introduction: Leprosy control programme has made remarkable progress in Bihar with the involvement of different stakeholders. Bihar is one of the three states in India yet to achieve the elimination goals and reports third highest number of new cases in the country. Situational analysis is needed to devise strategies aimed at further reduction of leprosy burden in the state.

Methods: SWOT (Strength, Weakness, Opportunities and Threats) analysis of leprosy control services provided in Bihar was done to assess the current situation.

Results: The number of new cases detected is showing decline from 2011. Involvement of community volunteers like Accredited Social Health Activists (ASHA) is a major strength for enhancing early case detection and an important link between leprosy services and community. Leprosy services are delivered through general health system. Implementation of rehabilitation services for person affected by leprosy still remains as a major challenge. The expertise and the number of Reconstructive Surgeries (RCS) done are declining since last two years. Lepra reactions are frequently missed by the local health workers due to the lack of knowledge. Most of the vertical program staff is expected to retire in the next 5 years hence could threaten the sustainability of leprosy services especially management of reactions. The potential of civil society organizations remains untapped and their involvement needs to be explored.

Conclusion: There is an urgent need for establishing leprosy referral centers to manage complications and surgical rehabilitation. Continuing Medical Education to the health professionals is needed to sustain the leprosy expertise. Engaging the community through civil society partnership is needed for sustaining the leprosy services.

P-418

Presentation Time: Wednesday 18/09/2013 at 13:40 – 13:50
Abstract Topic Name: Leprosy Control
Presentation Screen Number: 5
Presenter: Michel Sawadogo

ACCESS TO HEALTH CARE FOR LEPROSY PATIENTS IN BURUNDI

S. Michel [1,*], J. C. MUGISHA [2]

[1]Damian Foundation, [2]Ministry of Health, Giharo Hospital, Bujumbura, Burundi

Introduction: A survey has been conducted in Burundi in order to evaluate the outcome of a rehabilitation surgery held from January 2008 to December 2010 between patients who benefited from it. The study had to appreciate the profits of chirurgical intervention for the patient, to analyze the patient's perception about rehabilitation and to collect some suggestions from investigated patients.

Methods: A transversal study was conducted with a case-control survey in order to appreciate the difference between the patients who benefited from chirurgical rehabilitation (case) and the other non operated leprosy patients (control). The survey essentially took place in the 5 endemic provinces of Burundi, in the Reference Hospitals and Health Centers chosen according to the source of the patients. The access to health facility was checked from a questionnaire.

Results: All patients confirmed the availability of a health facility in their entourage. Among the cases, 16 patients (33,3%) had between 0 and 2 km of distance to reach a health facility; 19 patients (either 39,6%) between 3 and 5 km and 13 patients (either 27,1%) more than 5km. Among the cases, 12 patients (25%) is reaching health facility in 30 min, 16 patients (33,3%) between 30 min and 1 hour, and 20 patients (41,7%) more than one hour. The means used to reach this facility is walk for 34 patients (70,8%); bicycle by 8 patients (16,7%); motorcycle by 3 patients (6,25%) and transportation in a private vehicle for 3 patients (6,25%)

Among the control, 38 patients (either 39,6%) had a distance from 0 and 2 km to reach a health facility, 48 patients (either 50%) between 3 and 5 km; 10 patients (either 10,4%) more than 5 km. Among the control, 11 patients (11,4%) is reaching health facility in 30 min, 55 patients (57,5%) between 30 min and 1 hour, and 30 patients (31,2%) more than one hour. The means used to reach this facility is walk for 62 patients (64,6%); bicycle by 23 patients (23,9%); motorcycle by 5 patients (5,2%) and transportation in a private vehicle for 6 patients (6,2%).

Conclusion: Access to health facilities seems to be good enough in Burundi. Nevertheless, walking remains the essential mean of access for the majority, a way not always easy for patients suffering from wounds or feet amputations. The National Programme should develop, with the support of the Ministry of Health, services that must be closed to the patients and their families.

P-420

Presentation Time: Wednesday 18/09/2013 at 13:50 – 14:00
Abstract Topic Name: Leprosy Control
Presentation Screen Number: 5
Presenter: Arie de Kruijff

EVALUATION OF A PILOT PROJECT USING SMS TECHNOLOGY TO COLLECT LEPROSY DATA IN MOZAMBIQUE

A. De Kruijff [1,*]

[1]The Leprosy Mission, London, United Kingdom

Introduction: Improved access to communication technology, particularly mobile phones, has impacted communities in unprecedented ways and the expansion of the cellular network in Africa in particular has brought many new opportunities. In Mozambique the cellular network has increased rapidly and now covers even remote districts, while cheaper imported mobile phones have flooded the market.
Traditionally, in Mozambique, leprosy case notification information has been kept by each District Supervisor in a register. This information is then passed in written reports to the Ministry of Health via the Provincial Supervisor. The information is fragmented into the different districts and consisted mostly of numbers and the link to the actual patient is often lost. To get some specific information on a slightly different population set (e.g. women with grade 2 disability) was often very tedious and time-consuming.
With support from The Leprosy Mission Mozambique, an SMS based leprosy case notification system was set up as a 2 year pilot project for Mozambique starting in April 2011. The project created an SMS structure for the provincial and district supervisors for the notification of new leprosy cases, end of treatment and MDT medication levels. The project aimed to "improve the management of leprosy in Mozambique by improving the accuracy, reliability and availability of leprosy control information to and from leprosy service providers". The project was evaluated between October 2012 and January 2013 by Swiss TPH (Swiss Tropical and Public Health Institute). The outcomes of the evaluation are presented in this poster.

Methods: The evaluation aimed at assessing the overall project performance, and collecting lessons learned and recommendations regarding the design and implementation of the project. The evaluation questions therefore focused on effectiveness, impact, relevance, efficiency and sustainability
Data collection consisted of documentation review; semi-structured qualitative interviews with key partners and stakeholders based on the evaluation matrix and also observation to analyse practical aspects connected with the implementation of SMS-Hub (software, hardware).

Results: According to the key informants, the project improved the management of leprosy in Mozambique, as "accuracy, reliability and availability of leprosy control information" shared between levels of care clearly improved". The SMS-Hub allows the users across the NLCP to see real time patient data and statistics as they never did before. Patient leprosy data is more reliable which helps decision making. The national drug supply chain involves several actors not engaged with the SMS-Hub project, so the MDT stock level data is less reliable.
The SMS-Hub helps users performing their work, rather than being an extra burden. Reports are easier to create by using the SMS-Hub, supervisors can generate reports without manual data aggregation, which is much appreciated, especially by Provincial Supervisors.

Conclusion: The pilot project has demonstrated that SMS technology can be successfully used to collect leprosy data from remote districts. The impacts of the project are likely to remain as long as the system is maintained, and training and monitoring conducted. Currently, Provincial and District supervisors are satisfied using SMS-Hub and take benefit from it.
Many lessons have also been learned that can feed into the design of improved systems and possibly also link to Neglected Tropical Diseases.

P-357

Presentation Time: Wednesday 18/09/2013 at 12:30 – 12:40
Abstract Topic Name: Detection and Treatment of Reactions
Presentation Screen Number: 6
Presenter: Charles Nwafor

FIELD MANAGEMENT OF REACTIONS: HELPING OR HURTING?

C. Nwafor [1,*], J. Chukwu [1], N. Ekeke [1], C. Ogbudebe [1], D. Oshi [1], A. Meka [1], N. Madichie [1]

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Introduction: Throughout history, leprosy has been considered a disease apart because of the sometimes hideous deformities it causes. Leprosy reactions which can occur before, during or after treatment, contribute substantially to these deformities and disabilities. It is estimated that 30% -50% of multi-bacillary cases may be affected by leprosy reactions in the course of their disease (WHO, 2012).
Since more than ten years, the Nigerian TB and leprosy control programme formally introduced field management of reactions. The guidelines authorised Local Government TB and leprosy supervisors to diagnose and treat mild to moderate reactions including prescribing standardised course(s) of prednisolone. The guidelines also outlined contraindications to field management. These include (but are not limited to) diabetes and hypertension. Patients with such conditions were required to be sent to the referral centres.
Although there have been numerous anecdotes suggesting improper management of reactions in the field, especially with regards to use of prednisolone, no systematic review of this protocol has been undertaken.
This retrospective analysis of six years of data (2007-2012) on notified cases of reaction from the 14 states supported by GLRA is a first step towards filling this gap.

Methods: Routinely notified quarterly data from the 14 states in southern Nigeria assisted by the GLRA were collated for the years 2007 to 2011 in Microsoft Excel and percentage of cases notified as reaction cases calculated per year. The registered prevalence was the denominator in each year.

Results: In 2007 out of 1140 registered prevalence, 590 (51.8%) were managed for reactions. In 2008 and 2009, 686 (61.5%) and 752(62.6%) out of 1116 and 1202 registered prevalence respectively were treated for leprosy reactions. Similarly, of 1050 and 1058 registered leprosy cases in 2010 and 2011, 819 (78%) and 550(52%) respectively were diagnosed with and managed for leprosy reactions.
Of the leprosy cases managed for reactions in 2007, 396 (67.1%) were managed in the field while 194 (32.9%) were managed in the Referral centres. While 419 (61.1%) cases were treated in the field, 267(38.9%) were treated in the hospitals in 2008.
In 2009, 2010 and 2011, 74.1%, 55.9% and 70.5% of the leprosy cases were treated in the field respectively. The data used in this analysis were routinely reported data. They were not subjected to any additional validation process. This is a limitation.

Conclusion: The revelations here are twofold: the first is the disproportionately large percentage of cases reported as having reaction. The second is that the vast majority of the reported reactions were managed in the field. These findings appear to support our suspicion that reactions might be over-diagnosed and patients are being subjected to unwarranted steroid exposure by many TBLS in the field. The ability of many supervisors to confidently diagnose, properly classify and manage reactions solely in their field clinics is, in our experience, increasingly questionable.
In view of the relatively small numbers involved per supervisor, we recommend that, as an interim measure, all suspected cases of reaction should be validated through consultation with one or two persons appointed by the state control officer for the purpose. If confirmed, decisions on management plan for the case would also be agreed by the validation team. Creative use of mobile phones in this iterative process could prove helpful and cost-effective.

P-358

Presentation Time: Wednesday 18/09/2013 at 12:40 – 12:50
Abstract Topic Name: Detection and Treatment of Reactions
Presentation Screen Number: 6
Presenter: Dr Deanna Hagge

ENLIST 1: A PROSPECTIVE STUDY OF THE CLINICAL FEATURES AND TREATMENT OF ERYTHEMA NODOSUM LEPROSUM AT ANANDABAN HOSPITAL, KATHMANDU, NEPAL

M. Shah [1,*], K. Neupane [2], I. B. Napit [1], P. Parajuli [2], D. A. Hagge [2] and the Erythema Nodosum Leprosum International STudy (ENLIST) Group

[1]Anandaban Hospital, Kathmandu, Nepal, [2]Mycobacterial Research Laboratory, Anandaban Hospital, Kathmandu, Nepal

Introduction: Erythema nodosum leprosum (ENL) affects approximately 50% of individuals with lepromatous leprosy (LL) and 10% of borderline lepromatous (BL) leprosy patients. ENL is a debilitating, multisystem disorder characterised by fever, malaise and crops of painful erythematous cutaneous nodules. ENL also causes nerve impairment, arthritis, bone pain, orchitis, hepatitis and iritis. ENL may occur before, during or after completion of multi-drug

therapy (MDT). ENL commonly affects young adults, often becomes chronic and may persist for up to many years. It causes severe morbidity and economic hardship. However there are no prospective studies of the clinical features of ENL which might inform future treatment studies. ENLIST 1 is a prospective international multicentre collaborative study to determine the clinical features of ENL and the treatments employed in different countries. In Nepal, Anandaban serves as a central referral hospital for leprosy complications, including ENL.

Methods: Individuals diagnosed at Anandaban with their first episode of ENL, a new recurrent episode of ENL or a deterioration of their ENL while on ENL specific treatment were enrolled. Using standardized definitions and a data collection form demographic, clinical and laboratory data were recorded including evidence of nerve function impairment using voluntary muscle and sensory testing. The physician determined severity of ENL and the treatment administered were recorded.

Results: To date, 22 patients with ENL have been enrolled as follows. 4 individuals were newly diagnosed with ENL, 2 had recurrent and 16 chronic ENL. 82% were male. The median age was 29 years (range 18-57). 14% had BL leprosy and 86% LL. The average initial bacterial index (BI) was 4 at leprosy diagnosis. 59% w ere taking MDT.
91% of patients were classified as having severe ENL. All patients had painful erythematous skin nodules or lesions. 27% reported severe bone pain. 68% had fever and 41% had nerve function impairment. Lymphadenopathy was present in 14%. The C-reactive protein (CRP) was elevated in 86%. One patient was pregnant at the time of ENL diagnosis. 3 of the 4 individuals diagnosed with their first episode of ENL were placed on prednisolone while one patient with severe ulcerated nodules was placed on thalidomide only. Most ENL patients (95%) received prednisolone, although only 41% received only prednisolone. Others also received thalidomide (14%), clofazamine (23%), Azoran (5%) or some combination of these (14%). Some ENL patients receiving clofazamine had completed MDT (9%) while others had not yet completed their MDT (27%).

Conclusion: The majority of patients in this hospital-based study have severe, chronic ENL. Prednisolone was the most common treatment administered, although thalidomide was used in more severe cases. Skin lesions were present in all patients and a large proportion had evidence of a systemic inflammatory response demonstrated by an elevated CRP. Standardized documentation of ENL characteristics and treatment should allow comprehensive severity comparisons between ENL patients and leprosy care service providers across endemic populations. These data are preliminary with further recruitment ongoing.

P-359

Presentation Time: Wednesday 18/09/2013 at 12:50 – 13:00
Abstract Topic Name: Detection and Treatment of Reactions
Presentation Screen Number: 6
Presenter: Anna Maria Sales

ENLIST 1: A PROSPECTIVE STUDY OF THE CLINICAL FEATURES AND TREATMENT OF ERYTHEMA NODOSUM LEPROSUM AT THE LEPROSY LABORATORY, OSWALDO CRUZ INSTITUTE, FIOCRUZ, RIO DE JANEIRO, BRAZIL

J. A. D. C. Nery [1], A. M. Sales [1,*], M. A. Hacker [1], L. P. R. Nascimento [1], H. C. D. S. Bispo [1], A. Miranda [1], E. N. Sarno [1] and the Erythema Nodosum Leprosum International STudy (ENLIST) Group

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Introduction: Erythema nodosum leprosum (ENL) affects approximately 50% of individuals with lepromatous leprosy (LL) and 10% of borderline lepromatous (BL) leprosy patients. ENL is a debilitating, multisystem disorder characterized by fever, malaise, and crops of painful erythematous cutaneous nodules. ENL also causes nerve impairment, arthritis, bone pain, orchitis, hepatitis, and iritis. ENL may occur before, during or after completion of multidrug therapy (MDT). ENL commonly affects young adults and may persist for up to 10 years. It causes severe morbidity and economic hardship. However there are no prospective studies of the clinical features of ENL that might inform future treatment studies. ENLIST 1 is a prospective international multicentre collaborative study to determine the clinical features of ENL and the treatments employed in different countries.

Methods: Individuals diagnosed with their first episode of ENL, a new episode of ENL, or a deterioration of their ENL while on ENL-specific treatment were enrolled. Using standardized definitions and a data collection form demographic, clinical and laboratory data were recorded including evidence of nerve function impairment using voluntary muscle and sensory testing. Severity of ENL as determined by a physician and type of treatment administered were recorded. Patient data were stored in an Epi Info 7 database; and the data were analyzed via SPSS 16.

Results: Thirty-three multibacillary (MB) leprosy patients presenting clinical ENL from May 2012 thru February 2013 were included in the study. Males made up 72.7% while the mean age was 33 (ranging from 19 to 73). Almost all had the LL clinical form (88%) and the mean bacillary index at leprosy diagnosis was 4.33+ (ranging from 2.0+ to 6.0+). Regarding ENL episodes, 8 (24.2%) patients were diagnosed as new ENL cases; 11 (33.3%) as recurrent cases, presenting a new episode of ENL; and 14 (42.4%) as chronic ENL cases presenting ENL deterioration. The major symptoms patients most complained about were: skin lesions (88%), skin pain (63.6%), edema (51.5%), nasal stuffiness (45.5%), and malaise (36.4%) while pain was the main nerve symptom (21 patients). The most common type of ENL skin lesions presented were nodules (90%), subcutaneous nodules (39.4%), and plaques (27.3%). For the most part, skin lesions occurred in the upper (87.9%) and lower limbs (81.8%). Among the 21 patients with nerve function impairment, 12 (57%) were previously existing impairments and 6 (28.5%) were new. Regarding severity of the then current ENL episodes, 39.4% were considered severe and 36.4%, mild. The male patients were preferably treated with thalidomide and the women, with prednisone and/or other associated drugs like pentoxifylline.

Conclusion: Among MB patients, ENL is a frequently-occurring reactional episode, which affects young people in their prime. Chronic and recurrent, ENL impacts patients very negatively in psychological, economic, and social terms as well as the public health care system overall.

P-360

Presentation Time: Wednesday 18/09/2013 at 13:00 – 13:10
Abstract Topic Name: Detection and Treatment of Reactions
Presentation Screen Number: 6
Presenter: Shimelis Doni

ENLIST 1: A PROSPECTIVE STUDY OF THE CLINICAL FEATURES AND TREATMENT OF ERYTHEMA NODOSUM LEPROSUM AT ALERT CENTER, ADDIS ABABA, ETHIOPIA

S. N. Doni [1,*], S. M. Lambert [2,3], D. T. Alembo [1], B. A. Hassan [1], M. B. Shelemo [1], A. M. Yetaye [1], S. L. Walker [3] and the Erythema Nodosum Leprosum International STudy (ENLIST) Group

[1]Dermatology, [2]ALERT Center, ADDIS ABABA, Ethiopia, [3]Clinical Research Department, London School of Hygiene and Tropical Medicne, London, United Kingdom

Introduction: Erythema nodosum leprosum (ENL) affects approximately 50% of individuals with lepromatous leprosy (LL) and 10% of borderline lepromatous (BL) leprosy patients. ENL is a debilitating, multisystem disorder characterised by fever, malaise and crops of painful erythematous cutaneous nodules. ENL also causes nerve impairment, arthritis, bone pain, orchitis, hepatitis and iritis. ENL may occur before, during or after completion of multi-drug therapy (MDT). ENL commonly affects young adults and may persist for up to 10 years. It causes severe morbidity and economic hardship. However there are no prospective studies of the clinical features of ENL which might inform future treatment studies. ENLIST 1 is a prospective international multicentre collaborative study to determine the clinical features of ENL and the treatments employed in different countries.

Methods: Individuals diagnosed with their first episode of ENL, a new episode of ENL or a deterioration of their ENL while on ENL specific treatment were enrolled. Using standardized definitions and a data collection form demographic, clinical and laboratory data were recorded including evidence of nerve function impairment using voluntary muscle and sensory testing. The physician determined severity of ENL and the treatment administered were recorded.

Results: A total of 21 ENL patients were recruited up to February 2013; among them 12 (57.15%) were males and 9 (42.85%) were females. 9 (42.85%) patients BL and 12(57.15%) patients were classified as LL. At the time of diagnosis, 13 (61.90%) patients had BI >3, and 11 patients (52.38%) 13 (61.9%) patients presented with reaction.With regards to their ENL presentation, 7 (33.3%) patients presented with NEW ENL, 13 Patients (61.9%) presented with chronic ENL and 1patients with recurrent ENL. SEverity of ENL Reaction was graded severe for 8 patients, moderate for 15 patients and mild for 1 patient. Pain symptoms reported were analyzed: skin pain 18 (85.71%),joint pain 19 (90.1%),bone pain 17 (80.95%), muscles 12(57.15%), nerves 11 (52.38%), digits 9 (42.85%), Eye symptoms were reported in 5 patients (23.81%) and testicular pain reported in 2 patients. Nerve symptoms were analysed among ENL patients who had nerve symptoms: the commonest nerve symptom was pain in 11 patients, decreased sensation in 5 patients, weakness in 3 patients and hyperesthesia in 1 patient.
All 21(100%) patients presented with crops of erythematous painful nodules. The other types of ENL skin lesions reported were ulcerated skin lesion seen in 7 (33.3%) patients, bullae and vesicular lesions were also seen in 2 patients.
Fever was reported in 16 patients (76.19%) and peripheral edema in 15 (71.43%), malaise 13 (61.9%), nasal stuffiness 12 (57.15%), epistaxis 10 (47.6%), joint swelling 7 (33.3%), depression 7 (33.3%).

Conclusion: High BI >3 is a risk factor to develop ENL reaction. The common clinical ENL features are ENL skin lesions, high grade fever, malaise, arthralgia and peripheral edema. Other illness identified were intestinal parastosis in five patients, anemia in 4 patients and diabetes in one patient. 12 (57.12%) were treated with predinsolone, 9 (42.85%)patients treated with a combination of predinsolone and chlofazamine and 1 patient was treated with dichlofenac tablets. Correlation of Ethiopian ENL data to other international data would be interesting in helping to define types of ENL, severity and treatment regimes

P-361

Presentation Time: Wednesday 18/09/2013 at 13:10 – 13:20
Abstract Topic Name: Detection and Treatment of Reactions
Presentation Screen Number: 6
Presenter: Vivek Pai

"ENLIST 1: A PROSPECTIVE STUDY OF THE CLINICAL FEATURES AND TREATMENT OF ERYTHEMA NODOSUM LEPROSUM AT BOMBAY LEPROSY PROJECT, MUMBAI, INDIA

V. V. Pai [1,*], V. Halwai [1] and the Erythema Nodosum Leprosum International STudy (ENLIST) Group

[1]Leprosy and Dermatology, Bombay Leprosy Project, Mumbai, India

Introduction: Erythema nodosum leprosum (ENL) affects approximately 50% of individuals with lepromatous leprosy (LL) and 10% of borderline lepromatous (BL) leprosy patients. ENL is a debilitating, multisystem disorder characterised by fever, malaise and crops of painful erythematous cutaneous nodules. ENL also causes nerve impairment, arthritis, bone pain, orchitis, hepatitis and iritis. ENL may occur before, during or after completion of multi-drug therapy (MDT). ENL commonly affects young adults and may persist for up to 10 years. It causes severe morbidity and economic hardship. However there are no prospective studies of the clinical features of ENL which might inform future treatment studies. ENLIST 1 is a prospective international multicentre collaborative study to determine the clinical features of ENL and the treatments employed in different countries.

Methods: Individuals diagnosed with their first episode of ENL, a new episode of ENL or a deterioration of their ENL while on ENL specific treatment were enrolled. Using standardized definitions and a data collection form demographic, clinical and laboratory data were recorded including evidence of nerve function impairment using voluntary muscle and sensory testing. The physician determined severity of ENL and the treatment administered were recorded. The data were studied for preliminary observations.

Results: The data was studied with respect to 26 patients with ENL reaction which were recruited at the Main Referral Centre of Bombay Leprosy Project of which patients 6 were with new ENL, 19 with recurrent ENL and 6 with chronic ENL. Clinically 11 patients belonged to BL type and 14 of LL type. 21 were males and 5 females. Neuritis was seen in 3 patients. BI < 3+ in 4 patients and BI > 3+ in 21 patients. Histopathology studies done in 5 patients had features of ENL in all 5 patients.
Laboratory investigations included routine haemogram which showed leucocytosis in 15 patients out of 19 done and 11 patients with raised ESR out of 15 done, C Reactive protein levels were found to be raised in 6 patients and HIV screening using ELISA studies was negative in most patients.

Conclusion: Observations from the ongoing study are preliminary and concrete findings need to be confirmed in a larger series of patients with ENL which are being recruited.

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Presentation Time: Wednesday 18/09/2013 at 13:20 – 13:30
Abstract Topic Name: Detection and Treatment of Reactions
Presentation Screen Number: 6
Presenter: Saba Lambert

HEALTH RELATED QUALITY OF LIFE (HRQOL) IN LEPROSY REACTIONS CLINICAL TRIALS, AT ALERT, IN ETHIOPIA

S. M. Lambert [1, 2,*], D. Lockwood [1], P. Nicholls [3], S. D. Nigusse [4], D. Tsegay [4] and CiReCT

[1]Clinical Research Department · Faculty of infectious and Tropical Diseases, London School Of Hygiene and Tropical Medicine, London, United Kingdom, [2]ALERT Centre, Addis Ababa, Ethiopia, [3]School of Health Sciences, University of Southampton, Southampton, United Kingdom, [4]Dermatology, ALERT Centre, Addis Ababa, Ethiopia

Introduction: In recent years there has been a broadening of focus in measurement of health, beyond traditional health indicators such as mortality and morbidity, to include measures of the impact of disease and impairment on daily activities and behaviours, perceived health measures and disability /functional status measures. With increasing comparative clinical studies being conducted in the management of leprosy reactions, health related quality of life questionnaire should be used to allow patients' assessment of treatments to be taken into account.

Methods: With no validated HRQoL tool available in Amharic (main Ethiopian language), the SF36 was selected for translation from English, and content was evaluated with a patient focus group. Back translation was done before being validated in patients affected by leprosy to assess validity and reliability. The questionnaire was then used in a clinical trial comparing two treatments for leprosy reactions (Prednisolone vs. Ciclosporin).

Results: We found the SF36 questionnaire to be a very useful and easy to use tool. Questions were easily translated into the local language and also easily understood by the patients. The questioned seemed to be more cross-culturally relevant than those in other HRQoL questionnaires. The results of the validation exercise will be presented as well as the analysis of the use of HRQoL in the clinical trial. SF36 was used to compare progress over time with treatment *per se* and between treatment arms in 135 patients.

Conclusion: The analysis will assess the validity of SF36 as a HRQoL measurement tool in leprosy related clinical trials.

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Presentation Time: Wednesday 18/09/2013 at 13:30 – 13:40
Abstract Topic Name: Detection and Treatment of Reactions
Presentation Screen Number: 6
Presenter: Dr Deanna Hagge

TYPE 1 REACTIONS IN LEPROSY: A HOSPITAL-BASED STUDY OF CLINICAL DEMOGRAPHICS AND TREATMENT PATTERNS

C. B. Kunwar [1], M. Shah [1], K. Neupane [1], I. B. Napit [2], W. R. Berrington [3], T. R. Hawn [3], D. A. Hagge [1,*]

[1]Mycobacterial Research Laboratory, [2]Anandaban Hospital, Kathmandu, Nepal, [3]School of Medicine, University of Washington, Seattle, United States

Introduction: Type 1 (T1R) or reversal reactions are a significant factor for morbidity and disability development in new and multi-drug therapy (MDT) treated leprosy patients. The underlying dynamics for T1R are poorly understood; and therefore, adequate tools for prevention, early diagnosis and treatment strategies are either absent or limited. Current World Health Organization guidelines recommend 12 weeks of tapered prednisolone. Although it is known that protracted treatment durations are often required, limited information is available regarding risk factors and actual treatment patterns across endemic populations. In order to characterize risk factors and T1R treatment patterns within an endemic population, a retrospective chart review was performed in Nepal.

Methods: A retrospective chart review was performed on 1033 leprosy patients at Anandaban Hospital, which serves as a leprosy referral centre for Nepal. 386 patients presented at Anandaban w ith one or more episodes of T1R between1996-2011. Host DNA was also collected from most patients for genetic susceptibility analyses

Results: T1R occurred across the Ridley-Jopling spectrum of clinical classification; however, 87% of T1R arose in borderline patients (borderline tuberculoid (BT, 35%), borderline borderline (BB, 5%) and borderline lepromatous (BL, 47%)). Most first episode T1R (62%) were diagnosed concurrent with leprosy diagnosis. After MDT initiation, another 23% of first T1R episodes occurred within the first year, 11% within 2-5 years and 4% after 5 years or more. Patients <40 years old and those with BB/BL leprosy were at increased risk for T1R (OR 3.44/3.91 respectively). PB/MB classification, bacterial index (BI) and ethnicity were not related to T1R risk. Prednisolone treatment for first episode T1R ranged 3 months to 9 years, with a median duration of 30 weeks. Depending on classification, roughly 25-45% of borderline patients developed a second T1R episode (separated by 1 or more months without symptoms or treatment) with another 30% of those patients developing a third episode.

Conclusion: In an era of post-elimination control programs and passive case detection, T1R will remain a significant factor in driving undiagnosed leprosy cases to seek clinical diagnosis. Although T1R occurs across the leprosy spectrum regardless of BI, risk is highest for those under 40 years of age or with borderline forms of leprosy. Median prednisolone treatment necessary to resolve a first T1R episode was 30 weeks. These findings highlight current inadequacies regarding prompt T1R resolution and the critical need to identify better prevention, early diagnostic and treatment strategies. Further analysis of this data and associations to genetic susceptibility are in progress.

P-364

Presentation Time: Wednesday 18/09/2013 at 13:40 – 13:50
Abstract Topic Name: Detection and Treatment of Reactions
Presentation Screen Number: 6
Presenter: Zhaudat Umerov

LEPROSY NEUROPATHY: A STUDY BOTH CROSS-REACTING EPITOPE ON THE MYCOBACTERIUM LEPRAE AND HUMAN PERIPHERAL NERVE. A NOVEL AUTOIMMUNE MECHANISM OF NERVE DAMAGE AND APPROPRIATE THERAPEUTIC STRATEGY

Z. Umerov [1,*]

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Introduction: Leprosy is a human chronicle infectious disease with specific peripheral nerve damage mediating on the causative agent *Mycobacterium leprae*. It is commonly believed that the basis of leprosy neuropathy is the unique tendency of *Mycobacterium leprae* to invade Schwann cells. The uptake of *M. leprae* by Schwann cells results in demyelination and subsequent nerve damage in leprosy. Patients peripheral nerves are usual damaged all spectrum of clinical forms

i.e. non leprosy without neuropathy. Events are observed as before the treatment, while effective, and after multi drug therapy (MDT), when the host is released from the pathogen. These data suggest nerve damage, not only as a result of the invasion of the pathogen in the Schwann cells. Thus, we have different mechanism of nerve injury. Later cases apparently are aberrantly triggered autologous host immune response, autoimmunity.

Methods: This study presents experimental evidence for the autoimmune mechanism of nerve damage in leprosy. Both cross-reacting epitope (CRE) *Mycobacterium leprae* and human peripheral nerve (HPN) have defined by Immunochemical method of analysis.

Results: CRE is resistant to heat, incubation with acid, urine, chymotrypsin and settled in saturated solution of ammonium sulfate. Myelinated nerve fibers of mice dorsal root ganglia "*in vitro*" revealed demyelination and degeneration after leprosy serum (anti-CRE antibody) application.

Conclusion: These findings elucidate a novel mechanism that is involved in the immunopathogenesis of nerve damage in leprosy.

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Presentation Time: Wednesday 18/09/2013 at 13:50 – 14:00
Abstract Topic Name: Detection and Treatment of Reactions
Presentation Screen Number: 6
Presenter: Sérgio Luiz Antunes

DEMYELINATION IN LEPROSY NEUROPATHY: CORRELATION BETWEEN ELECTRONEUROGRAPHICAL ALTERATIONS AND DETECTION OF SERUM ANTI-GANGLIOSIDE ANTIBODIES.

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Introduction: Demyelination was demonstrated by teasing of nerve fibers to occur in human leprosy neuropathy according to Shetty et al (1987). Patients suffering reactional episodes, display demyelinating pattern in electroneurographical (ENG) exam (Jardim et al, submitted) and remyelinated fibers are also found in leprosy nerve biopsy specimens (Antunes et al, 2012). This is in line with the Rambukanna's report on the M lep-induced demyelination in experimental animal and *in vitro* models (2002). The mechanisms of demyelination in leprosy are still elusive and autoimmune chronic inflammation may also be one of them. Antibodies to gangliosides are known to be involved in the mechanism of demyelination in chronic demyelinatiing polyneuropathy (CIDP). This study aims the to correlate the detection of IgM antibodies to gangliosides in leprosy patients' sera with the presence or absence of a demyelinating pattern detected in leprosy patients by ENG.

Methods: Thirty patients were selected for this study and sorted into groups: 22 with demyelinating pattern in ENG (14 with demyelination + neuritic reactional episode = D+R =, 8 with demyelinationg but no reaction = D), eight patients in leprosy reactional episode but without demyelination = R; this groups was composed of 1 neuritis, 6 type I reaction and 1 type II reaction). Patients were clinically evaluated, submitted to ENG and their sera were collected concomitantly to the ENG to determine IgM antibody levels to the gangliosides GA1, GM1, GM2, GD1a, GD1b, GQ1b. Three healthy individuals were included in the study as a control for serological tests.

Results: Thirteen (43.3%) (9DR, 1D, 3R) in the total of 30 patients were anti-ganglioside-immunoreactive in the sera for at least one of the antibodies studied and 17 (56,7%) patients had no serum antibody detection. Among the 22 patients with demyelination in ENG (14 D+R and 8 D), 10 (45.4%), (9D+R, 1D) had at least one anti-ganglioside antibody detected in the serum, and among the 8 patients without demyelination in ENG, all of them in the R group, three (37.5%) were immunoreactive for at least one anti-ganglioside antibody. Thirteen patients were positive for anti-GA1 ganglioside, 5 for GM1, 4 for GM2, 3 for GD1b and none for GD1a e GQ1b. The level of the antibodies were considered positive in just one healthy control individual.

Conclusion: Exacerbation of the immunoinflammatory response in leprosy reactions generate a release of inflammatory mediators. Metalloproteases 9 and 2 as well as TNF are reported to be upregulated in immune activated individuals with pure neural leprosy (Teles et al, 2007; Oliveira et al, 2010). This is in connection with the Shubayev et al report (2008), correlating elevated MMP9 levels with demyelination and increased degradation of myelin basic protein in chronically injured mouse nerves (experimental model). The elevated level of serum antibodies to gangliosides in leprosy patients could contribute to the severity of the reactional response and consequent increased demyelination. Serological studies may provide a tool for diagnosis and followup of demyelination in patients with leprosy neuropathy.

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Presentation Time: Wednesday 18/09/2013 at 12:30 – 12:40
Abstract Topic Name: Experiences of People and Community
Presentation Screen Number: 7
Presenter: Maria De Jesus Alencar

LEPROSY REACTIONS AFTER RELEASE FROM MULTIDRUG THERAPY IN AN ENDEMIC CLUSTER IN BRAZIL: PATIENT AWARENESS OF SYMPTOMS AND SELF-PERCEIVED CHANGES IN LIFE.

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Introduction: We know little about existing diagnostic problems and case management issues from the perspective of persons affected by leprosy reactions. The objectives of this study were to relate leprosy-related reactions with perceived changes in life and socio-economic conditons as seen from the point of view of the patients.

Methods: Cross-sectional study in five municipalities of a leprosy-endemic cluster in north and northeast Brazil. We performed structured interviews with 280 individuals after release from multidrug therapy, who had experienced leprosy reactions in the period 2007 to 2009. Data included socio-demographic and clinical information and open questions regarding diagnosis of leprosy disease, patient awareness, diagnostic features of leprosy reactions, and self-perceived changes in life.

Results: Fifty-eight (38.7 %) patients had been diagnosed with leprosy during reactional episode. In 240 (85.8%) of cases, the patient himself/herself perceived symptoms first and in 29 (10.4%) the disease was noted by family members and friends. In 95/150 (63.3%) of cases where information was available, the Primary Health Care centre was the first entry point into the health system. In 69 (72.6%) of these cases, diagnosis was made within the primary care setting itself, whereas 23 (24.2%) patients were referred and diagnosed in reference centres. Self-perceived leprosy reaction signs and symptoms included skin lesions (115, 42.0%), neurological complaints (97, 35.4%), muscle disorders (11, 4.0%) and other clinical symptoms (51, 18.6%). In total, 216/280 (77.1%) stated that they perceived changes in life after experiencing leprosy reactions. Physical deficiencies limiting work performance and consequently reduced family income were mentioned by 118 (54.6%). Daily life was affected in many cases, difficulties doing household chores (25; 11.6%). Discrimination and social isolation also played an important role (39; 18.1%).

Conclusion: Self-reported changes in life indicate that leprosy still is heavily affecting individuals with reactions, and there is a need for integrative and systematic socio-psychological assistance. There is a need to maintain social participation and evidence indicates the need for empowerment of people affected by leprosy to deal effectively with the signs and symptoms of reaction and prevention of disability related events after release of MDT treatment.

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Presentation Time: Wednesday 18/09/2013 at 12:40 – 12:50
Abstract Topic Name: Experiences of People and Community
Presentation Screen Number: 7
Presenter: Dr Kiran Koduri

COSMETIC CAMOUFLAGE -A SIX MINUTE MAGIC FOR LEPROSY FACIAL PATCHES

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Introduction: Leprosy is a chronic infectious curable disease associated with a huge degree of stigma. Leprosy facial patches especially in dark skinned individuals can be a problem. Leprosy is curable in 6-12 months of MDT regimen, however facial patches may remain even after cure. Cosmetic camouflage can conceal the patches immediately. It will help in improving social and emotional functioning. Improve productivity at work and school. Reduce the burden of stigma. Leprosy patients with visible facial patches have increased the possibility of depression, anxiety, low self-esteem and increased burden of social stigma. It is prudent to consider cosmetic camouflage to them. It can offer rapid (six minute) and dramatic results. Cosmetic camouflage is a technique using make up to disguise disfiguring skin lesions immediately with intention of normalising the appearance of the skin. It is an art of concealing discolouration (facial patches). It can last up to 12 hours. Literature provides abundance of evidence suggesting medical therapy in conditions such as acne, melisma, vitilago, and rosacea. Dermatology Life Quality Index improves with therapy. It can be assumed that camouflage has a similar effect on DLQI. Further it helps build patient physician relationship, increase compliance with concurrent medical therapy.

Methods: It is offered as an option upon initial consultation as it provides immediate results. Time, money and commitment to use the product could be a limiting factor. The readymade commercially available as Derma colour is used. It is colour matched and given to the patient. Four patients were available for the treatment. The patient has to first cleanse the skin, apply selected colour to make the patches look closest to the patient skin wait for a few moments and put fixing powder supplied along with cream. DLQI questionnaire administrated before using camouflage and one month later. Clinical pictures taken before camouflage and six minutes later with camouflage with an amazing result

Results: Results were amazing as seen from pre and post camouflage within six minutes. The effect was cosmetically and socially comforting. DLQI of all four patients showed significant improvement.

Conclusion: DLQI Dermatology Life Quality Index improved with usage of camouflage cosmetic. It has enhanced greatly the look of the patient, relived the burden of stigma, improved self-esteem. Improved social and emotional functioning. Improved productivity at work and school. There is a need to increase the awareness and knowledge of cosmetic camouflage.

P-461

Presentation Time: Wednesday 18/09/2013 at 13:00 – 13:10
Abstract Topic Name: CBR
Presentation Screen Number: 7
Presenter: Gabriel Pani

INTEGRATED AND SUSTAINABLE DEVELOPMENT OF THE COMMUNITY WITH VULNERABLE AND MARGINALISED DUE TO LEPROSY/DISABILITY/CASTE/GENDER TO ACHIEVE SUSTAINABLE LIVELIHOODS, IN THE ORGANISED AND UNORGANISED SECTORS, LEADING TO POVERTY REDUCTION

V. V. Patta [1,*] on behalf of The Leprosy Mission Trust India, S. Francis [1], T. Mendis [2], J. C. Das [1] and The Leprosy Mission Trust India

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Introduction: TLM India emphasises on equal opportunities for all and therefore is committed to work with those marginalised due to the existing power structures in society – male domination, caste, religion and associated poverty. It may be noted that stigma related to leprosy is prevalent at the individual (self) level and cascades from there to family and community level. Lives of these people affected with poorer health outcomes, lower educational achievements, less economic participation, increased dependency, restricted participation and addressing barriers in inequalities, health care, education and unemployment. Livelihood opportunities are one of the key factors in eliminating poverty.

Methods: To study the culture, prevalent cultural practices, history of the cultural heritage as well as the people in the geophysical locations are very important to ensure what kind of input will lead of sustainability even after the external livelihood opportunities input stops.
Participatory Research (PR):· The researcher goes into the community with an open mind to "learn". PR uses the schedule method, informal group discussions, one o one interactions, etc Participatory Mapping (PM):·The participatory mapping will help discover maximum details of the community in entirety will serve as an additional information and reflects the understating of the people of their own place in it's entirety.These above two approaches will help the project to ensure integration of all section of the society

Results: Community Based vocational training is the training in the community with the community with respect to the need of the community. Training within the community will open the accessibility and flexible delivery mechanism (part time, weekends, full time, onsite/ offsite) to suit needs of various target groups besides working and taking care of family. Type of training input, duration, number of trainees to receive particular training and "modus operandi" will be worked out by the people of the community in consultation with the stake holders. However right from the inception of the project the people are to be involved in offering the training (of course you need your trainers to be involved and seed money to be offered). Thus the utilization of the capital money will be given in charge to the Self help Groups, so that they will roll the money for further development/training input by recovering the same through loan offered to the trainees (identified by the people themselves). Instead of giving them training and resources free of charge (charity mode) you make them more responsible for paying for it in a way that is not going to harm them but empower them with raising their self respect and offering them dignity.

Conclusion: Absorptive capacity defined as "a communities' ability to recognize the value of prior & new information, reflect on the core ethnological aspects, assimilate it, apply it to their daily living context and be challenged for further development. It depends greatly on prior related knowledge and diversity of the background of each identifiable people group within the community." The greater the absorption capacity of the community the better results will be seen in making the training input beneficial and also ensure sustainability. This intervention aim at opening up opportunities to economic participation for self reliance and recognize the need to create a positive attitude about people marginalized. When that happens, everyone benefits.

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Presentation Time: Wednesday 18/09/2013 at 13:10 – 13:20
Abstract Topic Name: CBR
Presentation Screen Number: 7
Presenter: Atul Shah

SOCIO-ECONOMIC REHABILITATION THROUGH GRANT OF INCOME GENERATION ARTICLES

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Introduction: A person affected by leprosy not only has physical changes but also behavioral changes like low self-esteem, withdrawal from the family and feeling like being alone without any help from the society. Income generation in sustained manner for social development and integration is crucial to achieve a solution for these unfortunate individuals. Economic rehabilitation assumes more significance for those challenged with activity limitations on account of physical deformities as well as for those who have been cured of deformities with reconstructive surgery. Reconstructive surgery aims at functional rehabilitation and needs to be followed up with offer of suitable income generation aids.

Methods: Selection of cases is crucial to success of the program as general tendency is to take whatever free you get and occasionally even health workers assessment may be over exaggerated. Therefore at the final selection is done based on interview with patients. The preference is given to those who have undergone reconstructive surgery, disabled patients, followed by women and children below poverty line. Among the various articles – the government small scale industry department provides list of the readymade kit available with them for carpentry, masonry, blacksmith, cycle repairing tools. Hand carts. Sewing machines etc. They are available at most economical rate from SSI. After the need is established a function is arranges for its delivery. The economic rehabilitation program is conducted as a public function with maximum participation of the community, local leaders, administrators & political leaders. The function helps to generate awareness in the society and exhibitions put at such places tends to be seen by more people than usual helping cure with MDT donation by Novartis. The assessment consists of the fact that affected person must use article and only in rare cases family is granted its use for the benefit of patient.

Results: In the assessment study for benefits conducted few years back, among the 600 beneficiaries, about 70% were followed up and 85 % were found to be using the articles with greater income generation. In fact, some of the case history demonstrate the capability of this technique=e as superior to other techniques like loan and recovery, gift of livestock and its maintenance and vocational rehabilitation which is more useful in untrained younger patients. The increase in income per month was from INR 600 to 3000.

Conclusion: Though selection in some cases may be debatable and life span of the article may wear off in few months to few years, the method was quite useful for mass rehabilitation and awareness generation. Following this government tribal sub plan also carried out rehabilitation in the similar fashion in more number of cases, thereby this project acted as incentive for sustainability. Currently, other NGOs and individuals are carrying out this activity.

P-463

Presentation Time: Wednesday 18/09/2013 at 13:20 – 13:30
Abstract Topic Name: CBR
Presentation Screen Number: 7
Presenter: Mr Shirish Shelgaonkar

ROLE OF SHGS IN IMPROVING THE LIVES OF INDIVIDUALS AFFECTED BY LEPROSY AND GENERAL DISABILITIES

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Introduction: 'The Strengthening SHG' project Chhattisgarh is an initiative of The Leprosy Mission Trust India (TLMTI) to explore Self Help groups as a means of getting disadvantaged people to work together to advance both economically as well as socially. The project was designed to implement a developmental approach. This approach involves the full participation of the primary stakeholders in the decision making process, an approach that is Holistic, Sustainable, Integrated, Gender sensitive and addresses individual's needs. The project aims to show a broader understanding of challenges in the rehabilitation of people affected by leprosy & the differently abled. This study is to ascertain how successful the approach of working in SHGs has been in improving the lives of individuals affected by leprosy and general disabilities.

Methods: A detailed review of the Strengthening SHG project documentation was done – proposal, annual reports, evaluation reports, case studies and media articles. Interviews and focussed group discussions were carried out with several stakeholders – Project staff, Volunteers, SHG members and Cooperative Society members, Government Officials and NGOs. A qualitative and journalistic approach was used in the interviews and focussed group discussions with the stakeholders.

Results: Women and men of the vulnerable groups were able to come together and start savings and that has helped several of the members to meet financial emergencies of their respective families. All SHGs are mixed groups(membership comprising of individuals affected with leprosy, general disabilities and those marginalised due to poverty and gender) which also supports in taking up a cause at the community level and also will be able to mainstream issues that affects people adversely affected by leprosy and disabilities. Several SHGs have come together and formed cooperatives for which the State Government renders support in providing raw materials and taking back finished products. The production cycle supports the members in regular income. The SHGs are working so much in isolation that no efforts are yet made to link up with other existing SHGs within the village/ Block of district. Interventions were directed towards accessing bank loans, financial assistance for cooperatives and accessing mobility aids, pension, and referrals to vocational training. However, this was not by generating public action and visibility which would have been possible if an advocacy strategy was planned.

Conclusion: The formation of SHGs have impacted individual lives in terms of enhanced income and easy access to loans for emergency, but in terms of social acceptability, dignity and visibility more strategic planning is required. SHGs being envisaged as a financially viable group could have been stimulated to think in terms "paying for services rendered" where the volunteers could have been sustained in their villages (support to their livelihoods). The existing SSHG project in Chhattisgarh should now identify the existing SHG Federations at Block/District levels and inspire the TLMTI supported groups to gain membership into the existing Block/District level SHG Federation. Most SHGs today struggle to leverage government schemes, government recognition, and support to gain competitive advantage. It is therefore imperative to have a unified platform at all levels – village, block and district to leverage new and existing policies that support the vulnerable for proactive interventions.

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Presentation Time: Wednesday 18/09/2013 at 13:30 – 13:40
Abstract Topic Name: CBR
Presentation Screen Number: 7
Presenter: Janine Ebenso

SOCIOECONOMIC ISSUES AFFECTING LEPROSY AFFECTED PEOPLE IN KOKOSSA WOREDA, WEST ARSI ZONE, OROMIA NATIONAL REGIONAL STATE, ETHIOPIA

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Introduction: The presentation highlights issues and ideas generated from a study conducted to assess the rehabilitation needs of persons affected by leprosy in Kokossa district in West Arsi zone, Oromia region in Ethiopia.

Methods: The study was conducted during March and April 2012. People affected by leprosy were asked socio-economic service provision and their access to it has changed over the years. Various participatory assessment tools were used, including focus group discussions and key informant interviews. In the case of Kuyera-Shashemene, a one day validation workshop was carried out to reach a consensus on main issues raised during the assessment and suggestions given about measures to be taken to improve the situation of people affected by leprosy in the area.

Results: The main issues emerging from the assessment sites include:
Psycho-social issues: Leprosy stigma prevails; lack of awareness about leprosy; lack of counselling services for people affected by leprosy and other disabled people.
Amenities and social services: access to potable water; poor sanitation and hygiene; access to education for children of the leprosy affected households; access to adequate health care services to people affected by Leprosy; inadequate housing.
Livelihoods: paucity of income generation opportunities in the community, higher prevalence of malnutrition among person affected by leprosy
Coordination and collaboration: No NGO with permanent local presence; lack of networking and coordination endeavours among service providers; inadequate monitoring and evaluation to measure impact of services; data gaps to measure performance of development interventions
The study also highlighted several opportunities for improving the situation, including:
- Nearby government schools
- Referral hospital at Sheshemane
- GLRA shoe programme
- Sheshemane branch of ENAPAL providing saving and credit services and community awareness workshops

Conclusion: The activities of the Ministry of Health, ILEP members and other leprosy service providers in Ethiopia have been limited to easy to reach areas. This study has highlighted the great needs in the hard to reach Kokossa area as well as opportunities which exist to help reach out to people affected by leprosy.
Since this study, leprosy actors in Ethiopia have created the Leprosy Expert Advisory Group which is in the process of mapping leprosy hotspots and planning for a coordinated effort to tackle leprosy and its complications (physical as well a social) in Ethiopia.

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Presentation Time: Wednesday 18/09/2013 at 13:40 – 13:50
Abstract Topic Name: CBR
Presentation Screen Number: 7
Presenter: Ved Bharadwaj

HEALTH EDUCATION AND SOCIAL WELFARE ACTIVITIES UNDERTAKEN BY LEPROSY PATIENTS WELFARE SOCIETY SINCE 1977 WITH AN AIM TO PROVIDE RESPECTABLE SOCIO-ECONOMIC REHABILITATION TO THE LEPROSY PATIENTS IN THE SOCIETY

V. P. Bharadwaj [1,*], M. Bharadwaj [1], J. V. Esser [1]

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Introduction: Leprosy Patients Welfare Society (L.P.W.S.), a Non Governmental Organisation (N.G.O.), is functioning for the welfare of leprosy patients since 1977 (36 years), with an aim to provide them respectable socio-economic rehabilitation in the society. It is a well-planned and long term pursued study, which is in progress with an aim to remove still existing stigma against leprosy, which is absolutely necessary to fulfill our mission regarding rehabilitation of leprosy patients.

Methods: Brief methodology for the fulfillment of our mission is detailed below:-
(i) Meetings/Workshops for creating Mass Awareness and giving heath education to the community regarding leprosy are regularly organised. In such meetings, the main emphasis is to impart basic, scientific information particularly which will help to remove superstitions, fear, wrong notions, etc. about leprosy. The main expectation here is that people will take leprosy as any other disease.
(ii) Vocational rehabilitation training is given to the leprosy patients, so that it may help for their respectable socio-economic rehabilitation.
(iii) Free and relevant counselling to the relatives of leprosy patients and community leaders is given, so that leprosy patients could be accepted by the family members and the society. This is being carried out with an aim to minimise the problem of begging.
(iv) To change attitudes of the community towards leprosy.
(v) To stress upon the early symptoms of leprosy and advantages of early treatment to prevent deformities and disabilities.
(vi) To inform the people about the curability of the leprosy using M.D.T. and also about various facilities now available for guidance and treatment of leprosy patients in their respective areas.

Results: The results of our study are detailed below:-
(i) Increased consciousness about the early signs of leprosy.
(ii) Superstitions, misunderstandings, wrong notions etc. are removed to certain extent.
(iii) Leprosy patients are treated like other handicapped persons.
(iv) Leprosy patients are less victimised on grounds of leprosy.
(v) Mass Awareness and Health Education regarding leprosy has shown positive results.
(vi) In our programme, we have also recently included detailed studies on childhood leprosy/ school going children and their related problems and possible solutions.

Conclusion: The well planned and pursued efforts of Leprosy Patients Welfare Society has played an important role regarding eradicating stigma against leprosy and trying its best for providing respectable socio-economic rehabilitation to the leprosy patients.
The detailed aspects of Introduction, Methods, Results and Conclusion will be presented and discussed.

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Presentation Time: Wednesday 18/09/2013 at 13:50 – 14:00
Abstract Topic Name: CBR
Presentation Screen Number: 7
Presenter: Maniksha Manickam

THE IMPACT OF SPECIALLY DESIGNED VOCATIONAL TRAINING PROGRAMMES FOR YOUNG ADOLESCENTS FROM LEPROSY BACKGROUNDS ON GRADUATES, THEIR FAMILIES AND COMMUNITIES

V. V. Patta [1,*], S. Franscis [2], T. Mendis [1] and The Leprosy Mission Trust India

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Introduction: The Leprosy Mission Trust India TLMTI runs six Vocational Training Centres (VTCs). These centres contribute to the r with their core competence in the areas of vocational training and job placement for young people affected by leprosy or children from families affected by leprosy. The uniqueness of TLMTI's VTCs is that they are exclusively for the young from leprosy backgrounds. Besides technical training, they focus on addressing the total needs of youth from leprosy backgrounds. Thus interventions in the area of health, prevention of impairment and

disability, enhancing socio-emotional development and promoting value based living are given same prominence as technical training. Formation and functioning of an Alumni Association as a support group for the graduates is an important function.
This study examines the extent to which the purpose of establishing VTCs for individuals from leprosy backgrounds has been achieved.

Methods: This is a Field based ·Action Oriented and Participatory Research covering all 6 VTCs. In each VTC 20 students from the batches of 2004 to 2008 were selected through random purposive sampling across categories such as gender, education, trades, geographical backgrounds, etc. 20 students each from 2 Non TLM Vocational Training Centres for individuals with disabilities in the same district where TLM's Vocational Training Centres are operational were also selected. Research Tools used included one on one interviews, Focused Group discussions, Participatory Rural Appraisal (PRA) exercises and Appreciative Enquiry.

Results: The VTCs have been instrumental in initiating innovative approaches for greater effectiveness of processes involved: downstream (identification, counselling of parents and student, admission), in stream (training, imparting life skills, life in the hostel, interfaces with new trend in training market), upstream (interfaces with job markets, job placement, post placement services). The Alumni Association lacks shared understanding of the various agency functions that can be taken up by them and systems to make these happen · placement, preventing job drop outs, in-service training and skill up gradation, addressing stigma, advocacy work, in addressing special needs of girls...).

Conclusion: The approach of VTCs exclusively for individuals affected by leprosy is distinctive to TLMTI and is instrumental in reaching out creatively to the young adolescents making them better equipped to earn sustained and decent incomes adequate. This raises their own and of their families' quality of life, responsibly manages the incomes earned, and live authentic value based lives. They have the potential to play a pivotal role in enabling graduates to extend caring and solidarity to each other, facilitate better placements, and enable them the job skill/knowledge up·gradation through the Alumni Association. The VTCs can also contribute in creative ways to the eradication of leprosy and to addressing stigma, thus promoting mainstreaming of its graduates.

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Presentation Time: **Wednesday 18/09/2013 at 12:30 – 12:40**
Abstract Topic Name: **Social Aspects and Self-Care**
Presentation Screen Number: **8**
Presenter: Sunil Deepak

SELF CARE GROUPS FOR PREVENTION OF DISABILITIES IN MOZMABIQUE

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Introduction: In 2011, national leprosy programme in Mozambique introduced promotion of self-care groups of persons affected with leprosy as part of prevention of disabilities efforts. A research was carried out to understand the functioning of self-care groups from the point of view of persons affected with leprosy in the provinces of Nampula and Manic.
The objective of the research was to understand how self-care groups are formed and supported and kind of benefits are perceived by persons affected with leprosy, to support them and to strengthen them.

Methods: There are 64 self-care groups in Nampula province and 47 self-care groups in Manica province. Together these groups involve around 1500 persons affected with leprosy. Most groups are initiated and supported by leprosy programme at provincial health services, but some groups are initiated and supported by other non·governmental organisations. A total of 25 groups in the two provinces were selected and interviewed with the help of a questionnaire. The questionnaire was prepared in Portuguese and then translated into local languages for administration. A reverse translation of all the collected information into Portugese was carried out. The information collected was analysed.

Results: The research provides information about positive impact of SCG on prevention of disabilities. At the same time, it highlights different areas of benefit from SCGs and the challenges facing the SCGs. It also highlights the need of providing standardized training and support to SCG members for the functioning of the groups.

Conclusion: Self-care Groups as promoted in Mozambique national leprosy programme have the potential to strengthen prevention of disabilities as well as become a medium for promoting wider changes in lives in persons with disabilities. However, for this to be effective, more structured support may be needed.

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Presentation Time: **Wednesday 18/09/2013 at 12:40 – 12:50**
Abstract Topic Name: **Social Aspects and Self-Care**
Presentation Screen Number: **8**
Presenter: Mrinmoy Karmakar

FACTORS CONTRIBUTING TO DEVELOPMENT AND RECURRENCE OF PLANTAR ULCERS IN LEPROSY

N. T. Simick [1,*], M. Karmakar [1], N. Mahato [1]

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Introduction: Plantar ulcers are a common problem in leprosy patients with the anesthetic feet. They contributeto the stigma associated with the disease and lead to absorption of the digits and further deformity of the foot. Appropriate footwear together with regular soaking, scraping and oiling (SSO) are methods that are used to keep the anesthetic foot in good condition and to prevent ulcers. But these methods are often not followed precisely and plantar ulcers do recur. Furthermore, there are anesthetic feet, that surprisingly do not develop plantar ulcers or on healing of an ulcer do not develop a recurrence. This study aims to determine the factors related to footwear and SSO that might predispose the foot to developing recurrent plantar ulcers, thereby helping clinicians in future to recognize these risks and take suitable steps to prevent the reoccurrence of plantar ulcers.

Methods: This is a cross sectional study. It includes all patients affected by leprosy, attending Premanda Memorial Leprosy Hospital, with a history of 2 or more non healing plantar ulcers. After a Voluntary Motor Test, Sensory Test and Biomechanical foot exam, a standardized in·depthinterview is conducted, concentrating on footwear and SSO issues. The same is done for an age and sex matched control group who are affected by Leprosy, have anesthetic soles for a duration of at least 2 years, but no plantar ulcers in the last 2 years. The sample size is 80 for each group.

Results: This is an on·going study and afteranalysis of the completed data the result will help to pin point the aspects of footwear and the SSO process that constitute a risk toward the recurrence of ulcers. Knowledge of this would help clinicians focus on these areas and take remedial steps.

Conclusion: The conclusion of this study should point out the importance and risk areas of various aspects of footwear and the SSO process that should be stressed upon in order to prevent recurrent plantar ulcers in anesthetic feet.

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Presentation Time: **Wednesday 18/09/2013 at 12:50 – 13:00**
Abstract Topic Name: **Social Sciences**
Presentation Screen Number: **8**
Presenter: Michel Sawadogo

POVERTY AND SOCIO-ECONOMICAL LEVEL OF LEPROSY PATIENTS IN BURUNDI

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Introduction: A survey has been conducted in Burundi in order to evaluate the outcome of a rehabilitation surgery held from January 2008 to December 2010 between patients who benefited from it. The study had to appreciate the profits of chirurgical intervention for the patient, to analyze the patient's perception about rehabilitation and to collect some suggestions from investigated patients.

Methods: A transversal study was conducted with a case-control survey in order to appreciate the difference between the patients who benefited from chirurgical rehabilitation (case) and the other non operated leprosy patients (control). The survey essentially took place in the 5 endemic provinces of Burundi, in the Reference Hospitals and Health Centers chosen according to the source of the patients. The socio-economical level of patients included in the study was checked from a questionnaire.

Results: Housing conditions of leprosy patients : 32 patients (66,7%) living in houses with thatch roofing, 14 patients (29,2%) with sheet metal roofing and 2 patients (4,2%) in houses with tiles roofing. 62,5% (30 houses) had ground made walls, 31,25% (15 houses) in bamboo and 1 (2,1%) in earthenware brick.
Concerning access to drinking water, 2 patients had some in the household (4,2%); 28 patients (58,3%) had drinking water in 1 km radius while 18 patients (37,5%), in a radius more than 1km. 47 (97, 9%) patients had a home toilet and 1 patient (2, 1%) didn't have some.
About access to food, 24 patients (50%) could have 1 meal per day, 20 (41,7%) 2 meals per day while 4 patients (8,3%) had access to more than 2 meals per day. Instruction level were also been taken in account: 31 patients (64, 6%) had not been at school; 15 patients (31,2%) had not finished primary school while 2 patients (4,2%) had secondary school level.

Housing conditions among control patients : 70 patients (72,9%), living in houses with thatch roofing,; 23 patients (23,9%) with sheet metal roofing and 3 patients (3,1%) in houses with tiles roofing. 66,7% (64 houses) had ground made walls, 27,1% (26 houses) in bamboo and 6 (6,2%) in earthenware brick.
Concerning access to drinking water, 50 patients (52,1%) had drinking water in 1 km radius while 46 patients (47,9%), in a radius more than 1km.
All had patients (100%) had a home toilet.
About access to food, 50 patients (52,1%) could have 1 meal per day, 36 (37,5%) 2 meals per day while 10 patients (10,4%) had access to more than 2 meals per day. Instruction level were also been taken in account: 40 patients (41,7%) had not been at school; 55 patients (57,3%) had not finished primary school while 1 patients (1,0%) had secondary school level.

Conclusion: The majority of Leprosy patients seems to be the poorest in Burundi: bad living conditions, poor access to drinking water and food. Burundi National Leprosy programme must develop socio-economical rehabilitation projects in order to better help patients to face to poverty.

P-271

Presentation Time: **Wednesday 18/09/2013 at 13:00 – 13:10**
Abstract Topic Name: **Social Sciences**
Presentation Screen Number: **8**
Presenter: Hiroshi Numayama

DEVELOPMENT OF SOCIAL INVOLVEMENT IN HANSEN'S DISEASE SANATORIUMS RESIDENTS IN JAPAN FROM THE PERSPECTIV E OF ECOLOGICAL SYSTEMS:EXAMINING THE RELATIONSHIP BETWEEN SOCIAL CHANGES AND PSYCHOSOCIAL DEVELOPMENT

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Introduction: This study seeks to investigate the relationship between social changes and psychosocial development. We analyzed 3 autobiographies of the Hansen's Disease (HD) sanatorium residents in Japan, and examined the interactions between residents themselves and social settings under the framework of Bronfenbrenner's ecological systems. In Japan, the national policy which segregated compulsorily the people diagnosed as HD to remote sanatorium began in 1907. And it continued even after the cure method had been established after World War II, and was finally abolished in 1996. Most of current residents were obliged to live a life in which freedom, such as movement, career choices, and marriage etc. was restricted over fifty years.

Methods: In this study, we selected three autobiographies written by the residents themselves. The authors were Y. Hirasawa, M. Kunimoto, and S. Fujita. The sections referring to "themselves," "family," "sanatorium" and "society" were extracted from the autobiographies. These items were arranged in chronological order for each author, then matched with the principal contemporaneous events in Japanese society or in neighborhoods around the sanatoriums (macro- or exo-system level), major events inside the sanatoriums (meso-system level), and changes in human relations experienced by the authors (micro-system level). Thus, we composed three chronologies of every author's life and examined the relations between the subjects and the social contexts in which they unfolded. All three authors were born in 1926-27, and entered the sanatorium during World War II when they were in their teens. According to analysis from the chronologies mentioned above, we made the life histories for our three authors.

Results: In terms of residents' involvement with outside society, it seems that they underwent five phases of development. with each phase being triggered by some corresponding social change at the macro- or exo-system level, that is, Japan's historical process of political, economical and social structures after World War II showed corresponding relationships with changes in the circumstances inside the nation's sanatoriums (meso- and micro-system) and, ultimately, with the development of the residents' social behavior. As for our three authors, their social behavior was at first limited to within sanatoriums. However, changes such as the above led to the expansion of their behavioral freedom, and they became associated with the citizens outside, and ultimately acted in concert with them. In response to these changes, their social recognition and self-awareness increased.

Conclusion: The process mentioned above suggests that the macro-system-level changes occurring from Japan's democratization and reintegration into the international community after the war through the era of high economic growth and widespread concern about social welfare and civil rights (exo-system) markedly affected the environments inside sanatoriums (meso-and micro-system) and impacted the social behavior of each resident either directly or indirectly. We believe that this study has succeeded in describing these processes as well as indicating that Bronfenbrenner's ecological frames are useful in describing human psychological development in relation to social contexts.

P-273

Presentation Time: **Wednesday 18/09/2013 at 13:20 – 13:30**
Abstract Topic Name: **Social Sciences**
Presentation Screen Number: **8**
Presenter: Mrs Valsta Augustine

A TOOL TO ASSESS PSYCHOLOGICAL DISTRESS NEEDS IN LEPROSY

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Introduction: It is a known fact that Leprosy and its consequent problems due to stigma leads to considerable Psychological burden for the patient. Studies have documented that psychological factors such as depression and other psychological problems are major correlates of healthcare use. In leprosy, problems related to stigma have been known to impact reporting, treatment compliance and quality of life. These may also lead to functional impairment and work loss and poorer self-management behavior. In view of these factors it becomes essential to have a screening tool to assess the level of distress/needs caused by leprosy in patients at different stages of treatment and also after treatment in order to provide adequate psychological support to those who are at high risk in terms of psycho social distress.

Methods: With an objective to assess the psychological distress/ needs in people affected by leprosy, a check list of problems faced by leprosy patients was developed from qualitative interviews and focus group sessions with patients at karigiri for one year and issues obtained were categorized into relevant domains.A questionnaire (30 questions) was developed from the checklist, after a pilot study the questionnaire was used to assess 50 leprosy patients.

Results: The 30 item tool has 9 domain- disease & treatment information, disclosure, Psychological well being, communication, physical, family, marriage, education, finance, job, social and community. The scores of the assessment tool positively correlated with the scores of GHQ 12.Inter tester validity have been done. Test Re test reliability is being carried out.

Conclusion: This assessment tool which is 'patient concern' led can be completed in 10 -15minutes, and may help the health workers frame a holistic care plan for the patients.

P-274

Presentation Time: **Wednesday 18/09/2013 at 13:30 – 13:40**
Abstract Topic Name: **Social Sciences**
Presentation Screen Number: **8**
Presenter: Isabela Maria Bernardes Goulart

EVALUATION OF MENTAL DISORDERS COMMON IN LEPROSY PATIENTS THROUGH THE "SELF REPORTING QUESTIONNAIRE"

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Introduction: The emergence of a disease like leprosy can deconsolidate the dynamics in the life of the individual and thus destabilize his emotional. The psychologist must access the psychological profile of the patient through simple and effective tools. In this research, the SQR-20 was used to identify Common Mental Disorders (TCM) in patients diagnosed with leprosy. The instrument was validated in Brazil by Mari and Williams, revealing an instrument with good specificity in their results. The SQR-20 contains 20 questions about symptoms and problems that have occurred in the last 30 days preceding the response. Each of the alternatives has score of 0 to 1, where a score of 1 indicates that symptoms were present in the last month and 0 when they were absent. The cutoff for suspicion of TMC is 6 or more positive responses for men and 8 for women or more.

Objective: To identify the incidence of common mental disorders in leprosy patients who have symptoms that may interfere with adherence to treatment or worsening of symptoms as a result of the use of medications for the treatment and / or leprosy reactions.

Methods: We applied a screening tool for common mental disorders called "Self Reporting Questionnaire" (SQR-20) in 121 leprosy patients without medications.

Results: In the evaluation through the SQR-20 was found symptoms of psychopathology in 33.88% (41/121), of which 28.92% (35/121) showed all three symptoms concurrently: depression (frequent crying, feelings of worthlessness, fatigue, difficulty with satisfaction of performing daily activities, thoughts of suicide), anxiety (insomnia, startle easily, tremors, restlessness / agitation / tension, difficulty at work and make decisions) and psychosomatic (headache, poor digestion or unpleasant sensations in the stomach) and 4.95% (06/121) had two symptoms, namely depression and anxiety.

Conclusion: It the positivity of SQR20 as an indicator of the presence of TMC, and how these can cause clinically significant distress or impairment in social, occupational, or other important areas of functioning. When the psychologist identifies this psychopathological profile in patients

with leprosy, may make referrals to psychiatric medications, warn the team about the risks that medications can offer and still come to accompany him during treatment or leprosy reactional states and providing adequate psychotherapy.

P-276

Presentation Time: **Wednesday 18/09/2013 at 13:40 – 13:50**
Abstract Topic Name: **Social Sciences**
Presentation Screen Number: **8**
Presenter: Nicole Holmes

THE IMPORTANCE OF COUNSELING AND SUPPORT IN OVERCOMING THE PHYSICAL, MENTAL, EMOTIONAL AND SOCIAL CHALLENGES OF LEPROSY

N. H. Holmes [1,*]

[1]IDEA, Rex, United States

Introduction: The stigma associated with leprosy can be a great burden that many individuals bear alone. Sometimes this becomes too much for people, including Rinku, a young woman in Nepal who committed suicide a few years ago. It was then that IDEA vowed to promote support, counseling, and the hope of always beginning again -- in her honor. This is in essence how we restore dignity, and make sure that every person with Hansen's disease feels like they are being heard.

Methods: For the last 11 years, as the Coordinator for IDEA's U.S. Support Group, I've been the support on the other end of the phone or computer, giving individuals with Hansen's disease a different perspective. They are happy to be able to get in contact with me, because I've experienced this illness, I've lived it, and I've survived the physical, mental, emotional, and social challenges that this disease brings with it.

Results: It took me a very long time to understand that my disease was only one aspect of who I am. The minute I told anyone that I had Hansen's disease was when I stopped being Nicole, and started being the young woman with leprosy. Every time this happened I was forced to explain what my disease was, and become my own advocate to eliminate stigma. Of course this is an easier task now, 16 years after being diagnosed, but as an 18-year-old with no knowledge about Hansen's disease, it was too much to handle.

With the changes in my body that I experienced, coupled by the side effects of multi-drug therapy, I was very depressed and felt alone. There were days I didn't want to get out of bed, partially because it was too painful to do so, and I just didn't have the desire to. What finally changed things for me was my perspective, making a conscientious decision to stop feeling sorry for myself, and the fact that I was fortunate to have a strong support system consisting of my family, IDEA, medical staff who treated me as a person, and my therapist.

Conclusion: The best way to find out what a person with Hansen's disease needs is to ask them. It's a simple thing to do, but oftentimes is overlooked. What I hear from people on the phone and through e-mails, is that they want more than anything, to continue to live their lives the way they did, prior to being diagnosed with Hansen's disease, like I wanted. They want to be the same person to their husband, mother, sister, children, employer, and pastor. They want to be included and continue to play an active role in their families and communities, whether it is in Miami, Florida, or in a village in Ghana, so that they don't cease to be Zilda, Kofi, Jose, Ymelda, Nicole, or Rinku.

P-386

Presentation Time: **Wednesday 18/09/2013 at 13:50 – 14:00**
Abstract Topic Name: **Social Aspects and Quality of Life**
Presentation Screen Number: **8**
Presenter: Derek Browne

HOLISTIC CHALLENGES FROM PRIMARY CARE

D. S. Browne [1,*]

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Introduction: Using the Resources in a Community, such as schools, community halls and local organsiations, a person can be encouraged and supported despite having disabilities to engage with others and realise their holistic potential for a better Quality of Living.

Methods: Our rural community in the New Forest England with a population of 3500 had a Primary Care facility, a School, two churches and over 50 local organisations. These were used to improve the health and well being of patients seen in the Primary Care Surgery and who were referred to a selected community activity through the expertise of a community coordinator.
The coordinator identified and compiled a data base of all the 'Community Resources' in the community. She listed them under themed titles including education, sport, music, art, library, clubs and societies. Also there were listed activities in the local school and college, activities in the village hall, in religious meeting places and in the private hotels.
Questionnaires were performed at the onset of the programmes then at three monthly with a final questionnaire at the end of 1 year. The health status questrionnaire measured quality if life in eight dimentions : physical function, social function, physical role limitations, emotional role limitations, mental health, energy/vitality, bodily pain and general perceptions of health.

Results: The 'Quality of Living' index showed a positive result. This indicated that the use of 'Community Rersources' to improve the health, and social wellbeing for those with diaabilites was positive.
In the opinion of the referrers 90% of users had either achieved or were on their way to achieving their original goal. Referrers reported that 67% of responders had improved their health and well being. None of the responders reported as feeling worse than when they started on the programme

Conclusion: Any communtiy with its resources can be used to support Primary care and improve holism in those with disabilities.
This project can be replicated in rural and urban environments. The voluntary sector is important in health and social care. The voluntary sector could be 'ciommissioned' by the health services to improve the 'holistic', approach to health and wellbeing. The body, mind spirit, or the whole person approcah is important in people who have disabilities and who are often stigmatised by society and communities.

P-076

Presentation Time: **Wednesday 18/09/2013 at 12:30 – 12:40**
Abstract Topic Name: **Training in Leprosy**
Presentation Screen Number: **9**
Presenter: Jaison Barreto

SITUATION OF LEPROSY IN BRAZIL, PERSONAL EXPERIENCES RELATED TO LEPROSY SYMPTOMS AND THERAPY

J. A. Barreto [1,*]

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Introduction: Leprosy remains an important problem in Brazil. Despite the advances in therapy, as MDT-WHO, the mean number of new cases detected, from 1990 to 2005, did not decrease in the states of Mato Grosso and Mato Grosso do Sul, supported by DAHW. Nevertheless, since 2006, after the beginning of financial crisis in Europe, and with the abandonment of the elimination goal by the government of Brazil, the number of new cases detected decreased from 50.000 to 30.000 per year. Consequently, there was an increasing in detection of grade 2 incapacities (visible incapacities) at the moment of diagnosis.

Methods: The methodology is composed by 3 steps: first, an evaluation using a structured questionnaire, to verify previous knowledge about leprosy, in order to help us choose the topics that should be emphasized during the discussions. Second, an overall lecture about leprosy, for all professionals, focused on all important aspects (epidemiology, microbiology, clinical and laboratorial diagnosis, treatment and prevention of incapacities), in order to demonstrate the importance of treating the disease according to clinical form, and not on the "number of lesions". Third, all the professionals who attend patients take part in the practical training, with newly diagnosed patients. At this occasion, I teach how to test the sensitivity to heat, cold and pain, as well as the palpation of nerve trunks. Also, very important, in the same moment we evaluate their household contacts. Fourth, I teach how to collect skin smears from lesions and index points, and/or how to take a punch biopsy (rare situation), and how to stain the smears using the Ziehl-Neelsen staining correctly.

Results: Using this methodology, since 2009, I already trained 4500 professionals. During these trainings, more than 500 new cases were detected, mainly because, before that, household contacts were rarely evaluated. Therefore, health professionals had the opportunity to see the importance of evaluating household contacts. This raised the number of new cases detected in all the cities I have worked, which reaches up to 400%. Only in the state of Mato Grosso do Sul, where we decentralized 90% of attention to leprosy patients, the detection increased 30%.

Conclusion: Physicians do not learn enough about leprosy in universities. Nowadays, the disease is commonly not included in differential diagnosis in the country.
The second problem is due to the fact that most affected patients belong to poor socially and culturally background, even in rich and developed states of Brazil, like São Paulo and Santa Catarina. This is one of several reasons they often do not look for medical attention when the disease is in its initial phase (indeterminate leprosy). This fact, even isolated, keeps the transmission chain.
The third problem is the almost total lack of surveillance of household contacts. Once leprosy is a contagious disease, in which the source of infection is usually a relative who often presents an active asymptomatic lepromatous leprosy without diagnosis, it is mandatory to search for the source of infection. Unfortunately, this clinical form is almost impossible to diagnose when slit skin smear is not available, a frequent condition.
How is it possible to change this vicious circle caused by lack of training of professionals to diagnose leprosy, lack of access or negligence of patient who does not look for specialized attention, and absence of laboratorial tools for the diagnosis? A possibility is: changing the rational of all health workers about the disease, using "on service training" strategy to solve such problems.

P-077

Presentation Time: **Wednesday 18/09/2013 at 12:40 – 12:50**
Abstract Topic Name: **Training in Leprosy**
Presentation Screen Number: **9**
Presenter: Charles Phaff

A LEPROSY TRAINING PROGRAM IN MOZAMBIQUE

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Introduction: In 2006 the Ministry of Health of Mozambique, National Leprosy Control Department, decided to implement, together with partner organisations, a long term leprosy teaching program to improve, update, standardise and evaluate leprosy training activities for national leprosy control staff and teachers in health training institutes. The main objective was to preserve knowledge and experience of leprosy control in order to maintain and improve effective early diagnosis of leprosy and reactions.

Methods: The following tools were used to achieve the objectives:
- A new up to date, comprehensive, accessible and understandable National Leprosy Control Manual for nurses and doctors
- A new Leprosy Training Guide with exercises, tests, questions and assignments linked to the National Leprosy Control Manual
- Train national medical staff, using the new Leprosy Control Manual and Training Guide.
- Train teachers of major national, provincial and district health training institutes in leprosy.
- A leprosy pre- and post-test for health workers and teachers covering all relevant leprosy subjects.

Results: Two editions (2008, 2011) of a national leprosy control manual and a leprosy training guide were produced and distributed to health staff and teachers in the country. Almost 500 Leprosy pre-tests were taken for teachers and health staff. The results were analysed according to education level of participants, training domains and distribution of staff in regions with different levels of leprosy incidence.
Provincial and District Leprosy control staff has superior Leprosy knowledge compared to teachers in national, provincial and district training institutes. Provincial and District Leprosy staff in endemic regions has more leprosy knowledge than comparable staff in other regions. Mozambican general health staff has limited knowledge about leprosy.
After the pre-test, health staff in all provinces received additional training in leprosy and 233 teachers in 11 health training institutes received 1-2 day training course in leprosy. After the implementation of these activities, a leprosy post-test was conducted for 483 health staff. Increased leprosy knowledge was observed, possibly as a causal effect.

Conclusion: A leprosy training program with a variety of activities was implemented in Mozambique in the period 2007-2011, possibly with increased leprosy knowledge of health staff as causal effect.

P-074

Presentation Time: **Wednesday 18/09/2013 at 12:50 – 13:00**
Abstract Topic Name: **Training in Leprosy**
Presentation Screen Number: **9**
Presenter: Artur Gosling

THE EDUCATION OF LEPROSY AND OTHER DERMATOSIS IN PRIMARY CARE

F. Lutz [1], P. Jesus [1], M. Ian [1], L. Gomes [1], M. Cardoso [1], L. E. Castro [1], M. K. Gomes [1,*] and interdisciplinary Program of Leprosy - HUCFF/UFRJ

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Introduction: The Federal University of Rio de Janeiro is a reference unit for training health professionals in education strategies, diagnosis and treatment of leprosy. In 2009, this university starts a program of tutors for undergraduate students aiming them inclusion in family health care. This program include practical teach of dermatology and leprosy during public campaigns. The purpose of this study was to describe the actions of the program for undergraduate students.

Methods: Individuals from Complexo do Alemão community were assessed between December 2010 and January 2011. Health agents were responsible to mobilize the community for these actions. A dermatologist tutor organized the assessment with undergraduate students and professionals of family health.

Results: 41 public campaigns of dermatosis and leprosy were conducted in schools, central area and primary units care. It was found 16 (2,28%) cases of leprosy, 31 (4,42%) cases of eczema, 84 (11.98%) of dermatophytosis, 19 (2.71%) of psoriasis, 46 (6.56%) of scabies, 24 (3.42%) of impetigo, 16 (2,28%) basal-cell carcinoma and 2 (0.29%) of melanoma. Primary care was responsible for more then 90% of diagnosis.

Conclusion: This experience helps health agents, family health professionals and undergraduate students to identify the most important dermatosis in clinical practice and to assess leprosy cases directly in communities. The learning in primary care is a relevant part of training and understanding of epidemiology, interdisciplinary care, health-disease process and clinical characteristics of a chronic and stigmatizing disease such as leprosy.

P-079

Presentation Time: **Wednesday 18/09/2013 at 13:00 – 13:10**
Abstract Topic Name: **Training in Leprosy**
Presentation Screen Number: **9**
Presenter: Joydeepa Darlong

ORIENTATION OF LOCAL PRIVATE PRACTITIONERS AS A MEANS OF EARLY CASE DETECTION IN LEPROSY

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[1]Medicine, The leprosy Mission Trust India, Purulia, [2]Research, The leprosy Mission Trust India, NOIDA, India

Introduction: Purulia is one of the districts in West Bengal state in India, where a large number of leprosy cases are detected each year. Many of these patients report for the first time after complications such as reaction and neuritis develop, resulting in disabilities. The help-seeking habits of the people are such that only 15% patients present to the Primary Health Centres of the Government Health Care System or The Leprosy Mission Hospital which is a referral centre for leprosy, preferring instead to consult local private and village practitioners. These practitioners do not have formal medical training or any knowledge of leprosy so in most cases they reassure patients and give ointments for local application for patches, leading to delay in diagnosis and treatment and subsequent complications. It was decided to orient these practitioners so that they could recognize and refer leprosy patients to appropriate centres where correct treatment is available.

Methods: The Secretary of the association of Local Private Practitioners (LPP) was contacted and the list of LPPs was obtained from him. All the LPPs were approached, and those who were willing were invited to join the awareness programme. This awareness programme was held in groups from various blocks. They were administered pre and post test questionnaires with a 1½ hr interactive awareness session in between.

Results: Most (88%) LPP obtained less that 50% in the pre test but after orientation knowledge improved, and scored more than 80%. However they had no knowledge regarding leprosy reactions and neuritis. LPP's showed great enthusiasm in attending the talks and requested a feedback programmes after a month for better understanding and clarification of doubts. They were given referral forms to enable tracking of how many patients were suspected and detected by them. Since then, in the 6 months period after the training there have been encouraging reports of referral of suspicious cases to local PHC and confirmation of cases by the block medical officers. 86 suspected cases were referred to the PHC out of which 75(87%) were confirmed to be leprosy. 28 (37.3%) were MB and 47 (62.7%) PB cases respectively. It is encouraging to see the excellent suspicion and referral rates among the LPP's. Though 37 % were MB cases there was no one with disability.

Conclusion: Referrals and confirmations from the trained LPPs still continue, proving this to be a good intervention to enable early reporting among leprosy patients.

P-080

Presentation Time: **Wednesday 18/09/2013 at 13:10 – 13:20**
Abstract Topic Name: **Training in Leprosy**
Presentation Screen Number: **9**
Presenter: Isaias Ferreira

COORDINATION OF COLLECTIVE WORK (BOOK): ADVANCES AND CHALLENGES IN LEPROSY

I. N. Ferreira [1,*], E. D. Alves [2], T. L. Ferreira [3]

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Introduction: Leprosy remains a public health problem in many countries and Brazil is the second country in number of cases, following only India. The National Leprosy Control stimulates actions of leprosy control, aiming an integrated primary care, stimulating the production of educational materials targeted to primary care services. This project aims coordinating a collective work where experienced professionals and organizations committed to the leprosy bearer will corroborate, in their areas of expertise, their experience in matters related to the disease. A course will be taught by videoconference in which lectures will be held by the authors of the chapters on the subjects covered by them. The compilation of the work and the course are designed to inform, update, raise questions and suggest actions with a humanistic view of the disease. The proposal is to bring out and promote discussion of the various facets of leprosy by renowned professionals to contribute to the training of academics graduate and post-graduated in the subject, as well as

other sectors that contribute to the performance and disease control. The objectives are: Carrying out the coordination of a collective work and a course in the various issues related to lepros.

Methods: The project will run for 24 months, starting in February 2012, developed by two researches at post-doctoral internship at the Multidisciplinary Center of Advance Studies (CEAM) University of Brasília. Initially, letters were sent by electronic mail to the professionals who work with leprosy, conducting a pool to know in which issues these professionals would like to obtain information about the disease. After defining the various subjects and focus to be given on the subject in question, professionals with established experience in the area and organizations committed to the carrier of leprosy were invited to write a chapter of the book being compiled. The chapters will be written by one or more authors. After the reception of all material sent by the various professionals, the coordinator will organize the work and send it to the proofreading. The material will be sent to professionals to review the texts after the completion of proofreading and subsequently led to the editing and publication by the publisher. The face meeting will also occur whenever the need arises. A course will be taught by videoconference where lectures will be held by the authors of the chapters on the subjects covered by them, to services and health professionals serving leprosy patients.

Results: The interdisciplinary approach of leprosy promotes the exchange of information and a broad and comprehensive understanding of a disease that has many facets and can generate many different types of impairments (social, psychological, occupational, physical and familiar). The published copies will be made available for donation to various institutions and professionals who work with leprosy patients in several Brazilian states.

Conclusion: The organizations providing care for leprosy patients and early diagnosis are important partners in campaigns for clarification of signs and symptoms of the disease. They will also benefit from the work. This initiative, to gather input from coaches and partners in the fight against an endemic disease, assists in improving vocational training and services provided by the health team, insuring the quality of the care provided to the population.

P-098

Presentation Time: **Wednesday 18/09/2013 at 13.20 – 13.30**
Abstract Topic Name: **Immunology**
Presentation Screen Number: **9**
Presenter: Vedithi Chaitanya

DIFFERENTIAL MRNA EXPRESSION PROFILES OF GENES ENCODING CORTISONE-CORTISOL SHUTTLE ENZYMES AND LOCALIZED REGULATION OF CORTISOL IN TYPE 1 REACTIONS OF LEPROSY.

V. S. Chaitanya [1,*], M. Lavania [1], R. P. Turankar [1], A. Nigam [1], I. Singh [1], I. Horo [2], U. Sengupta [1], R. S. Jadhav [3]

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Introduction: Cortisol, a stress hormone, is actively involved in suppression of inflammation in various chronic inflammatory and autoimmune diseases. Patients affected with leprosy, a chronic infectious disease, experience episodes of delayed type hypersensitivity reactions called Type 1 (Reversal) reactions (T1R) which primarily includes nerve and skin inflammation. Understanding the mechanisms that regulate localized cortisol in T1R may aid in developing effective treatment measures to control the nerve damage and subsequent deformities caused due to reactions in leprosy.
The objective of this study was to determine the extent to which the differential mRNA expression of genes encoding Cortisone –Cortisol shuttle enzymes (11 β Hydroxysteriod Dehydrogenase I & II (11 β HSD I & II)) is associated with localized cortisol concentration in skin lesions of leprosy cases in Type 1 Reaction.

Methods: 5mm of incisional skin biopsy samples were collected from 49 Leprosy cases in T1R and 51 leprosy cases without reactions (NR) (Control) after taking informed consent for participation. Total RNA was extracted from the skin biopsy samples and 100 ng was converted to cDNA. Genes encoding 11 β HSD I & II were amplified in realtime on Rotor Gene Q (Qiagen Inc) using SYBR Green dye and the data was acquired on Green Channel. A high resolution melt was performed to determine amplification specificity. The fold difference in expression was determined using PfaffI method. Cortisol levels were also measured in 1mg of total protein isolated (using TRI Reagent (Sigma Aldrich)) from the lesional skin biopsies using ELISA (R & D Systems Inc USA).

Results: The mRNA expression ratios were calculated based on the fold difference in expression in comparison to GAPDH gene (Glyceraldehyde 3 Phosphate Dehydrogenase) as reference. The mean expression ratios of genes encoding 11 β HSD 1 were significantly lower in cases with T1R when compared to non reaction cases (NR) (1.507 Vs 4.674, $p<0.05$). Similar observations were noted in genes encoding 11 β HSD II where mean mRNA expression ratios were significantly lower in cases with T1R when compared to NR (0.944 Vs 2.040, $p<0.05$). Concomitantly, the mean cortisol levels in T1R skin lesions were significantly lower when compared to those in NR. (T1R Vs NR, 2.760ng/ml vs 3.335ng/ml, $p<0.05$).

Conclusion: Our results indicate a decreased mRNA expression of genes encoding 11 β HSD I and 11 β HSD II and consequent low levels of localized cortisol in type 1 reactional skin lesions. Further functional analysis of these enzymes may aid in developing effective corticosteroid based treatment measures for controlling type 1 reactions in leprosy.

P-095

Presentation Time: **Wednesday 18/09/2013 at 13:30 – 13:40**
Abstract Topic Name: **Immunology**
Presentation Screen Number: **9**
Presenter: Dr U. Sengupta

INCREASED SERUM CIRCULATORY LEVELS OF ALPHA-1 ACID GLYCOPROTEIN IN TYPE 1 REACTIONS OF LEPROSY

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Introduction: Leprosy is a chronic infectious disease caused by obligate intracellular bacillus called *Mycobacterium leprae* which impairs the skin and the peripheral nervous systems leading to deformities. Disease follows an immunological spectrum with a tuberculoid pole at the early stage of infection which gradients through three intermediary borderline forms towards the lepromatous pole. Patients in the borderline forms experience immune excerbations called type 1 reactions in leprosy which causes nerve damage and nerve function impairment.

Methods: After taking informed consent, 3 ml of peripheral venous blood was collected from 44 leprosy cases in Type 1 reactions and 44 leprosy cases without any reactions attending the out-patient department of The Leprosy Mission Community Hospital, New Delhi. Serum levels of Alpha-1-Acid Glycoprotein were measured using ELISA Kits from R&D Systems Inc. USA (Sandwich ELISA Scheme).

Results: We observed that the mean serum levels of Alpha-1-Acid Glycoprotein were 3715.20 µg/ ml in cases with Type 1 Reactions and 2756.73 µg/ml in cases without reaction (3715.20 µg/ ml Vs 2756.73 µg/ml, $p<0.05$) indicating that this molecule significantly increased in type 1 reactions of leprosy.

Conclusion: Alpha-1-Acid Glycoprotein also known as Orosomucoid was reported earlier to have an association with ENL (Erythema Nodosum Leprosum) reactions in Leprosy. We demonstrated that this molecule upsurge in Type 1 Reactions as well. Further functional studies may aid in delineating its role as a potential predictive marker for early detection of type 1 reactions and nerve damage in leprosy.

P-096

Presentation Time: **Wednesday at 18/09/2013 13:40 – 13:50**
Abstract Topic Name: **Immunology**
Presentation Screen Number: **9**
Presenter: Mary Fafutis-Morris

ROLE OF TOLL-INTERACTING PROTEIN GENE POLYMORPHISMS IN LEPROSY MEXICAN PATIENTS

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Introduction: Leprosy (L) is a debilitating infectious disease of human skin and nerves. Genetics factors of the host play an important role in the manifestation of disease susceptibility. Toll-interacting protein (TOLLIP) is an inhibitory adaptor protein within the toll-like receptor (TLR) pathway, a part of the immune innate system that recognizes structurally conserved molecular patterns of microbial pathogens, initiating immune responses. With the purpose of identifying genes of susceptibility, the present study investigated the possible role of TOLLIP alleles in susceptibility to leprosy in Mexican patients.

Methods: *TOLLIP* polymorphisms were studied using a case-control design of patients with leprosy of Mexico. The polymorphisms of TOLLIP at loci -526 C/G, exon 4 Pro139Pro, exon 6 Ala222Ser and 3´UTR were analyzed by chain reaction amplification, with sequence-specific primers in (87) LL and (7) TT patients and (87) healthy subjects (HS) as controls

Results: Genotype distributions were in Hardy Weinberg equilibrium. Four *TOLLIP* polymorphisms revealed no differences in genotype and allele frequencies between LL, TT and control subjects. The linkage disequilibrium (LD) analysis did not show any statistical significance. However, in the assumption of LD for the three more informative loci, we observed the CTG haplotype showing a borderline association with LL (OR=0.80; CI=0.41-1.54; p=0.047).

Conclusion: CTG haplotype in TOLLIP gene may play a role in LL in Mexican patients. Yet replication studies in other cohorts and populations are warranted to confirm these results.

P-097

Presentation Time: **Wednesday at 18/09/2013 13:50 – 14:00**
Abstract Topic Name: **Immunology**
Presentation Screen Number: **9**
Presenter: Anastasia Polycarpou

BCG VACCINATION MODIFIES MACROPHAGE TOLL-LIKE RECEPTOR-4 RESPONSE TO MYCOBACTERIUM LEPRAE

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Introduction: Toll-like receptor (TLR)-4 belongs to a family of pattern-recognition receptors that bind to microbial ligands. Lipopolysaccharide (LPS) of Gram (·) bacteria is their most common ligand, the activation of which leads to the production of several pro-inflammatory cytokines. LPS does not form part of the cell wall of Mycobacteria. However, a role of TLR4 in the pathogenesis of mycobacterial infections has been suggested. Although TLR1 and TLR2 have been both implicated in the host recognition of *M.leprae*, the role of TLR4 remains unknown. We investigated the TLR4 expression of primary macrophages after incubation with increasing concentrations of killed *M.leprae*.

Methods: Peripheral blood mononuclear cells (PBMCs) were isolated with gradient centrifugation from peripheral blood of BCG and non-BCG vaccinated healthy volunteers within the London School of Hygiene and Tropical Medicine. Macrophages were allowed to differentiate over 8 days after using Macrophage colony stimulating factor (M-CSF). Attached cells were isolated and incubated overnight with increasing doses of killed *M.leprae*. Staining for macrophage markers CD14, CD16 and CD68 and for TLR4 was performed by multi-coloured flow cytometry. CD68 expression was considered a marker for matured macrophages and these cells were analysed for the expression of TLR4. The Median Fluorescence Intensity (MFI) for TLR4 expression was calculated. BCG-vaccinated subjects were compared with non-BCG.

Results: In macrophages from BCG-vaccinated healthy volunteers the dose-response curve of % change of TLR4 MFI with increasing concentrations of killed *M.leprae* showed gradual down-regulation of the receptor. On the other hand, the % change of TLR4 MFI in non-BCG vaccinated healthy volunteers showed up-regulation at low Multiplicity of Infection (MOI) of killed *M.leprae* (MOI<25) whereas at very high MOI (>50) showed a down-regulation of the receptor.

Conclusion: TLR4 expression in macrophages is altered after incubation with killed *M.leprae* in both BCG and non-BCG donors, suggesting that the pathogen could contain a ligand for this receptor. BCG vaccination is normally expected to have an effect only on acquired immunity to mycobacteria but surprisingly here we showed that it affects innate immune cells as well by shifting the macrophage TLR4 response to *M.leprae*. This is a model for analysing TLR4 response *in vitro*. Further work on leprosy patients will validate these results.

P-334

Presentation Time: **Wednesday 18/09/2013 at 12:30 – 12:40**
Abstract Topic Name: **Promoting Early Diagnosis**
Presentation Screen Number: **10**
Presenter: Burchard Rwamtoga

SCHOOL CHILDREN IN LEPROSY CONTROL

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Introduction: Leprosy control can be achieved by strengthening the prevention of disability services to people affected by leprosy. This can be made possible by empowering school children and other members of the community in early identification of new cases rather than depending on health workers only. Early identification, diagnosis and treatment before leprosy suspects have developed disabilities enables leprosy patients to be cured without disability and hence can live a normal life in the community.

Methods: Methodologies used in spreading the leprosy knowledge to school children and other members of the community include social marketing by the use of drama groups, school clubs, peer education lecture sessions in schools and village sensitization meetings by the use of village POD committes. Drama groups and POD committees include former leprosy patients. Everybody involved in this program work on voluntary basis

Results: In one year period, 60 POD committee members working as volunteers were involved. 55 villages and 65 schools were reached. Leprosy knowledge was spread to 36,157 adults and 38,167 school children. 174 suspects self reported to health facilities and or leprosy centres where 30 were confirmed by leprosy experts as new leprosy cases and put on treatment.15 self care groups of members ranging from 6 to 10 were formed. PALs have shown positive response in the proper use of foot wear.

Conclusion: Spreading the leprosy knowledge to school children and members of the community has proved to be a vital methodology in controlling leprosy and hence it has to be scaled up. As more and more people become knowledgeable in leprosy we can see an increase in self reporting of those suspected with leprosy. It is of no doubt that when school children and other members of the community are empowered in suspecting leprosy we can easily eliminate the disease

P-335

Presentation Time: **Wednesday 18/09/2013 at 12:40 – 12:50**
Abstract Topic Name: **Promoting Early Diagnosis**
Presentation Screen Number: **10**
Presenter: Ashutosh Prabhavalkar

STRATEGY TO SUSTAIN LEPROSY AWARENESS THROUGH COMMUNITY PARTICIPATION: AN ASSESSMENT OF 995 COMMUNITY VOLUNTEERS DURING AND AFTER SELECTIVE SPECIAL DRIVE

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Introduction: Lack of effective strategy to promote community participation in disease control program is a concern to tackle public health issues. Instituting an appropriate mechanism for encouraging the community in planning and implementing the health programs as well as contributing to decision making about the local health care needs will improve their accountability. Therefore, involving community groups and organizations and making them accountable for creating public awareness about leprosy is crucial to ensure community participation. ALERT-INDIA evolved Selective Special Drives (SSD) as a strategic intervention under Leprosy Elimination Action Program (LEAP) to involve community as a principle stakeholder in partnership with local NGOs working in development and education sector. Trained community volunteers (CVs) selected from the local areas were engaged in house to house Inter Personnel Communication (IPC) as well as NGO staff in community level IEC activities to increase leprosy awareness thus promote voluntary reporting of new leprosy cases for timely diagnosis.

Methods: The effect of SSD was assessed in terms of new leprosy case detection during SSD in 5,567 villages from 46 blocks of 7 districts of Maharashtra by 11,952 trained CVs conducted through 52 local NGOs in 2008 to 2011 (3 years). The level of leprosy knowledge and the tasks performed by 995 community volunteers randomly selected from 619 villages in 71 PHC areas of 17 blocks in 6 districts of Maharashtra in sustaining leprosy awareness after SSD were assessed through a pre-designed questionnaire and focus group discussion during one day feedback workshop. The blocks & PHCs were selected based on the criteria of leprosy endemicity as of March 2011.

Results: 1,158 new leprosy cases (New Case Detection Rate was 25.68 per 1 lac population) were detected among 45,09,787 out of 55,93,909 population reached during SSD.Among leprosy cases newly detected during SSD, 481 (41.5%) were MB cases, 100 (8.6%) were child cases and 29 (2.5%) grade II disabled cases. Besides, 6,818 cured leprosy cases from these SSD areas were reached and eligible cases were linked to nearest referral centres for services to prevent disabilities.
Out of 995 CVs (8.3% of CVs engaged during SSD) assessed, 56.8% were male and 43.2% were female. It was observed that about 85% of CVs had retained their knowledge about leprosy after an average period of 18 months post SSD. Similarly, 56.8% CVs had referred persons with suspected signs of leprosy in post SSD period. 37% CVs were approached either by new or old leprosy cases for assistance due to circumstantial difficulties.

Conclusion: Short term community level leprosy awareness campaigns with SSDs can promote timely detection of new leprosy cases. This study demonstrated that training and engaging community volunteers during SSD has enhanced the community participation in sustaining leprosy awareness even after SSD and therefore found to be a viable strategy for new case detection during integration phase. It is recommended that such SSDs conducted periodically can contribute to prospects of sustaining leprosy control programme in future.

P-336

Presentation Time: Wednesday 18/09/2013 at 12:50 – 13:00
Abstract Topic Name: Promoting Early Diagnosis
Presentation Screen Number: 10
Presenter: Jinlan Li

HOW TO DETECT MORE EARLY CASES AT LOW ENDEMIC SITUATION WITH PACKET AREA: ANALYSIS ON 1274 NEW LEPROSY PATIENTS DETECTED FROM 2008 TO 2012 IN GUIZHOU PROVINCE, P.R OF CHINA

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Introduction: The number of new leprosy patient has not significant decrease in recent 20 years in Guizhou province although leprosy in China maintained a low endemic situation. Guizhou was still second high prevalence rate and detection rate of leprosy in China in last 10 years. This study was to analyze the characteristics of newly detected leprosy cases at low endemic situation with packet area for improving effect of early case detection to control leprosy.

Methods: The data was collected from new case information report system and annual statistic report of leprosy in whole province.

Results: 1274 new patients were detected in Guizhou from 2008 to 2012 that included 939 male and 335 female. PB was 339 cases and MB was 935 cases as 77.8% case with skin smear positive. The average age at diagnosis was 42.2±16.6 years. The children (0-14 years old) accounted for 4.4%. The rate of disability Grade 2 among new patients was 36.4% as well as the rate of disability Grade 1 was 10.1%. The average of delay diagnosis duration after the onset of symptoms of leprosy were 41.7± 49.8 months. In general, clue survey was a major method to detect 57.8% of new patients. Self-report, contact survey, general skin clinic and others methods account for 12.7%, 12.3%, 11.7% and 5.5% respectively. The contact survey was 22.1% as second high rate on detecting patients within 2 year of the onset of symptoms of leprosy besides 43.2% by clue survey.

Conclusion: It is a big challenge that detected leprosy case early at low endemic situation with packet area. For detecting more early patients, the quality of contact survey should be improved by professional training and supervision. Meanwhile, general skin clinic should be positively led to join case detection by new health policy.
Funding: The study was supported by research grants from National Natural Science Foundation of China and Science (81260436) and Technology Provincial Governor Foundation of Guizhou Province (2012-23).

P-338

Presentation Time: Wednesday 18/09/2013 at 13:00 – 13:10
Abstract Topic Name: Promoting Early Diagnosis
Presentation Screen Number: 10
Presenter: Boosbun Chua-Intra

EVALUATION OF SUITABLE TARGET AREAS FOR STRENGTHENING LEPROSY CASE FINDING ACTIVITIES IN THAILAND

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Introduction: Leprosy control in Thailand has achieved the goal of eliminating leprosy as a public health problem, defined by WHO, as a reduction of the prevalence rate to below one case per 10,000 population since 1994. Since then the number of registered cases and newly detected cases have gradually declined to 671 cases (prevalence rate 0.11 case per 10,000 population) and 358 cases (annual case detection rate 0.56 cases per 100,000 population), respectively in 2009. However, the proportions of grade 2 or appearance disability among newly detected cases have not changed obviously, ranging between 10% and 16% since 1994 until 2009. These high proportions of disability reflect delayed detection of new leprosy cases. Therefore, it is important to strengthen case finding activities in the areas where new leprosy cases are expected to be detected. This study aimed to evaluate the suitable criteria for the target areas for strengthening case finding activities.

Methods: The target areas for strengthening case finding activities were the districts where in the last five years, there were new cases detected continuously every year or new child cases in any year or cumulative number of detected cases equal or greater than 10. Number of new leprosy cases detected in target areas in 2010 were compared between each criteria and statistically analized.

Results: Based on the leprosy patient data base from 2004 to 2008, there were 140 districts with the characteristics as three criteria of target areas for strengthening case finding activities. One hundred fifty five out of 358 (43%) newly detected cases in 2009 and 200 out of 405 (49%) new cases in 2010 were detected from the target areas according to one and/or another criteria. The highest number of cases was detected in the areas where new child cases were detected in any year. Among 140 target districts, new cases were detected from 107 districts (76%).

Conclusion: All three criteria based on data of newly detected leprosy cases in the last five years are suitable for targeting the areas for strengthening case finding activities. And if considering only one criteria, areas where new child cases detected in any year in the last five year were the most suitable target areas. However, these suitable criteria should be re-evaluated in order to suit for very low endemic leprosy situation in the future.

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Presentation Time: Wednesday 18/09/2013 at 13:10 – 13:20
Abstract Topic Name: Promoting Early Diagnosis
Presentation Screen Number: 10
Presenter: Mrs Chunzhi Pan

THE EXSITING PROBLEMS AND COUNTERMEASURES OF LEPROSY CASE-DETECTION IN CHINA

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Introduction: Over the recent 60 years, China has examined and treated nearly half a million leprosy patients and the annual case-detection rate declined from 5.56 per 100000 population in 1958 to 0.10 per 100000 population in 2010. For the last 10 years or so, about 1500 cases were found on an average. The pocket areas were in the southwest provinces such as Yunnan province, Guizhou province, Sichuan province, Gmmgdong province, Hunan province and Tibet Autonomous Region. Now the leprosy control system is reforming from a vertical to an integrated setup,and it is imperative to explore the problems and countermeasures in case-detection in China.

Methods: look up from the database of the nailonal system of leprosy surveillance and related literatures,combined with the qualitative observation of case-finding field in some areas of China. A descriptive and comparative analysis was performed to sum up its problems and countermeasures.

Results: Now the exsiting problems are as follows: (1) Low efficience in active case finding and most of control agencies sill get used to conduct routine epidemiological survey to find new cases; (2) many control agencies were abolished and merged into Center for Disease Prevention and Control,but the referral center establishment were ignored, which lead to the capacity of case-detection declined; (3) imperfect mechanisms of particiapting leprosy control work of general medical agencies, which can not meet the basic requirement of case-finding; (4) The public lack the recognition of leprosy, especially in low endemic areas; (5) The information utilization of leprosy epidemic surveillance is insufficient and the targeted investigation lacked.

Therefore,we should adopt the suitable countermeasures,including (1) We must establish the guiding principle of leprosy case detection with passive methods priorities and intermittent survey supplement in the coming days; (2) Strengthening leprosy training among dermatologists and the empowerment of general medical agencies may be the important strategy in the future; (3) Special investigation among immigrant populations and contacts check should be made to raise the efficiency of case-detection; (4) leprosy health education in the community should be continued to eliminate the stigma and promote medical service seeking; (5) Research on leprosy early diagnosis be strengthened and slit-skin smears be popularized in China.

Conclusion: Leprosy case-finding work in China should be improved and how to raise the pertinence and efficency of case-detection methods should be studied by the leprosy control administrative officer in China.

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Presentation Time: Wednesday 18/09/2013 at 13:20 – 13:30
Abstract Topic Name: Promoting Early Diagnosis
Presentation Screen Number: 10
Presenter: Artur Gosling

CONTACTS CONTROL IN LEPROSY: A NEGLECTED OPPORTUNITY OF EARLY DIAGNOSIS

T. Santos [1], L. Gomes [1], A. M. Nascimento [1], K. Brum [1], C. Aragon [1], A. M. Santos [1], M. K. Gomes [1,*] and interdisciplinary Program of Leprosy - HUCFF/UFRJ

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Introduction: Leprosy is a chronic disease caused by *mycobacterium leprae* bacillus. Primary care plays an important role for early diagnosis, treatment and self-care to prevent complications and improve quality of life. Contacts control in leprosy inside household is recommended to facilitate leprosy control programs in Brazil. The purpose of this study was to identify household contacts in cases of leprosy.

Methods: Fellows of "Des(Mancha)" Brazil Project from undergraduate courses of medicine, physical therapy, psychology and social work conducted household visits with a master student in Nova Iguaçu county. Contacts assessment was based on new cases of leprosy detected in 2010. The assessment points were Bacillus Calmette–Guérin scar tissue and dermatological and neurological physical examination. All suspected cases were discussed during project meetings.

Results: 168 contacts were assessed and 52 households visits were made in 2011. 69% of contacts receive Bacillus Calmette–Guérin vaccine before the diagnosis of leprosy in the household specific case and 26,8% receive the vaccine after. 88,7% of contacts was assessed in primary care unit and 4,76% has leprosy.

Conclusion: There was a high incidence of contact household cases with leprosy in this sample. The household assessment is usually neglected by health services because is expected that these contacts attend to primary care units. The partnership between "Des(Mancha)" Brazil Project and Nova Iguaçú county allows this relevant activity for leprosy control in Brazil.

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Presentation Time: **Wednesday 18/09/2013 at 13:30 – 13:40**
Abstract Topic Name: **Promoting Early Diagnosis**
Presentation Screen Number: **10**
Presenter: Sheikh Hadi

IMPACT OF EXTENDED CONTACT SURVEY IN LEPROSY ELIMINATION PROGRAMME IN SELECTED AREAS OF BANGLADESH

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Introduction: Bangladesh has achieved elimination target of leprosy at national level in 1998. At that time, the registered prevalence was 0.87/10,000 populations and the grade 2 disability rate among the newly detected cases was 8.9%. At the end of 2011, the prevalence has come down to 0.22/10,000 populations but the disability grade 2 has increased to 12%. Around 4,000 new leprosy cases are being detected annually in Bangladesh in the last few years. But the proportion of Multi-Bacillary (MB) type of leprosy and the grade 2 disability among the new cases is showing an upward trend. This indicates that new cases are identified at a later stage (delayed diagnosis) reflecting some sorts of complacency on the part of the control programme. To study the impact of the Extended Contact Survey regarding early case detection and reduction of the grade 2 disability among the new cases a survey was conducted in five upazilas of Lalmonirhat and five tea gardens of Moulvibazar district.

Methods: Five upazilas of Lalmonirhat and five tea gardens of Moulvibazar district were selected purposively. One survey team was formed for each district with expert support. A total of 40,306 people were briefed on leprosy and 4,438 persons were examined physically by survey teams. All the under treatment cases (54 cases; PB: 20 MB: 34) were included as index cases in this survey. Privacy was strictly maintained during examination of the suspects. All diagnosed cases were referred to the local UHC for registration and treatment and suspects were recorded for follow up examination afterwards.

Results: A total of 4,338 people (1,709 male, 1,523 female & 1,156 children) were examined in two districts. A total of 75 new leprosy cases (PB 50 & MB 25) were identified and 60 suspects. Majority of new cases (54%) was found among young adult age group (15 – 30). So, young adult age group is most vulnerable group for contracting leprosy. Almost 2 new cases were detected around each MB index case whereas less than 1 case was detected around each PB index case. So MB cases are contributing more than two-folds in the yielding of new cases than PB cases.

Conclusion: Extended contact survey is more cost effective in moderate endemic situation. Family contact examination is still a useful method for early case detection in low endemic situation. Health staff should have training on basic facts of leprosy to avoid missing of these cases.

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Presentation Time: **Wednesday 18/09/2013 at 13:40 – 13:50**
Abstract Topic Name: **Promoting Early Diagnosis**
Presentation Screen Number: **10**
Presenter: Mohammed Arif

A STUDY ON UTILITY OF COMMUNITY VOLUNTEERS NAMED ASHAS (ACCREDITED SOCIAL HEALTH ACTIVISTS) IN EARLY CASE DETECTION IN INDIA

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Introduction: National Leprosy Eradication Program of India changed it's implementation strategy from vertical to integrated approach and now all the leprosy services are rendered thru General Health Care staff. To strengthen institutional deliveries and general health care system Government of India revised its strategy and launched National Rural Health Mission (NRHM). Under this mission, village level female volunteers have been identified and given name ASHA (Accredited Social Health Activists). These ASHAs are available one for 1000 people and are acting as a link between community and health services. These ASHAs are supposed to refer suspected cases and help program in early case detection for which they are paid incentives.
For these above actions these ASHAs needed training but because of the large number the training was mixed with other health programs hence their understanding and involvement in leprosy was poor. NLR took the initiative to train them separately only for leprosy and keep track of their activities. This paper presents the usefulness of these ASHAs in detecting cases early if the training is imparted separately and of good quality.

Methods: Approximately 7000 ASHAs from 7 NLR supported districts were our target population for training and involvement in case detection. With support from NLR, training to ASHAs for suspecting and referring cases is continued. Each ASHA is issued with flash cards showing photos of leprosy cases. They are expected to show the flash card to community under their jurisdiction and examine all suspects. New cases are confirmed by Medical Officer at Primary health center. Cases detected thru them are recorded and reported for 2 financial years. These cases will be compared with the areas where NLR is not involved in training of ASHAs. Available data will be analyzed and presented in the congress.

Results: So far whatever data are available, among the cases detected thru ASHAs, show that the cases are detected early, more are PBs, with more females and less disability. Final data analysis will be presented in the congress

Conclusion: The study is in progress. It can be concluded with the data available so far that involvement of ASHAs is a good strategy for early case detection. They could also be involved in prevention of disability and for increasing community awareness

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Presentation Time: **Wednesday 18/09/2013 at 13:50 – 14:00**
Abstract Topic Name: **Promoting Early Diagnosis**
Presentation Screen Number: **10**
Presenter: Rujira Tragoolpua

HEALTH SEEKING BEHAVIOR OF LEPROSY PATIENTS ATTENDING HEALTH SERVICES IN URBAN AREA OF CENTRAL REGION, THAILAND.

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Introduction: Under low leprosy situation in the central area of Bangkok (BKK), it was found that most of leprosy patient delayed in treatment resulted in more complications and disability in many of them. This study was done to investigate the health seeking behavior of the patients and related factors. The results of this study would be used as basic and reference information in planning and operating leprosy control under low endemic situation.

Methods: The 16 subjects were those who volunteered and attended the leprosy treatment at health units in urban areas in central region under the supervision of the Office of Disease Prevention and Control 1, BKK. Semi -structured interviewed questionnaires was used to collect data which was later analyzed manually by content analysis. Descriptive statistics was used to describe the related information.

Results: The average duration from the first notice to the first doctor visit was 6 years with minimum 2 months and maximum 43 years. The average number of treatment seeking time was 6 times with minimum 6 times and maximum 18 times. Delay caused by doctor was 2 years on average.
When the early signs appeared, most of them waited for self healing. If the signs did not subside, they respectively went to pharmacists for skin related drug, traditional healers, medical clinics, and government health units respectively. Their seeking behavior will be changed back and forth among these mentioned methods depending on their satisfaction on the treatment results. More than half of them made decision related to treatment by themselves while the rest consulted their relatives.

Conclusion: Delay treatment caused by two main factors, the patients themselves and the doctor. In low leprosy situation, raising awareness of community and health related officer is needed. Expertise leprosy treatment service should be maintained at a certain level for diagnosis confirmation and correct treatment. These are to prevent delay in treatment and disability in leprosy patients.

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Presentation Time: **Wednesday 18/09/2013 at 15:30 – 15:40**
Abstract Topic Name: **Surgical Rehabilitation**
Presentation Screen Number: **1**
Presenter: Michel Sawadogo

USEFULNESS AND BENEFITS OF RECONSTRUCTIVE SURGERY IN PATIENTS WITH DISABILITIES IN BURUNDI

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Introduction: A study was conducted in Burundi to assess the outcome of patients in whom surgery was performed from 1 January 2008 to 31 December 2010 with the aim to assess the usefulness and benefits of the intervention for the patient and his family, to analyze the perceptions of patients and their families about leprosy and reconstructive surgery and to collect suggestions from respondents.

Methods: This is a cross-sectional descriptive study. A case-control study was nested in order to appreciate the difference between the operated patients (cases) and other unoperated leprosy patients (controls). The study was conducted mainly in five endemic provinces in Burundi in hospitals and reference health centers (CDS) selected according to the origin of the operated patients.

Results: 48 patients were interviewed from about 60 expected, 80% response among cases and controls (96 respondents). The average age was 50 years for cases and 46 years for controls, with a predominance of males among cases (68.75%) and controls (62.5%) with a sex ratio respectively 2.2 and 1.66 for men. Before surgery, 75% of patients had MPP, 60.4% and 4.2% lagophthalmos. 56.2% of patients were totally disabled. Stigma was present in 83.3% of cases. During the surgical treatment, several types of intervention have been made and some patients underwent more than one operation. The mean duration of hospitalization was 89.2 days. Among the one with hand operations, healing was complete in 100% of cases and function returned in 77.8%. 54.05% of the one operated in foot has completely healed and all regained capacity to walk. For the eyes, healing was complete in 100% and the success rate of surgery was 50%. Back at home, all patients interviewed reported having seen a remarkable interest in surgery. Stigma has decreased from 83.3% to 4.2%. The proportion of respondents fully satisfied remains high: 93.75%

Conclusion: This study demonstrates the relevance of rehabilitational surgery not only for the patient but also for his entourage in Burundi. It is useful for the health authorities and their partners, to include in addition to chemotherapy and prevention, the rehabilitation of disability by surgery.

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Presentation Time: **Wednesday 18/09/2013 at 15:40 – 15:50**
Abstract Topic Name: **Surgical Rehabilitation**
Presentation Screen Number: **1**
Presenter: Sreepuram Reddy

EXTENSOR POLLICIS BREVIS DIVERSION GRAFT FOR CORRECTION OF Z-DEFORMITY (FORMENT'S SIGN) IN LOW ULNAR PALSY

G. K. [1,*], A. R. Sreepuram [2], B. August Otto [3], P. R. P [4]

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Introduction: The Ulnar nerve is the most common among nerve trunks to become involved. Ulnar nerve commonly involved above olocranon groove (high Ulnar paralysis). Approximately 25 percent cases the lesion of this nerve occurs before nerve enters the Ulnar canal at the pisiform bone (low ulnar paralysis).
In low ulnar paralysis the adductor pollicis, all interossei and often flexor pollicis brevis (FPB) are paralysed. Loss of FPB causes interphalangeal (IP) hyperflexion (Forment's sign) or metacarpophalangeal hyprextension (Z-thumb), depending on the individual hand. Besides interfering with efficient use of the hand the appearance of the thumb also becomes cosmetically unacceptable.
Dr.H.Srinivasan in his book ATLAS OF Corrective surgical procedures commonly used in leprosy discribes three procedures, to correct above consequences.
I. Half - FPL transfer to EPL. II. Half FDS (index) transfer to the thumb. III. Beine.A.O. (1984) Extensor Pollicis Brevis Diversion Graft operation in case of Z-deformity of the thumb, using fascia lata as a free graft. - A preliminalry report - Indian Journal of Leprosy 57.
This procedure is to stabilize MCP joint of the thumb in flexon by diverting some of the extending force in ext.poll.brevis (EPB) volar to the joint.

Methods: The present study reports the retrospective analysis of 11 leprosy patients with Z-thumb who underwent reconstructive surgery at Sivananda Rehabilitation Home, Hyderabad, Andhra Pradesh, India getting done Extensor - Pollicis Brevis diversion graft operation using facia lata as a free raft. The said correcting procedures of Z-thumb were done during the year 2005-2007 and were followed up till 2012.

Results: Re-education of this transfer Post operative is easy. result to be checked by Physiotherapist at long term followup are the patient is able to do the pinch normally with "pulp to pulp" also Z-deformity disappeared. The whole presentation will be illustrated pre, post, intraoperational figure and long term followup data.

Conclusion: After seing the Long term followup the postoperative result of the EPB diversion graft, the patient feels satisfactory in functionally and cosmetically. It encourages us to do the same procedure regularly.

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Presentation Time: **Wednesday 18/09/2013 at 15:50 – 16:00**
Abstract Topic Name: **Surgical Rehabilitation**
Presentation Screen Number: **1**
Presenter: Vagner Sá

MAPPING MUSCLE CORTICAL REPRESENTATION AFTER TENDON TRANSFER SURGERY: A TMS CASE STUDY

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Introduction: Peripheral nerve lesions are often accompanied by reorganization of the motor cortex. The present study focused on the mapping of upper-limb muscle representations over the primary motor cortex (M1) employing Transcranial Magnetic Stimulation (TMS) before and six months after tendon transfer surgery in a chronic Leprosy patient.

Methods: We applied TMS over M1 in a patient (29 years old, female) with right claw hand deformity due Leprosy. She was submitted to a unilateral tendon transfer surgery using the Flexor Digitorum Profundus (FDP) tendon to replace impaired intrinsic hand muscle function. TMS stimulation was performed at 120% of the subject's resting motor threshold (rMT) for the Flexor Digitorum Superficialis (FDS) muscle. Surface Motor Evoked Potentials (MEP) were collected from the FDS, First Dorsal Interosseous, Abductor Digiti Minimi and Abductor Pollicis Brevis and stored for offline analysis. The unoperated hand served as control. Putative functional changes associated to the hand surgery were measured through the evaluation of rMT, center-of-gravity (CoG) from each muscle's cortical representation and a modified version of the Wolf Motor Function Test (WMFT).

Results: Shorter time performance on WMFT (lift can task) after surgery suggests an upper-limb improved function (right limbpresurgery: 2"; after:1.2" / left limb-control:pre,1.4"; after, 1.2"). Comparisons of the anteroposterior and medio-lateral CoG in the hemisphere contralateral to the operated hand indicated a tendency for postero-lateral displacement over time for all the analyzed muscles, approaching ipsilateral CoG values, a condition found commonly in healthy individuals. Finally, a rMT change occurred through time (Pre = 61% after = 65%), again approaching the ipsilateral rMT values (65%).

Conclusion: Taken together these results suggest that there is a tendency for the investigated TMS parameters found in the hemisphere contralateral to the operated hand to approach those of the ipsilateral hemisphere. This is suggestive of plastic reorganization in line with the improvement of hand function.

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Presentation Time: **Wednesday 18/09/2013 at 15:30 – 15:40**
Abstract Topic Name: **Epidemiological Surveillance**
Presentation Screen Number: **2**
Presenter: Joydeepa Darlong

BURDEN OF LEPROSY AND TREATMENT OUTCOMES AMONG CHILDREN REPORTING TO A REFERRAL HOSPITAL IN WEST BENGAL, INDIA

J. Darlong [1,*], A. S. John [2], P. S. Rao [2], D. Famkima [1]

[1]Medicine, The leprosy Mission Trust India, Purulia, [2]Research, The leprosy Mission Trust India, NOIDA, India

Introduction: Children are vulnerable members of society. They are dependent on their guardians for reporting to health care centres for their health problems and for completion of treatment. The epidemiological profile of leprosy in pediatric populations reflects the level and efficiency of leprosy control measures in a community. The number of new leprosy cases among children still remains high in many endemic districts in India, indicating ongoing transmission. The fact that young children develop visible deformities due to leprosy, even when the primary health system programmes which include leprosy exist, is a reflection of the failure of our current health programmes. Leprosy in very young children has not been explored in depth with respect to treatment and outcomes.
This paper explores the epidemiological profile of leprosy affected children aged less than 16 years, reporting to a tertiary leprosy hospital in an endemic state of India, during a period of three years. The outcome of treatment, reasons for noncompliance and disability burden are also considered.

Methods: A retrospective chart review was done for all patients below 16years who visited the hospital between 2010 – 2012. Their demographic data, disease details, course of treatment were documented and analysed. After the first visit, 110 children were referred to their respective Primary Health Centres, near their homes to continue treatment.
318 patients who chose to continue treatment at the hospital were followed up. The course of the disease and compliance was documented. Home visits and counseling was done for those who were irregular and non-compliant. A brief interview was conducted and reasons for non-adherence and irregularity noted. They were encouraged to restart their treatment at the local PHC's.

Results: 2329 newly registered untreated patients were registered at this leprosy referral hospital in the years 2010 – 2012, out of which 428 (18.3%) were children below 16 yrs. 277 (65%) children were multibacillary cases and 151(35%) were paucibacillary. 63 (15%) presented with grade 2 disability at the time of diagnosis and 33 (8%) children were smear positive. 62 (13%) children presented with neuritis and 30 (7%) children with Reactions. 151 (35.2%) children had contacts; in some cases more than 2 members in the family were suffering from leprosy.
Our findings were compared to a similar paper published in 2009, which studied the epidemiological profile of childhood leprosy from 2006 to 2009. There is an increasing trend among new child cases which is a cause for concern. Further details of disease burden will be discussed in the presentation.
The reasons for non adherence and irregularity were studied. Extreme poverty and the need to work daily to feed the family is a main deterrent for compliance, because accompanying a child to hospital means the loss of a days wages along with expenditure for travel. The other reasons were found to be death or migration of the guardian, need to remain anonymous, intolerance and unwillingness to take drugs.

Conclusion: Operational research is needed to find Innovative methods that facilitate completion of treatment so that children do not suffer from the dreaded complications of leprosy. School surveys along with contact surveys may help in detecting children early but the main change required is in the level of education and awareness.

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Presentation Time: **Wednesday 18/09/2013 at 15:40 – 15:50**
Abstract Topic Name: **Epidemiological Surveillance**
Presentation Screen Number: **2**
Presenter: Dr Mohammad Reza Aloudal

LEPROSY TREND IN AFGHANISTAN (15 YEARS EPIDEMIOLOGICAL ANALYSIS)

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Introduction: Afghanistan known to be endemic country with leprosy since ancient (Buddhism times) and leprosy control in Afghanistan for the last 40 years depends on activities of international NGOs. In 1970 German Medical Services (GMS) organization was started leprosy control activities that followed by Leprosy Control Organization (LEPCO) in 1984. WHO has started its support from 1996 when a leprosy clinic was established for registration, diagnosis and treatment of leprosy cases in dermatology department in Maiwand Hospital in Kabul city but a National Leprosy Elimination Program (NLEP) was not established till 2007. Case detection remained in passive way in this hospital and the program has not been expended to all parts of the country, except the activities that carried out by LEPCO and GMS in central highland which is been stand up to now. Thus, the exact leprosy situation nationwide in Afghanistan is still unknown.

Methods: Analysis of data for 15 years (1998-2012) Will show the leprosy trend, méthode of reporting and the rôle of gouvernement and Non- gouvernement organisations in leprosy control in Afghanistan.

Results: Collection of data for the last 15 years (1998 – 2012) was done from all over the country depending on the available registers in the MoPH and the international NGO's. The study of data was showed the leprosy is concentrated historically in the central highland in Afghanistan and most of the leprosy tasks were implemented by the international NGO's. Grading of disability showed significantly high in the first 10 years of the analysis span but less in the last 5 years as a result of early case finding.

Conclusion: In spite of poor political commitment and involvement of Public Health Ministry, but by strong performance of international organizations (LEPCO and GMS) through active case finding in endemic areas, utilizing treated leprosy cases in all aspects of leprosy elimination program reduced grade 2 disabilities dramatically.

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Presentation Time: Wednesday 18/09/2013 at 15:50 – 16:00
Abstract Topic Name: Epidemiological Surveillance
Presentation Screen Number: 2
Presenter: Dr Ma Victoria Balagon

A RETROSPECTIVE STUDY OF THE EPIDEMIOLOGY OF LEPROSY IN CEBU, PHILIPPINES - IS TRANSMISSION DECLINING?

M. V. F. Balagon [1,*], P. Scheelbeek [2], A. Maghanoy [1], P. Saunderson [1] and Netherlands Leprosy Relief & IDEAL Consortium

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Introduction: Over the years, Cebu reported a good WHO- MDT and BCG coverage among its target population. Despite these measures, a significant number of new leprosy cases are still detected in the island.We believe that more effective leprosy control measures require better understanding of transmission patterns in the island. This study was designed to assess the trends of leprosy case detection, with special attention on child leprosy as an indicator of leprosy transmission in Cebu.

Methods: With the approval of an LWM Ethical Regulatory Committee, data of Cebu leprosy cases detected in 2000-2010 were reviewed, with special attention on clinical and epidemiologic description of cases. Child leprosy cases were used as major indicators on transmission trends. The overall and stratified trends in case detection rate (CDR) and CDR-ratios were calculated using multiple linear regression models. For comparison of average age of child leprosy, a Student's t-test was used. All calculations were performed in Stata version 12.0. Mapping and geographic analyses were performed in ArcGIS 10.1.

Results: Over an 11- year period, Cebu detected a total of 3,288 leprosy cases with a declining trend. A significant decline was noted from 319 cases (CDR: 12.0) in 2000 to 204 cases (CDR 4.8) per 100,000 population in 2010. (regression coefficient: -0.723 cases per 10^5 population per year; P-value <0.001; 95% CI [-0.856 / -0.589]). Five-year CDRs were calculated for the period 2001-2005 and 2006-2010 and showed rates of 47.35 and 29.21 cases per 100,000 population respectively; a decrease in case detection by almost 40%.
Despite the decline in case detection rates, actual number of cases detected in recent years remained stable due to increasing population figures. Interestingly, detection rates in children have remained rather static. Moreover, over the decade, the average age on child leprosy diagnosis has not significantly changed. In general, children continue to represent slightly over 10% of annual cases, a long way from the WHO set goal of less than 3% .
The mean ages of child leprosy were compared at a 5-yearly interval. Overall, there was no significant difference in age between the two periods. When comparing five-year CDRs among adults (>15) and children (<15), there was a considerable decrease in CDR among adults from 69.37 in the first period to 40.60 in the second period. Over 5 years, the decrease in children was much smaller from 11.75 to 9.52 cases per 10^5 population.
The decline of cases was observed in all age groups, in both gender and in both leprosy types, although the decline was proportionately faster in PB compared to MB leprosy. In general, the observed decline in Cebu was proportionately slower compared to the national level.

Conclusion: Our study shows that despite good MDT and good BCG coverage, leprosy transmission appears to be continuing in Cebu.We believe that a new approach to leprosy control is required to tackle the issue of transmission. The most promising approach is likely to involve a direct intervention (including chemoprophylaxis) targeted at high risk groups, such as the household contacts.

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Presentation Time: Wednesday 18/09/2013 at 15:30 – 15:40
Abstract Topic Name: Human Rights and Discrimination
Presentation Screen Number: 3
Presenter: (Emma) Claire Manes

EDMOND LANDRY (USPHS CARVILLE, LA 1924-1932) AN ANALYIS OF ONE MAN'S ADVOCACY AS TOLD THROUGH HIS LETTERS

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Introduction: Arthur W. Frank (*Wounded Storyteller: Body, Illness and Ethics*, U of Chicago, 1995) poses the question "How [does one] live a good life while being ill?" (p. 156) The question for those who faced leprosy before treatments and cures was how to live a good life while being ill, incarcerated, stigmatized, and feared. It is not a question to be quantified with statistics, but it is a question that bears reflection. It was one of the questions I pondered in my study of my grandfather Edmond Gilbert Landry (ake Gabe Michael) a patient advocate in Carville, La from 1924-1932

Methods: My search to know my grandfather, who died thirteen years before I was born, has been a long one, hampered for many years by my adherence to the family code of silence. We did not speak of my grandfather and I held tightly to that taboo even as I surreptitiously searched for him in my grandmother's attic, on bookshelves, in books, and in cabinets. Stifled by my love for my grandmother, his wife, I did not speak about him for most of my life. I absorbed the message of silence that she maintained (too long) out of fear for their children rather than out of stigma toward her husband.
The dis covery of letters from my grandfather written between 1924 and 1932 to his family, the medical community, and governmental agencies gave me the impetus to study my grandfather's life more deeply. Aided by scholarship, I set about discovering the man I had longed to know and who had haunted my life. Through reading, academic study, dialogue with scholars and Hansen's disease survivors, research in Carville, and close and continuous reading of my grandfather's letters, I found a portrait of him in his own hand.

Results: I experienced the anguish he must have felt when at 33 years of age he voluntarily entered the United States Publich Health Services Hospital in Carville, La. I found a man who despite his illness quickly became an active advocate for the needs of patients more needy than he. He was a man missing family, his wife's love, the consolation of his religion and struggling with the temptation to abscond or end his life; yet he maintained dignity and his concern for others.
Reading and studying the letters of Edmond G. Landry in his own hand expanded my appreciation not onlyof his life but the life of so many other silent advocates who lived their lives with dignity and grace in undignified surroundings. Their lives are witness not only for leprosy patients but for all for whom advocacy is a way of life.

Conclusion: My research has given me an answer to the question "how to live a good life while being ill" My grandfather's life is a specific and identifiable example of the answer that Arthur W. Frank himself gave, Living a good life means living a life of witness for others and a desire for their good. Edmond Landry and so many others have done just that while living with leprosy.

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Presentation Time: Wednesday 18/09/2013 at 15:40 – 15:50
Abstract Topic Name: Human Rights and Discrimination
Presentation Screen Number: 3
Presenter: Parwati Oli

TOWARDS THE FULL DEVELOPMENT, ADVANCEMENT AND EMPOWERMENT OF WOMEN AFFECTED BY LEPROSY IN NEPAL

P. Oli [1,*]

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Introduction: There are innumerable problems related to the fundamental rights of women in Nepal. Women are deprived of their basic rights. They have not been able to utilize their rights as men can. Nepal is a male-dominated country, therefore many decisions are made in favor of men and women are not involved in different social activities. Women are limited to household work and their work is devalued and felt to be worthless. Most Nepalese families are uneducated. They do not know the importance of education, so they rarely send their daughters to school for education. Women are deprived of education and other social and political rights. Widows are not allowed to get remarried. They have to sustain their life without marriage after the death of their husbands, whereas a husband can get married after the death of his wife. Widows cannot expose their internal feelings in society. They are to hide their feelings inside their hearts.

Methods: The Principles and Guidelines for the Elimination of Discrimination Against Persons Affected by Leprosy and Their Family Members makes special provisions for the promotion and protection of the human rights of women. The Guidelines also observe that "States should promote the full development, advancement and empowerment of women, children and members of other vulnerable groups who have or have had leprosy, as well as their family members." IDEA Nepal has paid special attention to the empowerment of women starting with the First Empowerment Workshop for Women that was held in 2006, which has been followed by women's empowerment workshops in each region of the country.

Results: In the context of Nepal, when a woman suffers from leprosy, she is sent out of the village. Due to lack of education and knowledge, it is not known that leprosy can be cured with treatment. A woman has to divorce her husband when she has leprosy. Women have to leave their homes even when they are pregnant. Therefore it is said that the life of a woman with leprosy becomes pitiable and miserable after marriage.
IDEA Nepal is working to remove discrimination against women and help women to realize their rights through involving them in leadership roles, conducting empowerment workshops, and by creating awareness through the celebration of IDEA's International Day of Dignity and Respect, held annually on March 11. IDEA Nepal has also held workshops to educate people affected by leprosy about the legal basis for their rights.
While IDEA Nepal has focused special attention on women, the organization also works to promote the full rights and dignity of everyone.

Conclusion: IDEA Nepal is actively involved in empowerment and education for this brings change in society. Unless people are educated, their problems will remain the same in the future.

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Presentation Time: Wednesday 18/09/2013 at 15:50 – 16:00
Abstract Topic Name: Human Rights and Discrimination
Presentation Screen Number: 3
Presenter: Stephen Walker

THE DEPORTATION OF A MIGRANT WORKER WITH LEPROSY

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Introduction: A 29 year old Ethiopian man, GD migrated to Kuwait in September 2010 to work as a cleaner. In December 2011 he noticed a plaque on his left cheek. GD was seen at a hospital and prescribed topical treatment. He developed more skin lesions. After seeing a private Sri Lankan dermatologist GD was diagnosed with leprosy 11 months after he had first sought medical advice. However he was not informed of his diagnosis but was sent to another hospital where he was admitted. He was given rifampicin 600mg daily and dapsone 100mg daily for 14 days. He was still not informed of the diagnosis. He was told to stay in his hospital room which he shared with a man from India.
On the third day following GD's hospitalisation people wearing masks went to his flat and burnt his clothes and bedding. His three flatmates (all Ethiopian nationals) were taken by these "officials" to have a clinical examination. GD's passport and outstanding salary was taken from his employers. At the hospital an individual who did not identify himself wished to take a photograph of GD's face but not his lesions. When GD refused the man said he would call the police. GD agreed to the photograph after being persuaded by hospital staff. His fingerprints were taken two days later by a uniformed police officer who wore a face mask. His Indian roommate was also fingerprinted, taken from the hospital and did not return. With no official notice GD was taken in a marked police vehicle to a detention centre and 12 hours later to the airport. Without passing through normal airline and immigration channels he was put directly on a flight back to Ethiopia. On the flight no special precautions were taken. He had had no contact with his embassy and had not had the benefit of an independent Amharic translator.

Methods: On his return to Ethiopia GD attended the leprosy clinic and showed us the short handwritten discharge summary and 52 capsules of rifampicin and 120 tablets of dapsone he had been given. We diagnosed borderline lepromatous leprosy with associated T1R and started him on WHO MB MDT and immunosuppression. We asked him how he felt about his experience. GD said that at the time he had been very afraid but after returning to Ethiopia he felt angered by the way he was treated which had made him "feel like an animal".

Results: The delay in diagnosis of leprosy is a well recognised phenomenon in low endemic and non-endemic countries and often affects migrants in these settings. In Kuwait on being diagnosed with leprosy foreign nationals are referred to an infectious diseases hospital to start treatment and then "sent back to their respective countries" to complete it. In the Farwaniya region of Kuwait between 2003 and 2008 46 people were diagnosed with leprosy and of these almost 90% were foreign nationals. The authors describe as "significant" and "alarming" an almost ten-fold increase in the proportion of Kuwaitis diagnosed with leprosy in their study compared to a previous one with a different methodology published 20 years earlier. It was not shown how they arrived at this "significant" and "alarming" finding. We feel such language based on dubious statistical methodology is inflammatory and misleading.

Conclusion: The lack of information and respect accorded this individual prior to his removal from Kuwait, a member state of the United Nations infringed his human rights undermining the General Assembly resolution of 2010 and underlining the continued need for lobbying of governments by all those concerned about the welfare on people diagnosed with leprosy. We do not believe this case is an isolated incident.

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Presentation Time: Wednesday 18/09/2013 at 15:30 – 15:40
Abstract Topic Name: Prevention of Disability
Presentation Screen Number: 4
Presenter: Rajni Singh

"A STUDY OF ULCER HEALING IN LEPROSY WITH WOUNDEX DRESSING"

P. R. Rao [1], R. K. Singh [1,*], B. Abraham [2], K. Bhattrai [2], K. Kolaman [2]

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Introduction: Leprosy is a chronic infection of Myco-bacterium Leprae affecting peripheral nerves. Involvement of 'Post-Tibial Nerve' causes anaesthesia on soles and cause trophic ulcers on feet, which are synonymous with social stigma. Healing of ulcers has thus become an important intervention in improving quality of life of persons affected by leprosy.

Ulcer Management: while rest, aseptic dressings and appropriate protective footwear are the best conventional methods regularly used in ulcer management practically quick healing of ulcers and improved mobility is what is expected by persons affected by leprosy. Innovative methods of ulcer treatment are constantly explored.
Wound Ex is an external application which has been found to be effective to improve healing process in certain conditions. Wound Ex contains Zeolite·Iodine complex. WoundEX is a sterile dressing, which stops bleeding and closes wounds. Its support healing in chronic wound.
This improve healing of ulcers in terms of time and improve mobility of persons affected by leprosy using a new ulcer dressing technique.

Methods: 10 patients admitted in in·patient wards of little flower hospital under care of Mr. Abraham, Hospital manager and 10 patients seeking treatment for ulcers in LEPRA referral centre in Munger will be included in the study for treatment with Wound Ex. Equal number of patients taking conventional ulcer management will be included as control group.
A format has been designed to assess the ulcer healing process periodically. The ulcer healing will be measured by recording warmth and size of ulcer mouth in two directions and recorded on every three day basis. WoundEX pouch will be dressed on the ulcer with Gauze bandage and will change every three day. The new WoundEx pouch will be dressed without applied of any ointment/ antiseptic. During the WoundEx treatment patients will not take any antibiotic. Photos of each patients and each dress are captured to monitor and see the progress of wound healing.

Results: The initial results show decrease of ulcer surface by 1cm Cms among patients treated with Wound Ex within 9 days (3 WoundEx pouch) without any other supplement or antibiotics. The study is currently taken and detailed results of all patients will be presented in the paper.

Conclusion: The preliminary progress was very encouraging. This can be used at larger scale for indoor and outdoor patients. These very cast effective and reduce the stay of patients in Hospital.

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Presentation Time: Wednesday 18/09/2013 at 15:40 - 15:50
Abstract Topic Name: Prevention of Disability
Presentation Screen Number: 4
Presenter: Vivek Pai

ASSESSMENT OF DISABILITY CARE SERVICES AND ITS IMPACT – A FIELD BASED STUDY IN URBAN SLUMS OF MUMBAI

V. V. Pai [1,*], C. Dhamale [1], N. Ajayan [1], T. Kshirsagar [1]

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Introduction: Bombay Leprosy Project (BLP) covers an urban population of 2 million comprising mainly of slums including Dharavi the biggest slum in Asia. We present our experience in BLP pertaining to field based disability care and the study of its impact during the period from 2005 to 2012.

Methods: Subsequent to integration of leprosy services in Mumbai in July 2004 the leprosy elimination programme was reorganized and besides case detection activities, the Prevention of deformity and care programme (POD) was strengthened in the urban slums of Mumbai (Population: 12 million). Though complex health delivery structures are in place in the metropolis specialized disability care service is often lacking. In this background BLP is offering services through its Main Referral centre and a few satellite clinics which are strengthened and retained at the ward level after integration. The existing disabled patients (treatment completed and under follow up) are identified in the project area with grade I and grade II and assessment of their deformity status is done. Special records of disability assessment of individual patients are maintained. Ward wise maps to indicate the location of patients distributed is maintained for planning delivery of services and follow up. Disability care services like splints, MCR footwear, dressing of ulcers, goggles, foot drop splint have been provided depending on the type of deformity. Wax baths have been provided in these satellite clinics and extension units for facilitating wax therapy. Additional physiotherapy measures like muscle stimulation was provided for improving muscle function in early nerve function impairment. Clinical impact of services was carried out to ascertain status of deformity in patients with only grade II deformity receiving services using a simplified proforma.

Results: It was observed that in hand maximum improvement was found in 13 (59%) patients with abduction deformity and in 46 (33%) patients with mobile claw hand and in foot in 42 (40%) patients the ulcers healed well while in 8 (50%) patients foot drop was reversed. In the face in 5 (33%) patients with lagophthalmos, the nerve function was restored.

Conclusion: We believe that ascertaining the disability burden and distribution is a must to plan and implement field based POD care and services in the community wherein reasonable justice can be done to patients provided disability is identified early and services administered with regular follow up for compliance.

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Presentation Time: Wednesday 18/09/2013 at 15:50 – 16:00
Abstract Topic Name: Prevention of Disability
Presentation Screen Number: 4
Presenter: Mr Sathish Paul

RAPID SURVEY OF POPULATION RESIDING IN ORGANISED LEPROSY COLONIES WITHIN THE NATIONAL CAPITAL OF DELHI - GRANT IN AID SCHEME SUPPORTED BY DHS - GOVERNMENT OF NCT OF DELHI

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Introduction: Leprosy is curable without any residual deformity only if patient reports on time and completes MDT regularly. The factors such as lack of awareness, inaccessibility / non·availability of health services, unwelcoming attitude of health worker and social reasons often prevent them from seeking early treatment ending up in permanent disability. These factors often perpetuate the onset of deformity; make disability permanent and progressive in leprosy. This project attempts to narrow these gaps that exist in cycle of delayed detection of cases. The project strategizes to achieve the same through 2 major components of identifying those with disability due to leprosy, assess their status, intervene them with appropriate rehabilitation plan in a selected high endemic pockets. Inculcate awareness through prior IEC program and proactively search house-to-house and screen the household, neighbourhood and social contacts for new signs of disease activity in selected nearby areas.

Methods: The survey was initiated in all the 35 leprosy colonies in the state within and nearby Delhi. Relevant information was collected to enumerate population details in the colonies. The local leaders (such as political, religious, teachers) were well informed about the survey of persons with disability due to leprosy. A house-to-house survey searching was done for those affected by disability due to leprosy in all the colonies of Delhi. A team of staff were identified, trained and assigned (supervisor, fieldworker) to accomplish the assignment. Six female field investigators were assigned to four experienced supervisors. The colonies were divided into equal sectors (a street may be one sector). Opportunities were given to peer groups and women in conducting the survey. The colony population were examined and cases with disability due to leprosy were looked for signs of activity and screen those household, neighbourhood and social contacts of those cases showing active disease. 10% of surveyed population were cross·checked for quality assurance. Untreated case if identified were subjected to thorough investigations which included body charting, physiotherapy assessments, smears, and clinical evaluation. Attempts were made to identify the hidden cases of Lepromatous type of Leprosy. Standard diagnostic procedures were adopted as recommended by NLEP. Inactive cases with insensitive feet and hands were intensively monitored adopting latest concepts of physio and occupational interventions arresting further deformity.

Results: The survey which is being presently undertaken in the colonies will be over by the end of a month. Of the 12 colonies with about 751 families which were surveyed so far, 253 patients were with grade II disabilities, 112 were found to be with Gr I disability, 103 were with grade 0 disability and 35 were with general disabilities due to polio, trauma, mental retardation and other types of paralysis. Of the total population residing in the colonies 155 persons affected by leprosy needed protective footwear for their anesthetic feet, 12 needed artificial limbs, 16 needed wheel chairs and 10 needed specks for low vision.

Conclusion: The survey team have encouraged local members of the community, self·help groups to have orientation – training on leprosy which will have a long term and sustained impact in reducing impairments & disability. The social worker students were made to involve in survey as a step to fight against the social evil. Campaigning helps to refresh their memory and fight the complacency that is setting in.

P-419

Presentation Time: Wednesday 18/09/2013 at 15:30 – 15:40
Abstract Topic Name: Leprosy Control
Presentation Screen Number: 5
Presenter: Wanghua Li

ANALYSIS ON THE EFFECT OF LEPROSY CONTROL DURING THE 11TH FIVE-YEAR LEPROSY PROGRAM IN HUBEI PROVINCE CHINA

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Introduction: To evaluate the effect of leprosy epidemic situation monitored during the period of the 11th five-year (2006-2010) leprosy control program in Hubei Province, and to provide the information for government departments to develop the next five-year leprosy control program.

Methods: Descriptive statistical analysis was performed on the data obtained from Hubei province health system during 2006-2010, according to the assessment criteria stipulated by the state.

Results: During the period of the 11th five-year leprosy control program, Hubei province reported 227 leprosy cases, including 179 newly detected cases, and the early detection rate was 57.5%. Among all new cases, forty new cases had grade-2 disabilities which accounted for the disability rate of 22.35%. The number of counties which did not meet the leprosy elimination goal (prevalence less than 1/100,000) which was issued by China Ministry of Health decreased from 10 in the late 10th five-year(2001-2005) program to 2 at present.

Conclusion: The implementation of leprosy control program in Hubei province has achieved the significant progress. According to the analysis on leprosy epidemic situation after goal achieved in Hubei province, the reasons is that: first, the number of new patients increased by enlarging active detection and follow-up investigation; second, early detection rate increased by training for doctors in counties, countries and villages; third, disability rate decreased by strengthening the propaganda of suspicious symptoms of early leprosy and making patients actively seek doctors; fourth, plenty of funds were put into the cities and counties with more serious epidemic situation, which helped the active monitoring and lead to the epidemic rise. Together with the importation cases these years, it shows that leprosy infection still exists in Hubei, the early detection of leprosy and disability prevention need to be further improved.

P-427

Presentation Time: Wednesday 18/09/2013 at 15:40 – 15:50
Abstract Topic Name: Leprosy Control
Presentation Screen Number: 5
Presenter: Kissawat Somwang

A SURVEY AND ASSESSMENT OF THE READINESS OF THE MAE - SARENG HOSPITAL TO BE IMPROVED AS A SPECIALIZED LEPROSY UNIT UNDER LOW PREVALENCE

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Introduction: After achieving leprosy elimination in 1994, leprosy became less priority, doctors and public health officials had less experiences in leprosy leading to mis- diagnosis and delayed treatment, the potential cause of disability. This negative consequences could be interpreted from the proportion of grade 2 disability among newly detected leprosy cases that fluctuated between 11.36-16.54% over the past 10 years (2001-2010). It also reflect the less effectiveness of existing leprosy services. To deal with this problem, establishment of specialized leprosy unit was promoted in order to sustain expertise and quality leprosy services.
This study was aimed to survey and assess the readiness of Mae-Sareng hospital to be improved as a specialized leprosy unit.

Methods: This qualitative research was done by depth interviews with the director of the Office of Disease Prevention and Control, 10 Chiangmai and the director of the Office of National Health Insurance, 1 Chiangmai, Mae-Sareng hospital administrators, medical chief of clinical dermatology, head of department of social medicine and health, person responsible for leprosy, leprosy patients were treated, community leaders, people who serviced dermatology, health officers of sub- district health promotion hospital and health officers of the Mae-Sareng hospital responsible for leprosy.

Results: It was found that clients, community leaders and leprosy patients commented that Mae-Sareng hospital was appropriate to be a specialized leprosy unit. It was also found that Mae-Sareng hospital was ready to be improved as specialized leprosy unit because of its potential human resource, budget, equipment, and management. The hospital's officials willing to enhance their knowledge and skill related to leprosy treatment in order to provide more quality leprosy services to the people in their catchment area.

Conclusion: As it was found that Mae-Sareng hospital was ready to be improved as specialized leprosy unit, further interventions should be done by providing advanced leprosy knowledge and skill to health providers of the Mae-Sareng hospital and of its networking units; on the job training for laboratory officials, physiotherapists, pharmacists; providing leprosy screening skill to pheripheral health providrs of sub-district health promotion hospital. Regular monitoring and evaluation should be done in area to ensure the quality and the sustainability of leprosy service of Mae-Sareng hospital and the long run.

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Presentation Time: Wednesday 18/09/2013 at 15:50 – 16:00
Abstract Topic Name: Leprosy Control
Presentation Screen Number: 5
Presenter: Nimal Kasturiaratchi

LEPROSY CONTROL IN DEVOLVED-DECENTRALIZED HEALTH SYSTEMS: SRI LANKA EXPERIENCE

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Introduction: Sri Lanka has had several constitutional reforms brought about by the mounting social and political pressures. In 1984 Sri Lanka opted for devolution of political to power to provinces under which "health" became a fully devolved subject, meaning that independence as regards to health actions and their financing are to be given solely be given to provincial governments.
This curtailed the power enjoyed by the Line Health Ministry, pushing the vertical programmes it was running into jeopardy. Such programmes since then had to adjust to the macro changes brought about by constitutional changes by balancing national policy and strategy with those of the provinces where different political realities existed.
Leprosy Control Programme in Sri Lanka is one such vertical programme that was affected and is still struggling to come to terms with political realities.

Methods: This paper reviews the challenges to the Anti Leprosy Campaign (ALC) Sri Lanka working with the ILEP members operating in Sri Lanka namely FAIRMED FOUNDATION & Netherlands Leprosy Relief in meeting such macro level political demands.

Results: With a devolved health system in function the vertical programmes lost their strength. The Provincial government introduced their own administrations with provincial health directors and district level health directors. Staff allocations were done based on the district needs and the Provincial Health Ministers had their own local political agendas. While the some designated staff remained with the relatively powerless national level programmes, no such persons were appointed at the district or provincial level, even for leprosy.
Integration of leprosy into general health service made leprosy yet another disease for which the normal hospital would provide treatment. In 1997, Sri Lanka declared leprosy elimination claiming that it is no longer a public health problem. Ideally, the supervision for leprosy should have been given to the District health authorities. But it never happened that way. Instead, leprosy began to be forgotten with less resources and attention. The Dermatology clinic to which the Leprosy patients were referred for treatment had no exposure to the "public health issues" and they remained isolated from the wider circle of leprosy control.
Leprosy became just limited to a discourse at the national level but generally forgotten at the district level. Targeting sub district endemic pockets became less attractive to district authorities amidst other urgent needs such as control of dengue and non communicable diseases. Such pockets became distant to the center as well when the interest waned among the local health authorities

Conclusion: This paper attempts to demonstrate the challenges that national leprosy control programmes experience when they have to adjust changing from a vertical programme to working with devolved programmes. Such challenges to programmes are *hidden* and are not recognized and hence receive no special attention. It is recommended that donors and higher level health policy makers recognize such systemic characteristics of health systems and how they influence less eye-catching programmes such as leprosy control. Intensification of leprosy control, especially with sub national endemic pockets, will require recognition of such issues and changes in organization development to achieve leprosy objectives.

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Presentation Time: **Wednesday 18/09/2013 at 15:30 – 15:40**
Abstract Topic Name: **Detection and Treatment of Reactions**
Presentation Screen Number: **6**
Presenter: Priscila Andrade

THE AUTOCRINE EFFECT OF TNF IN THE ACTIVATION OF HUMAN SCHWANN CELL DURING MYCOBACTERIUM LEPRAE INFECTION

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Introduction: Leprosy is one of the oldest diseases to afflict humankind. Its pathological agent is *Mycobacterium leprae* (**ML**) that infects, mainly, macrophages and Schwann cells (**SC**). SC are glial cells involved in the immune response regulation that occurs during the peripheral neural damage caused by ML. Among the cytokines that contribute to this response, is the Tumor Necrosis Factor (**TNF**). Previous data from our group showed high levels of TNF in the dermis, epidermis and plasma of leprosy patients during reactional episodes, as well as higher expression in nerve biopsies of patients undergoing reverse reaction and with the pure neural form. It has been described that TNF may act as an autocrine mediator in neural injury, and therefore, may continuously activate SC in the absence of a pathogen. It is also known that ML is capable of "hijacking" the ERK 1/2 pathway to induce the proliferation of SC. Our aim is to evaluate the contribution of TNF and ML to nerve injury in leprosy, by analyzing the participation of the cytokine's positive feedback mechanism in ML infection and in the SC sustained activation state using the human SC lineage ST88-14.

Methods: The human SC ST8814 lineage was cultured with human recombinant (Rh) TNF (25 ng/ml) and/or irradiated ML (MOI 50:1) in different periods. The gene expression of inflammatory molecules was assessed through real time PCR after 3h and 24h. TNF protein expression after 2h and 3h and ERK1/2 phosphorylation after 30 min were evaluated by western blotting. The presence of cytokines in the culture supernatants was assessed by ELISA.

Results: Our results showed that ML is able to induce TNF gene expression, but not its secretion, probably because of a rapid capture by soluble receptors or even by membrane receptors present in SC, emphasizing its possible autocrine function. In this instance, stimulation with RhTNF revealed an increased gene expression of TNF as well as, soluble (sTNF) and membrane (mTNF) protein expression in a dose dependent manner. TNF was also able to induce the gene expression of IL1β, IL-6, IL-8, MMP13 and MMP9. ERK phosphorylation was observed under stimulation with both ML and TNF in the ST8814 cell lineage model. The joint stimulus of TNF and ML showed a similar effect of TNF alone in all the experiments conducted.

Conclusion: Our results suggest that in the leprosy neural injury, ML may induce SC activation by recruiting ERK pathways, and promoting TNF production, which may evoke its biological effects in an autocrine manner or through interactions with other cells in the endoneural space. They also indicate a strong participation of the SC in the neural immune response. In addition, it was also observed the effect of this cytokine on the SC, increasing its own expression and that of some pro-inflammatory molecules, as well as, others involved in tissue remodeling. Therefore, TNF may not only aggravate inflammation in the peripheral nerve, but also contribute to the progression of neural lesion and fibrosis.

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Presentation Time: **Wednesday 18/09/2013 at 15:40 – 15:50**
Abstract Topic Name: **Detection and Treatment of Reactions**
Presentation Screen Number: **6**
Presenter: Balachandra Ankad

TITLE: MULTIPLE NERVE ABSCESSES ON CUTANEOUS RADIAL NERVE - A CASE OF PURE NEURAL LEPROSY

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Introduction:-Leprosy is a unique infectious disease due to varied spectrum of clinical signs it exhibits. Pure neural leprosy (PNL) is an unusual form of leprosy and accounts for 4-8% of all leprosy cases. Nerve abscesses in PNL are very occasionally documented and multiple nerve abscesses along the course of a single cutaneous nerve is not reported so for. Here we report a case of PNL involving isolated cutaneous radial nerve as multiple abscesses along the course of the nerve. To the best of our knowledge, this is rarest presentation of pure neural leprosy.

Methods: Case report- A 24 year old female had painful swellings on the right forearm since 6 months. Examination revealed four abscesses situated along the course of cutaneous radial nerve and the nerve was thickened and tender with sensory impairment on dorsum of right hand. Histopathology showed granulomas consisting of epitheloid cells, lymphocytes & multinucleated giant cells in the dermis involving nerve fibres.

Results: A diagnosis of pure neural (Borderline Tuberculoid) leprosy in downgrading type 1 reaction was made. Patient was given oral steroids for 3 months in a tapering dose and with WHO multidrug therapy (MDT) regimen. There was complete remission of all the abscesses after treatment.

Conclusion: Multiple nerve abscesses occurring along the course of a single nerve is very unusual and rare in PNL. Hence, this clinical feature is a new addition to the wide spectrum of signs and symptoms of PNL. Leprosy, a disease of antiquity, always throws challenges to dermatologists to learn more and more to treat patients better.

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Presentation Time: **Wednesday 18/09/2013 at 15:50 – 16:00**
Abstract Topic Name: **Detection and Treatment of Reactions**
Presentation Screen Number: **6**
Presenter: Paul Roche

TREATMENT OF LEPROSY REACTIONS AND NEURITIS: PRESERVING OR IMPROVING NERVE FUNCTION?

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Introduction: Treatment of leprosy reactions and neuritis are the major reason for admission to leprosy hospitals. Standard protocols for the treatment of reactions and neuritis have been developed but there are few reports of the clinical and nerve function outcomes in field settings

Methods: Since August 2011, all patients presenting with leprosy reactions (Type 1 reaction or ENL) or neuritis (recent decrease in sensory or voluntary muscle scores) have been admitted for treatment using standard protocols and their clinical and nerve function progress monitored. Type 1 reactions and neuritis were treated a 20 week course of prednisone (40mg od x 2/52; 35mg od x 2/52; 30mgx4/52; 25mg x 4/52; 20mg x 4/52; 10mg x 2/52; 5mg x 2/52). ENL was treated with thalidomide (42 cases) plus clofazimine and or prednisone. The SALSA score measuring activity limitations and safety awareness were measured at presentation and discharge

Results: By February 2013, 218 patients (90 Type 1 reaction, 63 neuritis and 56 ENL) and were enrolled and outcomes of treatment in 96 patients are presented. Of these, VMT scores remained the same or improved in 93% T1R (24% 2 point or greater improvement in ST & 69% with no function loss below scores at presentation); 96% of ENL (23% improve 73% no decline) and 83% neuritis (29% and 54%). Sensory testing score showed similar patterns with ST scores the same or improved by 2 points or more in 95% T1R (28% improved and 67% no decline); 91% ENL (17% improve 74% same) and 79% neuritis (25 improved and 54% no decline). Nerve function outcomes were better in younger patients (< 40 years) but outcomes were not improved by longer courses of treatment (>20 weeks). Recrudescence of symptoms was observed in 29% of patients but nerve function outcomes were similar to patients without recrudescence.
SALSA scores measuring activities of daily living showed marked improvements in patients treated for ENL (mean decrease of 8 points); T1R (3 point decrease) and neuritis (2 point decrease).
Despite health education on signs and symptoms of leprosy reactions and neuritis, the average time between first symptoms and presentation for treatment was 87 days

Conclusion: The treatment of neuritis and reactions at GPHRC does not use standard protocols rather it depends on clinical and nerve function assessments. Consequently, patients are being treated for very long periods of time and we will only be able to analyse the full impact of the project some months after its completion.
The measurements of nerve function (VMT and ST) and of activity limitation (SALSA) have been used widely, but have not been standardised internationally. This project will make a significant contribution to this important issue, but we are still to define a 'successful' treatment outcome. Is preservation of nerve function a 'success'? How large a change in overall activity limitation as measured by the SALSA scale should be expected?

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Presentation Time: Wednesday 18/09/2013 at 15:30 – 15:40
Abstract Topic Name: CBR
Presentation Screen Number: 7
Presenter: Maniksha Manickam

RELEVANCE OF VOCATIONAL TRAINING CENTRE'S IN PROMOTING GAINFUL EMPLOYMENT AMONG YOUNG ADOLESCENTS AFFECTED BY LEPROSY

V. V. Patta [1,*], A. Biswas [2], T. Mendis [3] and The Leprosy Mission Trust India

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Introduction: The Leprosy Mission Trust India (TLMTI) is committed to walk the last mile, till leprosy is totally eradicated and every affected person and her/his family is rehabilitated. TLMTI runs six Vocational Training Centre's (VTC's). In VTC Bankura 35% are leprosy affected students out of total admissions, VTC Nashik 29% are leprosy affected students, VTC Vadathorasalur 10% students affected by leprosy, VTC Champa 23%, Faizabad 26% and Vizianagram·14%. These centre's have been in existence for 10 to 30 years and contribute to the community with their core competence in the areas of vocational training and job placement for the young affected with leprosy or children from families affected with leprosy. In a year approximately 1000 students are trained and graduates through these 6 VTC's. The VTCs have an excellent record of placement of approximately 80% per year.
This study was conducted to ascertain how relevant the VTCs are in promoting gainful employment of graduates and to recommend strategies for repositioning the VTCs to be recognized as regional centres for the same.

Methods: This is a cross sectional study. Data was collected based on random samples of an average of 08 students per year since 2007·2008, and added to the list per year for a period of 5 years. Thus a total 240 students were selected from the VTCs. Research tools used were one on one interview with graduates, their family members (50 families), employers (20 employers) and colleagues (50) at work place. Focused Group discussions were initiated in communities where the graduates reside.

Results: Analysis of 5 year trends of placements reveals that larger number of graduates from all VTCs go into waged employment, ranging from 53% in 2007 · 91% in 2011.Very few graduates from all the VTCs are self employed ranging from 0% · 9% in 2011. 80% of the graduates interviewed were found well placed in leading companies and accounted good career growth, as they were found reliable, hardworking and committed employees. All the graduates were working as per fair labour conditions. 90% job placements with corporate's in cities involve migration and the 65% of women graduates left the employment after marriage.
95% of the employers were satisfied with the quality of vocational training and the conduct of the graduates, however they expressed the need for a systematic follow up and feedback mechanism to bridge the gaps between training and actual requirement at the work place.

Conclusion: The VTCs play a crucial and relevant role in promoting gainful employment of individuals affected by leprosy. The choice of self-employment could be emphasized during the vocational training. The VTCs could encourage and provide support to initiate self-employment units through required entrepreneurship training, business development skills and linkages with government schemes and local banks for self employment, so that the graduates are not limited to salaried jobs. The placement team could also explore possibilities for self-employment or group entrepreneurships for the female trainees with the support of government schemes and influencing them to have better livelihood opportunities through Government and Non-Government funds.

P-471

Presentation Time: Wednesday 18/09/2013 at 15:40 – 15:50
Abstract Topic Name: CBR
Presentation Screen Number: 7
Presenter: Shyla Fransis

IMPACT OF VOCATIONAL TRAINING ON FEMALE STUDENTS BY LEPROSY AND GENERAL DISABILITIES

S. Francis [1], V. V. Patta [2,*], T. Mendis [3] and The Leprosy Mission Trust India

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Introduction: Patriarchy · male control over economics, power and culture deprived women out of their rights · in the personal, domestic and public spaces. Leprosy affected and differently abled women are thrice victimized by the "unfreedoms" of gender, poverty and stigma/prejudices. Within its core competencies, The Leprosy Mission Trust India's (TLMTI), Vocational Training Centres (VTCs) have been enabling such women. This study is a reality check on how effectively gender, disability and stigma related "unfreedoms" are addressed by the VTC and, based on learnings, to work for performance enhancement.

Methods: A participatory action study design was used in tandem with statistical methods, involving multiple stakeholders. Using purposive random sampling techniques, 10% of the women and men from the last 5 years admission registers were selected for primary data by the placement officer and principal of VTC's who are trained on sampling and interview techniques. The methodology included interviews, group discussions, workshops and policy level discussions.

Results: Though intake of girls has improved steadily, they were not adequately diversifying from conventional avenues of employment (Cutting & Sewing and DTP). Less than 10% of the girls opted for engineering trades. 90% of the girls did get placed immediately, but retention rates were low as 40% dropped out after marriage. Life styles of the women graduates and of their families had changed for the better. Women gave back to their families better than men did. Incidences of violence on women graduates were almost nil, while such violence persisted with other women and girls. Interactions with the alumni underscored the constraints married graduate girls faced. The place of women is seen as in their homes, unless the income and status her job brings are powerful counter incentives. The alumni pointed out that advocacy, community impacting and giving back to VTC were less than adequate.

Conclusion: The conclusions we can draw from the study are Intake of leprosy and disability affected girls demands good liaison with state schools, hospitals, national rural and urban health mission, NGOs, peoples' organisations, Grama Panchayats, municipal wards and women self help groups.
Training must be aligned with markets. Induction and training policies must equip girls for jobs that pay them well. Low end skills for supplementary incomes could be provided through community extension. Focus of life skills and hostels management must shift from protection to equipping with confidence to face the hostile realities on the job and during marriage. VTC could examine whether an exclusive leprosy focus is conducive for addressing stigma, when the state is moving away from exclusive leprosy and disability outreach. A dynamic Alumni Association, its pan-India networking post placement services and peer support are needed for women to experience the solidarity needed to stay on the job, advocate change, serve as defenders of rights in the communities and work places and to give back to the VTCs.

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Presentation Time: Wednesday 18/09/2013 at 15:50 – 16:00
Abstract Topic Name: CBR
Presentation Screen Number: 7
Presenter: Dr Masako Namisato

REAL INTEGRATION OF PEOPLE HAVING PAST HISTORY OF LEPROSY (ACTIVITIES IN A COMMUNITY-BASED CLINIC IN JAPAN)

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Introduction: For 89 years, Hansen's disease (HD) had been managed under segregation law in Japan until its legal abolition in 1996. Now we have almost no new case except for sporadic immigrant cases, but there are about 4500 people having past history of HD, and half of them are supposed to be living in the community. These people usually don't visit local clinic worrying about disclosure of their past history. In Japan, discrimination of HD has been decreasing, but they themselves cannot get out of their gloomy depressed memories. We started community-based clinic 8 years ago near Tokyo, aiming real integration of these people into the society.

Methods: Based on about 50 medical records of ex-patients of HD in our clinic, we review their medical and social situations. The diseases frequently occur in daily lives, vigilant follow-up study to find early sign of relapse are presented. The details of surgical cases are shown in another poster presentation by one of the coworkers.
Communications between ex-patients and general citizens are reviewed; searching effective factors which leading to real integration of HD.

Results: 1) Their ages are in the range of 50ys and 80s, on the average 71.6 years old; 10 years younger than the people living in sanatoria. Most of them have no communication with their relatives.
2) HD-related disability rate is very high. 70%, 67.4%, 93% of their faces, anterior part of eyes, upper and/or lower limbs respectively have grade1 or 2 disabilities. They frequently need surgical, ophthalmological care, or management of chronic neuritis.
3) They have common adults' diseases and 3 developed cancer of their lung, prostate and colon. When they need treatment of other specialist, they usually hesitate worrying about their past history. In these occasions, the support of Medical Social Worker (MSW) is greatly helpful to persuade them to get most appropriate medical cares.
4) In Japan, many ex-patients haven't received WHO-MDT when their disease was active, so the observation is inevitable to find early sign of relapse. Now we have 4 cases having some active signs of HD. In one relapsed case, drug-resistance related mutations were found in 3 drugs; DDS, RFP, and OFX. In Japan, multi-drug resistance is not rare in relapsed cases.
5) Through frequent study, many volunteers, students, Buddhists' group etc. achieved good understanding about HD. They supported and encouraged ex-patients to step in the local

community. Now friendly communication between ex-patients and local citizens has been emerging and growing.

Conclusion: We have 1.5 ex-patients each day together with many local citizens. In our community, although it's small, real integration of HD was achieved, getting good understanding of local citizens. We must also emphasize the great contribution of IDEA-Japan, many MSWs and ex-patients' association; they did a wonderful cooperation with us in the 3rd Workshop on Sentinel Surveillance for Drug-Resistance in Leprosy held in Tokyo (WHO Global Leprosy Program; Nov. 2010)

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Presentation Time: **Wednesday 18/09/2013 at 15:30 – 15:40**
Abstract Topic Name: **Social Aspects and Quality of Life**
Presentation Screen Number: **8**
Presenter: Uday Thakar

INVOLVEMENT OF THE SCHOOL/COLLEGE STUDENTS IN LEPROSY AWARENESS PROGRAMME.

U. H. Thakar [1,*], N. J. Koli [2], V. V. Pai [3], V. J. Kathe [4]

[1]hind kushtha nivaran sangh, Mumbai, [2]Kustharog Nivaran Samiti-Shantivan, Panvel, [3]Bombay Leprosy Project, [4]Acworth Leprosy Hospital Research Society, Mumbai, India

Introduction: Kushtarog Niwaran Samiti, Shantivan Panvel is situated at 55 kms from Mumbai which runs 8 SET Centres and 1 Urban Leprosy Centre. School students are the main force if their strength is properly utilized in generating awareness on leprosy. Shantivan has been organizing "Shram Sanskar Shibirs" (Camps) since 1981. We share our observations on how student community and teaching faculty can contribute to leprosy awareness activity in the community.

Methods: Three & half day (residential) programme is in place to create awareness amongst the students on Leprosy & social problems.
During their camp they are given scientific orientation in leprosy with slides and film shows. Students are also involved in other activities at Shantivan. During last 31 years, 1295 schools, 432 D.Ed, B.Ed. & other colleges participated through 1,50,945 Students and 13,240 Teachers & Professors. The project is economically self-sufficient as the students bear their own expenses. Maharashtra State Road Transport Corporation is giving special concession for the students.

Results: *Stigma & discrimination reduced * Society based rehabilitation became possible * Message that Leprosy is curable disseminated to 15,00,000 people * 150 + students choose leprosy field as their carrier * In true sense it has become people programmes * School teachers willingly accepted the responsibility of case holding * Students are involved in fund raising activity

Conclusion: This activity of involving students & teaching faculty goes a long way in creating leprosy awareness in the community and eliminating stigma.

P-388

Presentation Time: **Wednesday 18/09/2013 at 15:40 – 15:50**
Abstract Topic Name: **Social Aspects and Quality of Life**
Presentation Screen Number: **8**
Presenter: Rajni Singh

"PAHAL (FIRST INITIATION OF INNOVATION)" A SUSTAINABLE APPROACH -VILLAGE HEALTH FORUM CONCEPT IN BIHAR"

G. C. Srivastav [1], A. Singh [1], P. V. Rangnadha Rao [2], R. K. Singh [1,*]

[1]NGO, LEPRA Society, Patna, [2]NGO, LEPRA Society, Hyderabad, India

Introduction: LEPRA Society executed a community health project focusing on Leprosy, Tuberculosis, Lymphatic Filariasis (LF), Kalazar and HIV/AIDS in four districts with the support of Iris Aid in Bihar. The concept of this project is to empower the community to identify their health needs and get benefitted from national health programme.
To improve the health status and health seeking behaviors of the community by formation of Village based forum (Village Health Forum).

Methods: A base line study carried out and Village health registers were designed. Volunteers from the community were identified to maintain these registers in 100 implementing villages and Village Health Forum were formed. The Village Health Forum consists of 11-13 members from the same village which includes Angan Wadi Workers, Panchayati Raj Institution members, Accredited Social Health Activists, Traditional healers, Rural Medical Practitioners, Teachers, ANMs, Religious leaders, etc. They were trained in all the said disease for early identification of suspect cases and their referrals to the Primary Health Centre. In the initial phase these forums were supported and monitored by Community Health Organizer (CHO) of LEPRA Society.

Results: The 100 Village Health forums were formed with adequate Members from the same villages. The Office of this forum is in either Panchayat Bhawan, ASHA's House, or Community Building. They meet every month with an agenda. Within 3 years 31879 cases (Leprosy, TB, LF, and Kalazar) were benefitted. 138 Hydrocele surgeries were done in District Hospitals. More than 60% of the Village Health Forums are acting on their own in these three years. 5954 new cases of Leprosy, Lymphatic Fialariasis, TB and leshminiasis (Kalazar) were confirmed by PHCs, which were referred by these forums. These forums have referral slip system which makes it easy to monitor referrals.

Conclusion: This is good sustainable model in the community. It future it can merge with Village Health & Sanitation committee of Nation Rural Health Mission programme. Community is more actively participating in Govt. health scheme and benefitted by Govt. National Health Programmes. The best part of this forum is key stake holders are from the same community, are monitoring on their own and part of decision making process.
This is very good model which will sustainable in the community. It future course it will merge with Village Health & Sanitation committee of Nation Rural Health Mission programme. Community was now much more actively participating in Govt. health scheme and now benefitting by govt. National health Programme. The best part of this forum is the entire key stake holder from the same community, they are monitoring their own and part of decision making process.
This is a good community led sustainable network which helps in identification of suspect cases at an early stage and their timely referrals. Similar models could be replicated in other parts of the country. Village Health Register adopted in the project helps the volunteers like ASHA in tracking of cases of various diseases, which on one hand help early referrals and on the other helps these volunteers to earn incentives from national health programmes, which keeps them motivated.

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Presentation Time: **Wednesday 18/09/2013 at 15:50 – 16:00**
Abstract Topic Name: **Social Aspects and Quality of Life**
Presentation Screen Number: **8**
Presenter: Shirish Shegaonkar

INTEGRATED SELF HELP GROUP DEVELOPMENT (CASE STUDY FROM CDI PROJECT KARNATAKA, INDIA)

S. D. Shegaonkar [1,*], S. J. Katti [1], T. D. Mendis [1]

[1]Livelihood Projects, The Leprosy Mission Trust India, Belgaum, India

Introduction: Although illegal, the devadasi custom has been in place for centuries and involves dedicating young girls at the temple so they are able to 'provide sexual services' to the men of their community. Belgaum District in the north of Karnataka, India has been a traditional home of the devadasi practice. However, it is not only devadasi in these communities who are marginalized and subject to human rights abuses. Other marginalized groups including people affected by leprosy, people living with HIV, People with disability and those from scheduled castes and tribes, many of whom are discriminated against. Their social exclusion, health issues and lack of empowerment have led to a downwards spiral into extreme poverty. The Choice Dignity & Integration project focused on increasing the earning capacity of People affected by leprosy. Devdasi & Other Disability; improved access to regular – mainstream – services and resources; women empowerment and ultimately it is expected that through this program the socio-economic status of its target will be uplifted and in so doing improve the quality life of the clients.
One such SHG is Karemma Devi SHG Mavnoor Village Hukerri Taluka in Belgaum, Karnataka. A volunteer of the village willing to help improve the living conditions of the residents of the village underwent the pre-requisite training and facilitated the formation of Karemma Devi SHG

Basis of Integration: Total 17 females in the Self Help Group (5 People affected by Leprosy, 5 from General Disability, 4 Ex- Devdasis and three from Backward class) were organized in a group and facilitated to move ahead to improve their living conditions.

Methods: Data was collected largely from documentation, records, interviews, Focus Group discussion direct observations and participant observation.

Results: Self Help Group Micro finance activities has reduced the incidence of poverty through increase in income, enabled the poor to build assets and thereby reduce their vulnerability. and increased community participation like involved in Gramsabha meeting in the village level Panchayat.

Conclusion: The Study has revealed that the leprosy affected and other disabled has shown increased participation in the decision-making process. The group members has shown increased social acceptance and approach to the holistic, sustainable, integrated, development of human life Micro-Credit System.

P-099

Presentation Time: Wednesday 18/09/2013 at 15:40 – 15:50
Abstract Topic Name: Immunology
Presentation Screen Number: 9
Presenter: Yulianto Listiawan

COMPARISON EXPRESSION OF TLR2/1, NF-κB P105/P50, NF-κB P65 AND TNF-κ IN MACROPHAGES OF ERYTHEMA NODOSUM LEPROSUM WITH MULTIBACILLARY LEPROSY PATIENT AS MARKERS OF INNATE IMMUNITY ACTIVITY

Y. Listiawan [1,*], C. R. S. Prakoeswa [1], I. Agusni [1]

[1]Dermatovenereology, Dr. Soetomo Hospital / Airlangga University School of Medicine, Surabaya, Indonesia

Introduction: Erythema Nodosum Leprosum (ENL) is one of the complication in Multibacillary (MB) leprosy. Wewambu in 1969 proposed a theory that ENL is based on the mechanism of hypersensitivity type 3 (Arthus-like phenomenon), with histopathology finding shows abundant of neutrophil as an inflammatory cells. But however, this theory remains difficult to prove. The cause, mechanism, and treatment of ENL also remain highly problematic. Previous studies revealed a high level of TNF-α in circulation and skin as well on ENL, whereas this phenomenon can not be explained by complex immune theory. Detailed mechanism of TNF-α increased during ENL is still unclear and no studies have obtained the expression of TNF-α, especially in macrophages, which is the primary host cell for *M. leprae* in dermis layer. This studies have identified possible evidence involvement of innate immune system in acute episode of ENL, based on the high level of TNF α. Objective of this study is to compare the expression of TLR2/1, NF-κBp105/p50, NF κBp65, TNF α, which are significantly different in ENL patient than in MB patient without ENL as a marker to the involvement of innate immunity.

Methods: A cross sectional study design has been performed using 21 ENL and 21 MB leprosy patients without ENL as a comparison group, in Out Patient Clinic of Dr. Soetomo Hospital, on February 2010 until December 2010. Immunohistochemical staining method using specific monoclonal antibody for TLR2/1, NF-κBp105/p50, NF-κBp65 and TNF-α was performed to both groups to determine the expression of dermis macrophages cells. Statistical analysis was performed using Mann-Whitney U test.

Results: The result showed significant different expression of TLR2/1 (p = 0,00), NF-κBp105/p50 (p = 0,00), NF-κBp65 (p= 0,00), and TNF-α (p =0,00) in dermis macrophages between ENL group and MB leprosy without ENL group.

Conclusion: The innate immunity was activated during ENL reaction, as shown by strong higher expression in TLR 2/1, NF-κB p105/p50, NF-κB p65, and this is caused by the increased of TNF-α expression.

P-100

Presentation Time: Wednesday 18/09/2013 at 15:50 – 16:00
Abstract Topic Name: Immunology
Presentation Screen Number: 9
Presenter: Ramanuj Lahiri

IN SEARCH OF A SURROGATE MARKER FOR PROTECTIVE IMMUNITY IN M. LEPRAE INFECTION.

R. Lahiri [1,*], B. Randhawa [1], L. B. Adams [1], N. A. Ray [1], N. Y. Robbins [1], M. S. Duthie [2], M. Dietrich [3], T. P. Gillis [1]

[1]DHHS/HRSA/HSB/National Hansen's Disease Programs, Baton Rouge, [2]IDRI, Seattle, [3]Pathobiological Sciences, Louisiana State University, Baton Rouge, United States

Introduction: Understanding protective immunity to *Mycobacterium leprae* infection is fundamental to guiding vaccine development and clarifying the distinguishing characteristics of susceptibility and resistance to leprosy. This study used previously identified protective and non-protective antigens to ascertain the nature of protective immunity against *M. leprae* infection in mouse foot pad model.

Methods: C57BL/6 mice were vaccinated with either heat killed *M. leprae* (HKML), recombinant ML85B, recombinant ML46f, or adjuvant alone. EM005, a proprietary formulation was used as adjuvant. After vaccination mice were challenged with a high dose of live *M. leprae* ($1x10^6$/ hind foot pad). Lymph nodes and foot pads were harvested at 4, 6, 8 and 12 weeks post challenge for characterization of the extracted cells by flow cytometry.

Results: ML85B and HKML, antigens capable of providing protection in the mouse foot pad model, elicit a strong local influx of $CD4^+$ cells after a high dose challenge. A $CD4^+$ T cell influx was not observed when mice were immunized with ML46f an antigen incapable of conferring protection. The majority of the $CD4^+$ cells present in the foot pads of heat-killed *M. leprae* and ML85B vaccinated mice were of activated ($CD44^{hi}$, $CD62^{low}$) phenotype when compared to ML46f or adjuvant alone treated mice ($P<0.001$). Although the influx of activated $CD8^+$ T cells in the foot pads of heat-killed *M. leprae* and ML85B vaccinated mice was much reduced when compared to $CD4^+$ T cell influx, the majority of $CD8^+$ T cells present in the foot pads of heat-killed *M. leprae* and ML85B vaccinated mice were also of activated phenotype. Similar results were obtained when primed / memory ($CD44^{hi}$, $CD45RB^{low}$) $CD4^+$ T cells were assessed. The importance of $CD4^+$ T cells in the protective response against *M. leprae* was further established using knock-out mice where CD8 knock-outs were protected following immunization with heat-killed *M. leprae*. In contrast, no protection was observed in CD4 knock-out mice following the same immunization protocol.

Conclusion: This study implicates $CD4^+$ T cells as major cellular components of protection against *M. leprae* in the mouse model. Defining the proper correlate(s) of protective immunity, can provide an evaluation tool that can be used to streamline vaccine testing by shortening the time necessary for assessing effective vaccines and provide potential measures for monitoring vaccine efficacy in humans.

P-345

Presentation Time: Wednesday 18/09/2013 at 15:30 – 15:40
Abstract Topic Name: Promoting Early Diagnosis
Presentation Screen Number: 10
Presenter: Harald Schmid de Gruneck

ACTIVE CASE-FINDING AMONG CONTACTS OF FORMER LEPROSY PATIENTS FOR THE IMPROVEMENT IN EARLY CASE DETECTION

H. Schmid De Gruneck [1,*], K. Lai [2]

[1]Campaigne Internationale de l'Ordre de Malte contre la Lepre (CIOMAL), [2]Cambodian National Leprosy Elimination Program (NLEP), Phnom Penh, Cambodia

Introduction: Early detection of leprosy is essential to leprosy control. Detection is increasingly challenged by shrinking resources and skills, as well as low endemicity and therefore requires more strategic and efficient detection campaigns. Active case-finding among the contacts of both current and former patients, diagnosed years ago, brings new potential to early case detection.

Methods: In 2011, **former** patients, diagnosed between 2001 and 2010, were contacted and visited at home, in districts with an endemicty ranging from 1.78/10,000 to less than 0.5/10,000 inhabitants; visits were made to examine their household members and neighbors.
In parallel, the populations in the districts concerned were invited to attend theater performances on leprosy.

Results: Between 2011 and 2012, four campaigns, covering 30 of the 76 cambodian districts were conducted, detecting **379 new leprosy cases**; 10.5% were children below 15 and 6.9% Disability Grade II cases, thereby indicating a delay in detection which resulted in continued transmission and accumulation of undetected cases.
An average of 14.12 cases per district were detected in the 25 districts with theater performances, compared with only 5.2 cases per district in the 5 districts where no theater performances took place.
While in recent years the **average** yearly number of new leprosy cases was decreasing gradually (from 740 in 2002 to 262 in 2010), it started increasing again as from 2011 when those campaigns started (314 in 2011 and 475 in 2012).

Conclusion: While more evidence is necessary, data first indicators suggest promising results. Campaigns have detected up to 83% of leprosy cases early, before transmission expanded and disabilities occurred.
By complementing medical examinations of the contacts of former patients, with awareness/knowledge raising mobile theater performances, campaigns gained in efficiency, with respect to number of cases detected early, the capacity-building of the leprosy supervisors/health staff and the knowledge enhancement/stigma reduction of families and neighbors concerned.

P-333

Presentation Time: Wednesday 18/09/2013 at 15:40 – 15:50
Abstract Topic Name: Promoting Early Diagnosis
Presentation Screen Number: 10
Presenter: Dr Hiren Narendrabhai Thanki

FINDINGS OF THE SPECIAL ACTIVITY PLAN (SAP) IN 9 HIGH ENDEMIC DISTRICTS OF GUJARAT STATE IN INDIA.

H. N. Thanki [1,*], P. V. Dave [2], K. R. Pujara [3], A. B. Parmar [4], R. Singh [5], G. Srinivas [6]

[1]GLRA Gujarat Coordination Project, German Leprosy and TB Relief Association (GLRA India), [2]Additional Director (Public Health), [3]State Leprosy Officer, [4]Medical Officer (Leprosy Training), SIHFW, Health and Family Welfare Department, Government of Gujarat, Gandhinagar, [5]German Leprosy and TB Relief Association, Northern Regional Office, Delhi, [6]GLRA India Central Office, German Leprosy and TB Relief Association (GLRA India), Chennai, India

Introduction: SAP was recommended and funded by Government of India for the year 2012-13 to improve early case detection in 209 districts (where Annual New Case Detection Rate {ANCDR} >10 /1,00,000 Population) of India as a part of Result Based Activity for the 12th five year plan

(2012-2017). Gujarat state proposed a special activity plan for 9 high endemic districts. This SAP consisted of active search, capacity building of staff, Information Education Communication (IEC) awareness drive, enhanced monitoring with supervision and validation of cases. Technical details were prepared and activities facilitated by GLRA India as an ILEP partner in Gujarat.
Gujarat state achieved elimination status (Prevalence Rate · PR <1/10,000 Population) in October 2004. The PR (per 10,000 population) was 0.82 and 0.81 in the year 2007 and 2012 respectively. Annual new case detection rate (per 1,00,000 population) of the state was 12.4 in 2007 and 12.2 in 2012. A Total of 7228 (March 2008) and 7496 (March 2012) new leprosy cases were detected in the state. Out of the total new cases detected in India, Gujarat state contributed 5.7% (2011) and 6% (2012) towards the same. The grade 2 proportion was 2.7 (2007) and 2.3 (2012) while the child proportion was 10.2 (2007) and 9.3 (2012).

Methods: Sixty six blocks of 9 districts were covered. A detailed subcenter level micro planning was done. An intensive IEC awareness drive was carried out for 15 days, there after house to house survey was completed. Each survey team consisted of a health supervisor or a male multipurpose health worker (MPW) and a female multipurpose health worker, an ASHA (Accredited Social Health Activist) or a community volunteer. A Total of 3591 survey teams were formed. A survey of 10 days for Dang district (hard to reach tribal area) and 6 days for each of the remaining 8 districts was completed. There were 4 levels of training organised for SAP. Block health officers, Medical officers, Health workers and ASHA-community volunteers were trained subsequently at State, District, Block and PHC levels.

Results: A population of 1,19,00,169 was enumerated and 89,46,390 were examined out of a total population of 2,09,92,793 as the urban area was not covered. 5497 villages were surveyed. A Total of 2,704 new leprosy cases were detected, of which 71.6% (n=1937) cases were validated by the district nucleus team and remaining cases validated by the medical officers. 36% new leprosy cases were detected during SAP activity in comparison to the average number of total cases detected each year (7398 in 11th five year plan period 2007-2012).

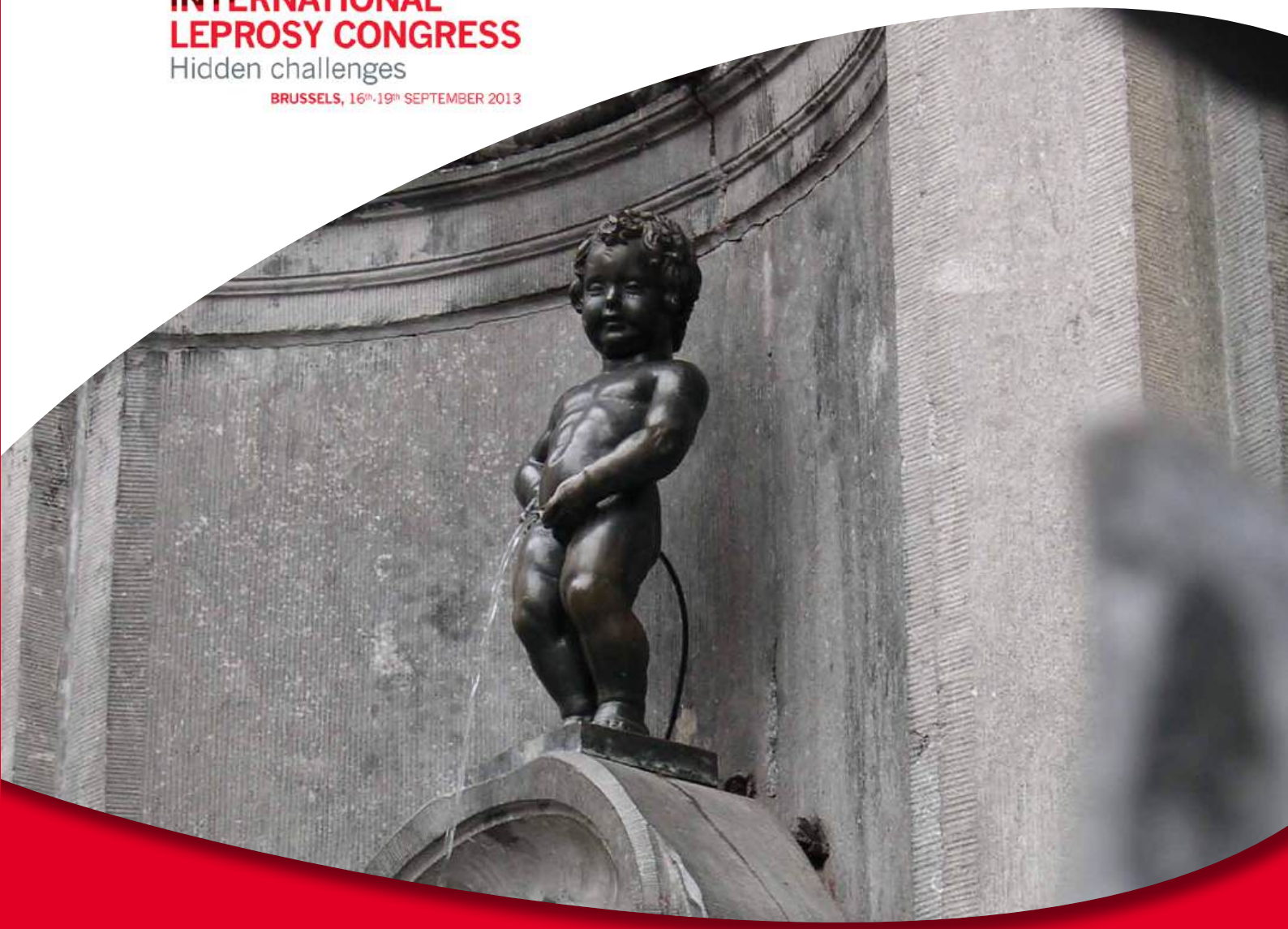
Conclusion: A total of 4407 new leprosy cases were detected during the regular programme before the SAP. SAP indicators (Grade 2 proportion, child proportion) are similar to state's annual indicators except the MB proportion (31.3) which shows early detection and New Case Detection Rate of 22.2 (NCDR per 1,00,000 population) which indicates disease endemicity in high endemic districts. SAP NCDR was 22.2 in comparison to the state's average ANCDR of 12.2 (2008-2012) which shows well organised grass root level activities with intensive supervision and monitoring. Therefore regular SAP is essential to promote early case detection and achieve the 12th five year plan objectives of the National leprosy eradication programme (NLEP).

18th

INTERNATIONAL LEPROSY CONGRESS

Hidden challenges

BRUSSELS, 16th-19th SEPTEMBER 2013



Thursday 19 September 2013

Programme

HIDDEN CHALLENGES

DAY AT A GLANCE

Thursday 19 September 2013

09:00 - 10:30	**Plenary Session 3: Reducing transmission** **Chair:** *Cairns Smith* **Speakers:** *Prof Stewart Cole, Prof Annemiek Geluk, Prof Jan Henrik Richardus* — **Plenary Room A & B • Level 1**					
10:30 - 11:00	*Coffee Break and ePoster sessions* **Foyer • Level 0**					
11:00 - 12:30	**Session 37**	**Session 38**	**Session 39**	**Session 40**	**Session 41**	**Session 42**
	Detection and Treatment of Reactions	**Social Aspects and Quality of Life**	**Genetics and Leprosy**	**Leprosy Control**	**Reconstructive Surgery**	**Specialised Centres**
	Work Group Area	**Room C & D**	**Room E & F**	**Plenary Room A & B**	**Room 1 & 2**	**Room 3 & 4**
12:30 - 14:00	*Lunch and ePoster sessions* **Foyer • Level 0**					
14:00 - 15:30	**Session 43**	**Session 44**	**Session 45**	**Session 46**	**Session 47**	**Session 48**
	Chemotherapy - Newer Drugs	**Human Rights and Advocacy**	**Immunology 3**	**Innovative Approaches**	**Community Based Rehabilitation**	**Eye in Leprosy**
	Work Group Area	**Room E & F**	**Room 3 & 4**	**Plenary Room A & B**	**Room C & D**	**Room 1 & 2**
15:30 - 16:00	*Coffee Break and ePoster sessions* **Foyer • Level 0**					
16:00 - 17:00	**Closing Ceremony** — **Plenary Room A & B • Level 1**					
17:00 - 18:00	**ILA General Meeting** — **Plenary Room A & B • Level 1**					

Thursday 19 SEPTEMBER 2013

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Room: Work Group Area

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O-200
POST-MDT LEPROSY NEUROPATHY: DIFFERENTIALLY DIAGNOSING REACTIONAL NEURITIS AND RELAPSES
Presenter: *Sérgio Luiz Antunes*

O-201
GLOBAL GENE EXPRESSION STUDIES OF PBMC DURING REVERSAL REACTIONS SHOW INCREASED EXPRESSION OF MICROBIAL RECOGNITION RECEPTORS
Presenter: *Kathryn Dupnik*

O-202
RCT ASSESSING CICLOSPORIN IN TYPE 1 REACTION TREATMENT, IN ETHIOPIA
Presenter: *Saba Lambert*

O-203
MIXED DC/MACROPHAGE LINEAGE PHENOTYPES IN ACTIVATED LEPROMATOUS LESIONS DURING REVERSE REACTION
Presenter: *Priscila Andrade*

O-204
RCT OF AZATHIOPRINE VERSUS PREDNISOLONE IN THE TREATMENT OF TYPE 1 REACTION AND NEURITIS
Presenter: *Dr Annamma John*

Social Aspects and Quality of Life

Chair: *Mrs Janine Ebenso*
Room: C & D

O-205
LIFE COURSE PERSPECTIVES ON EXPERIENCES OF AND RESPONSES TO LEPROSY-RELATED STIGMA IN WESTERN NIGERIA
Presenter: *Bassey Ebenso*

O-206
ASSESSING SOCIAL DISTANCE AS STIGMA PREDICTOR: EXPLORING SILENT STIGMA TOWARDS PEOPLE AFFECTED BY LEPROSY FROM A COMMUNITY PERSPECTIVE IN INDONESIA
Presenter: *Dadun Dadun*

O-207
UNDERSTANDING ADVERSE EXPERIENCES IN A STIGMA REDUCTION PROJECT IN CIREBON, INDONESIA; DIAGNOSIS AND CONCEALMENT
Presenter: *Ruth Peters*

O-208
A CASE-CONTROL STUDY COMPARING THE QUALITY OF LIFE OF PATIENTS UNDERGOING LEPROSY TREATMENT TO PEOPLE CURED OF LEPROSY AND CONTROLS IN VIET NAM
Presenter: *William Hunt*

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DISABILITY ADJUSTED WORKING LIFE YEARS (DAWLYS) OF LEPROSY AFFECTED PERSONS IN INDIA
Presenter: *Mr Royce Kurian*

O-210
LIFE SATISFACTION AND STIGMA PROFILE OF LEPROSY PATIENTS WHO HAVE BEEN RELEASED FROM TREATMENT
Presenter: *Mrs Valsa Augustine*

Genetics in Leprosy

Chair: *Professor Indira Nath*
Room: E & F

O-211
GENETIC SUSCEPTIBILITY AND SKIN CHEMOKINE EXPRESSION ACROSS THE SPECTRUM OF LEPROSY
Presenter: *Dr Deanna Hagge*

O-212
VITAMIN D RECEPTOR GENE POLYMORPHISMS AND ITS ROLE IN LEPROSY SPECTRUM
Presenter: *Mr Venkata Sanjeev Kumar Neela*

O-213
GENETIC RESEARCH OF LEPROSY
Presenter: *Prof Furen Zhang*

O-214
GENOTYPE IMPUTATION ANALYSIS OF LEPROSY SUSCEPTIBILITY GENE IN THAI POPULATION
Presenter: *Ms Sukanya Wattanapokayakit*

O-215
HUMAN GENETICS OF LEPROSY POLARIZATION
Presenter: *Jean Gaschignard*

O-216
GENETIC DIVERSION OF NAT2 AND CYP2E1 GENES IN LEPROSY PATIENTS FROM THREE DIFFERENT GEOGRAPHIC REGIONS FROM BRAZIL
Presenter: *Adalberto Santos*

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Chair: *Dr P Krishnamurthy*
Room: A & B

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PATIENTS' PERCEPTIONS ON DISCLOSURE OF LEPROSY BY HEALTH CARE PROVIDERS IN SOUTH INDIA: RELEVANCE TO LEPROSY CONTROL
Presenter: *Thilakavathi Subramanian*

O-218

COST-EFFECTIVENESS ANALYSIS OF COMBINED ACTIVE AND PASSIVE VERSUS PASSIVE LEPROSY CASE DETECTION ALONE IN THAILAND
Presenter: *Weena Primkaew*

O-219

COPING WITH LEPROSY IN A LOW-ENDEMIC COUNTRY: THE SURVEILLANCE PERSPECTIVE
Presenter: *Mary Gorreth Nabukenya-Mudiope*

O-220

EARLY NERVE FUNCTION IMPAIRMENT IN LEPROSY AND ITS CORRELATES IN THE POST ELIMINATION ERA
Presenter: *Dr Annamma John*

O-221

EPIDEMIOLOGICAL STUDY OF RESETTLEMENT VILLAGE OF CURED LEPROSY PATIENTS FROM A LOW ENDEMIC AREA IN MAHARASHTRA (INDIA)
Presenter: *Rupendra Jadhav*

O-222

HANSEN'S DISEASE TRAINING AND SURVEILLANCE MEASURES IN THE U.S.-AFFILIATED PACIFIC ISLANDS, 2012-2013
Presenter: *Thomas Doker*

Reconstructive Surgery

Chair: *Dr Mannam Ebenezer*
Room: 1 & 2

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LONG TERM OUTCOME OF TIBIALIS POSTERIOR TRANSFER FOR CORRECTION OF FOOT DROP IN LEPROSY: REPORT FROM REGIONAL LEPROSY TRAINING AND RESEARCH INSTITUTE SERVING AN ENDEMIC AREA IN INDIA
Presenter: *Krishnamurti Kamble*

O-224

MODIFICATION OF THE SURGICAL CORRECTION OF LUMBRICAL REPLACEMENT - A LONG TERM FOLLOW UP
Presenter: *Sreepuram Reddy*

O-225

FACTORS IMPACTING FORM AND FUNCTION OF HAND FOLLOWING CLAW CORRECTION USING LASSO PROCEDURE
Presenter: *Dr Mannam Ebenezer*

O-226

FEASIBILITY OF RECONSTRUCTIVE SURGERY AND ITS IMPACT IN GENERAL HEALTH CARE INCLUDING EVALUATION RESULT
Presenter: *Dr Surendra Pati*

O-227

A LONG TERM ASSESSMENT OF FUNCTIONAL, ECONOMICAL AND SOCIAL BENEFITS OF RECONSTRUCTIVE SURGERY AMONG 125 LEPROSY PATIENTS WITH HAND DEFORMITIES
Presenter: *Stanley Kingsley*

Specialised Centres

Chair: *Dr Shyamala Anand*
Room: 3 & 4

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TIME TRENDS IN MB -PB RATIO AMONG UNTREATED LEPROSY PATIENTS ATTENDING A REFERRAL HOSPITAL IN UP, INDIA DURING 2001 TO 2010
Presenter: *Dr Premal Das*

O-230

DIABETIC STATUS IN LEPROSY PATIENTS IN TWO REFERRAL CENTRE IN BIHAR AND JHARKHAND, INDIA
Presenter: *Rajni Singh*

O-231

MONITORING PATIENT UPTAKE AND STRENGTHENING LEPROSY SERVICES THROUGH FAIRMED'S HOSPITAL INFORMATION SYSTEM (HIS)
Presenter: *Akshaya Mishra*

O-232

FAIRMED'S (FM) OUTPUT BASED AID (OBA): 6 YEARS OF PROVIDING LEPROSY SERVICES IN INDIA
Presenter: *John George*

O-233

THE EFFECTIVENESS OF PREVENTION OF IMPAIRMENT AND DISABILITY (POID) IN LEPROSY THROUGH TERTIARY LEPROSY REFERRAL HOSPITALS IN INDIA
Presenter: *Shyamala Anand*

14:00 – 15:30

Chemotherapy – Newer Drugs

Chair: *Dr Robert Gelber*
Room: Work Group Area

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THE DIARYLQUINOLINE BEDAQUILINE IS BACTERICIDAL AGAINST RAPIDLY MULTIPLYING M. LEPRAE IN MICE AT LOW DOSE AND ADMINISTERED INTERMITTENTLY
Presenter: *Robert Gelber*

O-235
ADVERSE EFFECTS OF AZATHIOPRINE IN AN RCT IN LEPROSY REACTIONS AND NEURITIS
Presenter: *Joydeepa Darlong*

O-236
2 MONTHS OFLOXACIN & SPARFLOXACIN FOLLOWED BY 12 MONTHS MB MDT IN LL TYPE LEPROSY WITH BI FIVE TO SIX
Presenter: *Amar Kant Jha Amar*

O-237
EFFICACY OF STATINS IN THE CONTROL OF M. LEPRAE AND M. TUBERCULOSIS INFECTION.
Presenter: *Flavio Lara*

O-238
THE ACTIVITY OF SEVERAL NEWER ANTIMICROBIALS AGAINST LOGARITHMICLY MULTIPLYING M. LEPRAE IN MICE
Presenter: *Robert Gelber*

O-239
MOXIFLOXACIN BASED REGIMENS IN LEPROSY – OBSERVATIONS ON OCCURRENCE OF REACTIONS AND BACTERIAL DECLINE
Presenter: *Vivek Pai*

Human Rights and Advocacy

Chair: *Anwei Law*
Room: E & F

O-240
ADDRESSING INEQUALITY AND EXCLUSION · PEOPLE AFFECTED BY LEPROSY'S OPINIONS AS TO WHAT SHOULD BE INCLUDED IN ANY POST MILLENNIUM DEVELOPMENT GOAL FRAMEWORK
Presenter: *Sian Arulanantham*

O-241
LOVE AND LEPROSY: IMAGES OF PAIN AND/OR COMFORT
Presenter: *Mr Jose Ramirez, Jr*

O-242
CHALLENGES OF EMBRACING A RIGHTS-BASED APPROACH TO DEVELOPMENT WHEN WORKING WITH PEOPLE AFFECTED BY LEPROSY
Presenter: *Mr Jacob Oommen*

O-243
CREATING AN INCLUSIVE SOCIETY
Presenter: *Ms Miyoji Morimoto*

O-244
AN EXPECTATION OF JUSTICE: 160 YEARS OF ADVOCACY AND RESISTANCE BY INDIVIDUALS DENIED THEIR HUMAN RIGHTS BECAUSE THEY HAD LEPROSY
Presenter: *Ms Anwei Law*

O-245
REUNITING FAMILIES IN GHANA – AN IMPORTANT STEP IN ENSURING HUMAN RIGHTS AND ELIMINATING STIGMA
Presenter: *Ms Kofi Nyarko*

Immunology 3

Chair: *Dr Mayara Barbosa*
Room: 3 & 4

O-246
THE EFFECT OF APOPTOTIC CELL RECOGNITION ON MACROPHAGE POLARIZATION AND MYCOBACTERIAL PERSISTENCE
Presenter: *Roberta Pinheiro*

O-247
CIRCULATORY AND LOCALIZED MRNA EXPRESSION PROFILES OF INTERLEUKIN 17F AND INTERLEUKIN 23 IN TYPE 1 (REVERSAL) REACTIONS OF LEPROSY
Presenter: *Vedithi Chaitanya*

O-248
METABOLOMICS REVEALS DRASTIC CHANGES IN IMMUNOMODULATORY POLYUNSATURATED FATTY ACIDS DURING LEPROSY AND UNCOVERS POTENTIAL MECHANISMS OF DISEASE TOLERANCE
Presenter: *Cristiana Macedo*

O-249
INSULIN-LIKE GROWTH FACTOR-I IN LEPROSY: POSSIBLE ROLE ON MACROPHAGE DEACTIVATION AND INTRACELLULAR MYCOBACTERIUM LEPRAE PERSISTENCE
Presenter: *Luciana Rodrigues*

O-250
ENROLLMENT OF IRON IN THE IMMUNOPATHOGENESIS OF LEPROMATOUS LEPROSY
Presenter: *Mayara Barbosa*

O-251
MOLECULAR MIMICRY BETWEEN MYCOBACTERIAL ANTIGENS AND HOST MYELIN BASIC PROTEIN
Presenter: *Itu Singh*

Innovative Approaches

Chair: *Dr York Lunau*

Room: A & B

O-252

CONTROL AND PREVENTION OF LEPROSY IN DIFFICULT TO REACH AREAS OF AMAZONAS, BRAZIL THROUGH TELEHEALTH TECHNOLOGY
Presenter: *Carolina Talhari*

O-253

ROLE OF SCHOOL CHILDREN IN LEPROSY CONTROL
Presenter: *Burchard Rwamtoga*

O-254

ROLE OF CONTACT SURVEY AND RING SURVEY IN DETECTING NEW CASES OF LEPROSY IN THE PRESENT SCENARIO
Presenter: *Mannam Ebenezer*

O-255

LOW COST EXTENDED CONTACT SURVEY FOR LEPROSY
Presenter: *Sheikh Hadi*

O-256

KINSHIP AND LEPROSY IN CONTACTS OF LEPROSY PATIENTS. COHORT AT THE SOUZA ARAÚJO OUTPATIENT CLINIC, RIO DE JANEIRO, RJ, 1987-2010
Presenter: *Daiane Santos*

O-268

EVALUATION THE IMPACT OF THE CONDITIONAL CASH TRANSFER PROGRAM "BOLASA FAMILIA" ON THE DETECTION RATE OF LEPROSY IN BRAZIL
Presenter: *Dr Jolida Nery*

Community Based Rehabilitation

Chair: *Dr Sunil Deepak*

Room: C & D

O-257

BENCH TO BASTI: A FRAMEWORK FOR TRANSLATIONAL RESEARCH IN LEPROSY
Presenter: *Pim Kuipers*

O-258

IMPACT OF COMMUNITY BASED INTERVENTIONS ON IMPROVING THE QUALITY OF LIFE OF PEOPLE AFFECTED BY LEPROSY AND GENERAL DISABILITY.
Presenter: *Shirish Shegaonkar*

O-259

LONG TERM IMPACT OF SOCIO ECONOMIC ASSISTANCE TO IMPROVE THE LIVELIHOOD OF PERSONS AFFECTED BY LEPROSY IN INDIA
Presenter: *Shivakumar Mugudalabetta*

O-260

ULTRA POVERTY ASSESSMENT AND INTERVENTIONS AMONG PEOPLE WITH LEPROSY RELATED DISABILITIES IN NORTH WEST BANGLADESH
Presenter: *Mr Bob Bowers*

O-261

UNEXPECTED FINDINGS IN A STUDY OF PARTICIPATION AND STIGMA: COMPARING PERSPECTIVES OF PEOPLE WITH LEPROSY AND OTHER DISABILITIES WITH PERSPECTIVES OF COMMUNITY MEMBERS
Presenter: *Mr Bob Bowers*

Eye In Leprosy

Chair: *Dr Ebenezer Daniel*

Room: 1 & 2

O-262

QUANTUM OF MYCOBACTERIA LEPRAE AND INCIDENT OCULAR COMPLICATIONS IN MULTI-BACILLARY LEPROSY
Presenter: *Ebenezer Daniel*

O-264

EFFICACY OF STEROID AND PHYSIOTHERAPY IN EARLY REPORTED LAGOPHTHALMOS
Presenter: *Krishnamurti Kamble*

O-265

INCIDENT OCULAR COMPLICATIONS ARE ASSOCIATED WITH HAND AND FEET DEFORMITIES IN MULTI-BACILLARY LEPROSY PATIENTS
Presenter: *Dr Sundar Rao*

10:30 – 11:00

Surgical Rehabilitation

Screen 1, 10:30 - 10:40 P-304

PROPOSAL FOR A PROSPECTIVE, RANDOMIZED TRIAL TO DETERMINE THE ROLE OF NERVE DECOMPRESSION IN LEPROSY NEUROPATHY
Presenter: *J.A Garbino*

Screen 1, 10:40 - 10:50 P-305

DYNAMIC RECONSTRUCTION FOR PARALYTIC LAGOPHTHALMOS OF LEPROSY WITH TEMPORALIS MUSCLE TENDON TRANSFER
Presenter: *Krishnamurti Kamble*

Screen 1, 10:50 - 11:00 P-306

DOES THE DECOMPRESSION OF THE PERIPHERAL NERVE MAY PREVENT THE PROGRESSION OF THE DEFORMITY IN LEPROSY
Presenter: *Sajid husain*

Epidemiological Surveillance

Screen 2, 10:30 - 10:40 P-193

TENDANCES DE LA DÉTECTION DES NOUVEAUX CAS DE LÈPRE PAR PROVINCES DE 2007 À 2012 AU BURUNDI
Presenter : *Sawadogo Michel*

Screen 2, 10:40 - 10:50 P-195

TRENDS OF TRANSMISSION OF LEPROSY IN THE ERA OF ONE YEAR MULTIDRUG THERAPY
Presenter: *Balachandra Ankad*

Screen 2, 10:50 - 11:00 P-196

STUDY ON THE DISCRIMINATION AND KNOWLEDGE OF MEDICAL STAFF IN LEPROSY CONTROL AGENCY TOWARDS LEPROSY
Presenter: *Mr Gao Yanwei and Mr Shen Yunliang*

ENL Reaction 2 and Dermatology

Screen 3, 10:30 - 10:40 P-325

LEPROMATOUS LEPROSY PRESENTING AS A TYPE 1 (REVERSAL) REACTION WITH ACUTE EDEMA AND PARESTHESIAS
Presenter: *Mara Dacso*

Screen 3, 10:40 - 10:50 P-326

B LYMPHOMA AND BL LEPROSY - CLINICAL AND HISTOPATHOLOGICAL CORRELATION
Presenter: *Dr Apolonio Nascimento*

Screen 3, 10:50 - 11:00 P-330

COMMON SKIN DISEASES AND HEALTH SEEKING BEHAVIOUR IN KANO STATE, NORTHERN NIGERIA
Presenter: *Erik Post*

Relapse and Drug Resistance

Screen 4, 10:30 - 10:40 P-262

PERSISTENCE OF VIABLE M. LEPRAE AFTER MDT (MBR) IN MULTIBACILLARY LEPROSY PATIENTS. IS THIS THE MISSING LINK IN LEPROSY ERADICATION?
Presenter: *Tarun Narang*

Screen 4, 10:40 - 10:50 P-263

MUTATION ANALYSIS OF MYCOBACTERIUM LEPRAE GENES AND DRUG RESISTANCE USING CULTIVABLE MYCOBACTERIA
Presenter: *Noboru Nakata*

Screen 4, 10:50 - 11:00 P-264

DRUG RESISTANCE MONITORING OF LEPROSY PATIENTS IN THE UNITED STATES
Presenter: *Thomas Gillis*

Leprosy Control

Screen 5, 10:30 - 10:40 P-424

ENHANCING THE ACCESS AND SUSTAINABILITY OF LEPROSY SERVICES IN PARTNERSHIP WITH CIVIL SOCIETY ORGANIZATIONS: EXPERIENCE FROM INDIA
Presenter: *Shivakumar Mugudalabetta*

Screen 5, 10:40 - 10:50 P-425

COST-EFFECTIVENESS ANALYSIS OF COMBINED ACTIVE AND PASSIVE VERSUS PASSIVE LEPROSY CASE DETECTION ALONE IN THAILAND
Presenter: *Weena Primkaew*

Screen 5, 10:50 - 11:00 P-426

STRENGTHENING THE MONITORING SYSTEM OF LEPROSY CONTROL ACTIVITIES AT PERIPHERAL LEVEL (PHC) USING A SIMPLE TASK ORIENTED PERFORMANCE MONITORING TOOL: A PILOT INITIATIVE IN 2 HIGH ENDIMIC DISTRICTS OF MAHARASHTRA, INDIA
Presenter: *Ashutosh Prabhavalkar*

Detection and Treatment of Reactions

Screen 6, 10:30 - 10:40 P-369

USE OF THALIDOMIDE IN TYPE II LEPRA REACTIONS IN PRIVATE DERMATOLOGICAL PRACTICE SETTING
Presenter: *Uday Thakar*

Screen 6, 10:40 - 10:50 P-370

INTRA AND INTER TESTER RELIABILITY OF NERVE PALPATION IN THOSE AFFECTED BY LEPROSY
Presenter: *Sathish Kumar Paul*

Screen 6, 10:50 - 11:00 P-371

MANAGEMENT OF REACTIONS - THERAPEUTIC CHALLENGES
Presenter: *Vivek Pai*

CBR

Screen 7, 10:30 - 10:40 P-481

INCLUSIVE LEPROSY COMMUNITY BASED REHABILITATION AND ITS IMPACT ON ACTIVITY DAILY LIVING AND SOCIAL PARTICIPATION OF PEOPLE WITH LEPROSY RELATED DISABILITIES IN KATPADI AND GUDIYATHAM BLOCK OF VELLORE DISTRICT, INDIA
Presenter: *Dr Mannam Ebenezer*

Screen 7, 10:40 - 10:50 P-475

THE IMPACT OF COMMUNITY BASED REHABILITATION: A SYSTEMATIC LITERATURE REVEIW, 2002-2012
Presenter: *Mr Bob Bowers*

12:30 – 14:00

Screen 7, 10:50 - 11:00 P-476

ROLE OF SELF HELP GROUPS (SHGS) IN PROMOTING SUSTAINABLE LIVELIHOOD OUTCOMES FOR INDIVIDUALS AFFECTED BY LEPROSY
Presenter: *Mr David Jaganathan*

Social Aspects and Quality of Life

Screen 8, 10:30 - 10:40 P-390

SOCIAL AUDIT OF INTEGRATED DISABILITY CARE CENTER AT REFERRAL MUNGER DISTRICT IN BIHAR, INDIA - A NEW INITIATIVE IN LEPROSY PROGRAMME
Presenter: *Rajni Singh*

Screen 8, 10:40 - 10:50 P-391

CREATION OF SELF-SUPPORT GROUP (SSG) AMONG DISABLED PERSON DUE TO LEPROSY AND LYMPHATIC FIALARIASIS AT VILLAGE PANCHAYAT LEVEL
Presenter: *Rajni Singh*

Screen 8, 10:50 - 11:00 P-392

A LONG WALK TO THE CHALLENGE FOR INTEGRATION AND INCLUSION FOR PALS
Presenter: *Mahamath Cisse*

Immunology

Screen 9, 10:30 - 10:40 P-102

PREDNISOLONE INDUCES A VARIABLE FALL IN TNF-A, ANTI- MYCOBACTERIAL AND ANTI-NEURAL ANTIBODIES ASSOCIATED WITH LEPROSY REACTION AND NEURITIS
Presenter: *Dr Renuka Raju*

Screen 9, 10:40 - 10:50 P-103

EVALUATION OF MACROPHAGE ACTIVITIY IN NUDE AND BALB/C MICE INOCULATED WITH MYCOBACTERIUM LEPRAE
Presenter: *Prof.Dr P.S. Rosa*

Screen 9, 10:50 - 11:00 P-104

FUNCTIONAL ASSESSMENT OF T LYMPHOCYTES SUBSETS INVOLVED IN THE PATHOGENESIS OF REACTIONAL EPISODES IN LEPROSY MULTIBACILLARY PATIENTS
Presenter: *Danuza Esquenazi*

Stigma

Screen 10, 10:30 - 10:40 P-018

LIFESTYLE AND USE THE USE OF TOBACCO AND ALCOHOL AMONG LEPROSY PATIENTS IN BURUNDI
Presenter: *Sawadogo Michel*

Screen 10, 10:40 - 10:50 P-019

COMMUNITY BASED REHABILITATION IS AN EFFECTIVE INTERVENTION TO INCREASED COMMUNITY PARTICIPATION & SOCIAL ACCEPTANCE OF LEPROSY AFFECTED TO IMPROVED QUALITY OF LIFE
Presenter: *Shirish Shegaonkar*

Screen 10, 10.50 - 11.00 P-029

EXPERIENCE FROM LEPROSY APPLIED TO THE REDUCTION OF STIGMA ASSOCIATED WITH FISTULA IN NIGER. BETWEEN HOPES AND CHALLENGES - THE CASE OF WOMEN IDENTIFIED AT THE SIM DANJA FISTULA CENTRE
Presenter: *Ms Yohanna Abdou*

Surgical Rehabilitation

Screen 1, 12:30 - 12:40 P-307

FACTORS INFLUENCING THE MOTIVATION OF NORTH INDIAN PATIENTS WITH INTRINSIC MINUS HAND OPTING FOR RECONSTRUCTIVE SURGERY
Presenter: *Pankaj Gupta*

Reconstructive Surgery

Screen 1, 12:40 - 12:50 P-440

RECONSTRUCTION OF SOLE OF THE FOOT FOLLOWING PLANTAR ULCERS
Presenter: *Dr Atul Shah*

Screen 1, 12:50 - 13:00 P-441

CORRECTION OF LAGOPHTHALMOS IN LEPROSY
Presenter: *Dr Atul Shah*

Screen 1, 13:00 - 13:10 P-442

A SIMPLE TECHNIQUE FOR CORRECTION OF TRANSVERSE METACARPAL ARCH AND ULNAR CLAW
Presenter: *Dr Atul Shah*

Screen 1, 13:10 - 13:20 P-443

FACTORS THAT DETER THE RETURN OF PATIENTS TO THE MAIN STREAM SOCIETY POST TENDON TRANSFER SURGERIES
Presenter: *Ms Latika Rewaria*

Screen 1, 13:20 - 13:30 P-444

IMMEDIATE EARLY ACTIVE MOTION VERSES CONVENTIONAL IMMOBILIZATION AFTER TENDON TRANSFER FOR CLAW HAND CORRECTION IN LEPROSY
Presenter: *Indra Napit*

Screen 1, 13:30 - 13:40 P-445

PLASTIC SURGERY OF THE ULNAR PARALYSES OF THE LEPROSY: OUR LOCAL EXPERIENCE IN DEMOCRATIC REPUBLIC OF CONGO
Presenter: *Anatole Kibadi Kapay*

Screen 1, 13:40 - 13:50 P-446

THE VARIOUS CAUSES FOR THE REJECTION OF RECONSTRUCTIVE SURGERY IN PATIENTS IN RURAL INDIA
Presenter: *Dr Mannam Ebenezer*

Screen 1, 13:50 - 14:00 P-447

DÉVELOPPEMENT DE LA CHIRURGIE LÉPREUSE EN RÉPUBLIQUE DÉMOCRATIQUE DU CONGO
Presenter : *Dr Matthieu Kiwele*

Epidemiological Surveillance

Screen 2, 12:30 - 12:40 P-197

ASSESSMENT OF THE QUALITY OF LEPROSY CONTROL SERVICES FROM THE MEDICAL STAFF'S PERSPECTIVE IN ZHEJIANG PROVINCE, CHINA
Presenters: *Mr Gao Yanwei and Mr Shen Yunliang*

Screen 2, 12:40 - 12:50 P-198

EVALUATING EFFECTS OF LEPROSY CASE FINDING AND HEALTH EDUCATION IN MIGRANT POPULATION IN ZHEJIANG PROVINCE, CHINA
Presenters: *Mr Gao Yanwei and Mr Shen Yunliang*

12:30 – 14:00

Screen 2, 12:50 - 13:00 P-199

THE ROLE OF RELAPSES ON MAINTENANCE OF LEPROSY DETECTION RATES IN A HIGHLY ENDEMIC MUNICIPALITY IN THE STATE OF MATO GROSSO, BRAZIL
Presenter: *Dr Patricia Rosa*

Screen 2, 13:00 - 13:10 P-200

VALUATION OF LEPROSY HEALTH EDUCATION AMONG RURAL RESIDENTS
Presenters: *Mr Gao Yanwei and Mr Shen Yunliang*

Screen 2, 13:10 - 13:20 P-201

MENTAL HEALTH STUDY ON PATIENTS LIVED IN GRASSROOTS LEPROSARIA OF ZHEJIANG PROVINCE, CHINA
Presenters: *Mr Gao Yanwei and Mr Shen Yunliang*

Screen 2, 13:20 - 13:30 P-202

STUDY ON THE FAMILY FUNCTION OF LEPROSY PATIENTS LIVED IN RURAL COMMUNITY
Presenters: *Mr Gao Yanwei and Mr Shen Yunliang*

Screen 2, 13:30 - 13:40 P-203

STUDY ON DISCRIMINATION TO CURED LEPROSY PATIENTS LIVING IN RURAL COMMUNITY AND ITS INFLUENCING FACTORS
Presenters: *Mr Gao Yanwei and Mr Shen Yunliang*

Screen 2, 13:40 - 13:50 P-204

COMPARISONS AND EVALUATIONS OF VARIOUS METHODS OF LEPROSY HEALTH EDUCATION AMONG MIDDLE SCHOOL STUDENTS
Presenters: *Mr Gao Yanwei and Mr Shen Yunliang*

Screen 2, 13:50 - 14:00 P-206

A DESCRIPTIVE STUDY OF HANSENIASIS DEATHS IN BRAZIL: THE USE OF LINKAGE TO IMPROVE VITAL INFORMATION
Presenters: *Mr Gao Yanwei and Mr Shen Yunliang*

ENL Reaction 2 and Dermatology

Screen 3, 12:30 - 12:40 P-328

REPORT OF RPOB (RIFAMPICIN) MUTATION IN A NEW CODON IN CLINICALLY SUSPECTED DRUG RESISTANCE LEPROSY CASES: A STUDY FROM EASTERN INDIA
Presenter: *Basudev Bhattacharya*

Screen 3, 12:40 - 12:50 P-329

ASSOCIATION OF SINGLE NUCLEOTIDE POLYMORPHISM (SNP) IN CYTOKINE GENOME WITH DIFFERENT ENTITIES OF LEPROSY AND AD THEIR ROLE IN DISEASE SUSCEPTIBILITY IN EASTERN INDIA
Presenter: *Basudev Bhattacharya*

Screen 3, 12:50 - 13:00 P-327

LEPROMATOUS LEPROSY AND PERIANAL TUBERCULOSIS IN THE SAME PATIENT
Presenter: *Joel Lastoria*

ENL Reactions 1

Screen 3, 13:00 - 13:10 P-120

PILOT TRIAL: METHYL SULPHONYL METHANE TREATMENT IN ERYTHEMA NODOSUM LEPROSUM
Presenter: *Dr Cita Rosita Prakoeswa*

Screen 3, 13:10 - 13:20 P-121

THE PROFILE OF SERUM TNF-Α AND CORTISOL IN ERYTHEMA NODOSUM LEPROSUM TREATED WITH METHYL SULPHONYL METHANE
Presenter: *Linda Astari*

Screen 3, 13:20 - 13:30 P-122

ERYTHEMA NODOSUM LEPROSUM IN THE PATIENTS WITH MULTIBACILLARY LEPROSY
Presenter: *Joel Lastoria*

Screen 3, 13:30 - 13:40 P-123

EVALUATING THE IMPACT OF THE THALIDOMIDE IN THE ERYTHEMA NODOSUM LEPROSUM (ENL) TREATMENT IN BRAZIL AFTER THE PUBLICATION OF THE RDC 11/2011
Presenter: *Elaine Morelo*

Eye in Leprosy

Screen 3, 13:40 - 13:50 P-492

OCULAR SURFACE DISORDER DIAGNOSIS AND MANAGEMENT IN LEPROSY – CURRENT CONCEPTS
Presenter: *Saibaba Alampur*

Screen 3, 13:50 - 14:00 P-493

SURGICAL EXPERIENCE IN OCULAR LEPROSY
Presenter: *Saibaba Alampur*

Relapse and Drug Resistance

Screen 4, 12:30 - 12:40 P-265

DRUG RESISTENCE DUE TO DAPSONE AND RIFAMPICIN ON MYCOBACTERIUM LEPRAE IN INDONESIA ENDEMIC POCKETS
Presenter: *Dr Cita Rosita Prakoeswa*

Screen 4, 12:40 - 12:50 P-266

THE GENDER ASPECTS OF THE INFLUENCE OF PHENOTROPIL ON THE PSYCHOEMOCIONAL STATUS OF RATS UNDER THE EFFECT OF DAPSONE
Presenter: *Svetlana Luzhnova*

Screen 4, 12:50 - 13:00 P-267

TO ANALYZE THE RELAPSE AMONG PATIENTS TREATED WITH MULTIDRUG THERAPY IN HUNAN PROVINCE, CHINA
Presenter: *Mr Zhonghe Wei*

Screen 4, 13:00 - 13:10 P-268

FOLLOW-UP OF 708 LEPROSY CASES RELEASED FROM TREATMENT DURING 2005-10 IN INDIA
Presenter: *Aparna Srikantam*

Genetics and Leprosy

Screen 4, 13:10 - 13:20 P-397

CHARACTERISTIC SNPS IN MYCOBACTERIUM LEPRAE ISOLATED IN JAPAN
Presenter: *Dr Masanori Kai*

Screen 4, 13:20 - 13:30 P-398

THE TISSUE RESPONSES OF VARIOUS MOLECULES IN SKIN, NERVE AND PLASMA TO M LEPRAE FOLLOW MENDELIAN & NON-MENDELIAN EPISTASIS RATIOS
Presenter: *Dr Renuka Raju*

Screen 4, 13:30 - 13:40 P-399

IMMUNOGENETIC OF LEPROSY. INTERETHNIC ASPECT
Presenter: *Prof Liudmila Saroyants*

Screen 4, 13:40 - 13:50 P-400

POLYMORPHISMS AT MMD GENE IN THE 17Q22 CHROMOSOME REGION ARE ASSOCIATED WITH LEPROSY SUSCEPTIBILITY IN BRAZILIAN POPULATION
Presenter: *Ana Carla Pereira Latini*

Screen 4, 13:50 - 14:00 P-401

A REPLICATION STUDY SUPPORTS NOD2 AND CCDC122 AS LEPROSY SUSCEPTIBILITY GENES
Presenter: *Heloisa Salomão*

Leprosy Control

Screen 5, 12:30 - 12:40 P-417

DEVELOPMENT OF NETWORK OF LEPROSY HEALTH SERVICES FOR LOW LEPROSY ENDEMIC SITUATION IN THAILAND
Presenter: *Boosbun Chua-Intra*

Screen 5 12:40 - 12:50 P-428

EVALUATION ON THE ACHIEVEMENT OF LEPROSY CONTROL PROGRAM FOR 60 YEARS IN HUBEI PROVINCE,CHINA
Presenter: *Wanghua Li*

Screen 5, 12:50 - 13:00 P-429

ANALYSIS OF MAIN NLEP INDICATORS IN THE STATE OF ASSAM, INDIA DURING LAST TWO DECADES AND THE ROLE OF INTERNATIONAL NGO
Presenter: *Natarajan Manimozhi*

Screen 5, 13:00 - 13:10 P-439

WHAT HAPPENS AT FIELD LEVEL WITH LOOSE CLOFAZIMINE IN THE TREATMENT OF ENL?
Presenter: *Erik Post*

Screen 5, 13:10 - 13:20 P-431

LEPROSY CONTROL PROGRAM IN CHINA: A 60 YEARS EXPERIENCE
Presenter: *Prof. Dr Guo Cheng Zhang*

Screen 5, 13:20 - 13:30 P-432

ASSESSMENT OF THE PERFORMANCE OF GENERAL HEALTH WORKERS IN LEPROSY CONTROL ACTIVITIES AT PUBLIC HEALTH FACILITIES, IN AMHARA AND OROMIYA REGIONS, ETHIOPIA
Presenter: *Mr Tadie Abeje*

Screen 5, 13:30 - 13:40 P-433

PARTICIPATION OF AYUSH PRACTITIONERS IN THE NATIONAL LEPROSY ERADICATION PROGRAMME IN INDIA - A PILOT STUDY
Presenter: *Dr G. Pitchaimani*

Screen 5, 13:40 - 13:50 P-434

POSSIBILITIES OF INVOLVING PARTNERS TO RETAIN EXPERTISE AND SUSTAIN LEPROSY SERVICES IN KURNOOL DISTRICT ANDHRA PRADESH – INDIA
Presenter: *Natarajan Manimozhi*

Screen 5, 13:50 - 14:00 P-435

LEPROSY CONTROL IN A LOW ENDEMIC SETTING – LEVERAGING MOBILE TELEPHONY FOR PROGRAMMING
Presenter: *Charles Nwafor*

Detection and Treatment of Reactions

Screen 6, 12:30 - 12:40 P-372

STUDY OF RECURRENCES AFTER THALIDOMIDE IN TYPE II REACTIONS AS MAINTAINANCE THERAPY
Presenter: *Vivek Pai*

Screen 6, 12:40 - 12:50 P-373

ISOLATED MEDIAN NEUROPATHY AS THE FIRST SYMPTOM OF LEPROSY
Presenter: *Sérgio Luiz Antunes*

Screen 6, 12:50 - 13:00 P-374

SEVERE NERVE DAMAGE IN MULTIBACILLAR LEPROSY TREATED WITH METHYLPREDNISOLONE PULSO THERAPY: A CASE REPORT
Presenter: *Marco Frade*

Screen 6, 13:10 - 13:20 P-377

DEFLAZACORT FOR MANAGEMENT OF TYPE 1 REACTION WITH NERVE DAMAGE IN LEPROSY
Presenter: *Dr Kiran Koduri*

Screen 6, 13:20 - 13:30 P-378

ULCERATED LEPROSY TYPE 1 REACTION PRESENTING WITH LEUKOCYTOCLASTIC VASCULITIS
Presenter: *Carolina Talhari*

Screen 6, 13:30 - 13:40 P-379

NEUROPATHIC PAIN IN LEPROSY PATIENTS IN MUMBAI: A CASE CONTROL STUDY
Presenter: *Omer Haroun*

Screen 6, 13:40 - 13:50 P-381

HIGH DOSES OF INTRAVENOUS METHYLPREDNISOLONE REESTABLISHES THE NERVE FUNCTION IN LEPROSY NEURITIS: A PILOT STUDY
Presenter: *Marco Frade*

Screen 6, 13:50 - 14:00 P-382

THE RELEVANCE OF DENTAL CARE IN LEPROSY CONTROL: EXPERIENCE FROM A REFERENCE SERVICE IN LEPROSY, SÃO PAULO, BRAZIL.
Presenter: *Manso Vânia*

CBR

Screen 7, 12:30 - 12:40 P-477

LIVELIHOOD INTERVENTIONS TOWARDS INCLUSIVE DEVELOPMENT FOR HEALING, INCLUSION AND DIGNITY OF INDIVIDUALS AFFECTED BY LEPROSY AND DIFFERENTLY ABLED PEOPLE
Presenter: *Jaganathan Kandasamy*

Screen 7, 12:40 - 12:50 P-478

RELEVANCE OF SAVING AND CREDIT CO-OPERATIVES TO THE EMPOWERMENT OF PERSONS WITH DISABILITIES:A DESCRIPTIVE STUDY IN ADDIS ABABA SLUMS
Presenter: *Ashenafi Demessie*

Screen 7, 12:50 - 13:00 P-479

INVESTIGATION AND ANALYSIS ON THE LIVING CONDITIONS OF LEPROSY REHABILITATION OUTSIDE THE HOSPITAL IN GANSU PROVINCE
Presenter: *Shumei Feng*

12:30 – 14:00

Screen 7, 13:00 - 13:10 P-487

UNDERSTANDING THE IMPACT OF MIXED SELF-HELP GROUPS AND ECONOMIC EMPOWERMENT ON THE SELF-RESPECT OF LEPROSY AFFECTED PEOPLE IN NEPAL
Presenter: *Shovakhar Kandel*

Screen 7, 13:10 - 13:20 P-474

LEPROSY REHABILITATION - CBR APPROCH
Presenter: *Jose Manikkathan*

Screen 7, 13:20 - 13:30 P-483

MODEL OF COMMUNITY BASED REHABILITATION FOR PEOPLE AFFECTED BY LEPROSY AFTER INTEGRATION OF LEPROSY COLONY TO GENERAL COMMUNITY : CASE STUDY OF PRASAT LEPROSY COLONY, THAILAND
Presenter: *Niyom Kraipui*

Screen 7, 13:30 - 13:40 P-484

INCLUSIVE SELF HELP GROUP: INCREASING HUMAN DIGNITY OF PEOPLE WITH LEPROSY AND OTHER CONDITION RELATED DISABILITIES
Presenter: *Niorn Ariyothai*

Screen 7, 13:40 - 13:50 P-485

THE MODEL OF PARTICIPATORY INTEGRATION OF LEPROSY COLONY INTO GENERAL COMMUNITY IN SURIN PROVINCE, THAILAND
Presenter: *Gomes Unarat*

Screen 7, 13:50 - 14:00 P-486

COMMUNITY BASED REHABILITATION FOR LEPROSY AFFECTED PEOPLE WITH DISABILITIES IN BANGLADESH THROUGH MICRO FINANCE : A REAL PICTURE OF SOCIAL INCLUSION OF DISABLED PEOPLE AND ITS SUBSEQUENT IMP
Presenter: *Mohammad Rahman*

Social Aspects and Quality of Life

Screen 8, 12:30 - 12:40 P-394

PROFESSIONAL AND EDUCATIONAL INCENTIVE FOR PATIENTS AFFECTED BY LEPROSY IN PORTO VELHO, RONDÔNIA, BRAZIL
Presenter: *Artur Gosling*

Screen 8, 12:40 - 12:50 P-395

NORMATIVE VALUE OF 18 ITEM PARTICIPATION SCALE IN LEPROSY LOW PREVALENT AREA IN KANCHANABURI PROVINCE, THAILAND
Presenter: *Siramas Rodchan*

Social Science

Screen 8, 12.50 - 13.00 P-272

ASSOCIATION BETWEEN DEPRESSIVE SYMPTOMS, CURRENT OCCUPATION AND DEGREE OF DISABILITY IN LEPROSY
Presenter: *Eliane Silva*

Nerve Funcion and Impairments

Screen 8, 13:00 - 13:10 P-062

NORMATIVE VALUES FOR MONOFILAMENT TESTING IN RADIAL CUTANEOUS AND SURAL NERVES
Presenter: *Inge Wagenaar*

Screen 8, 13:10 - 13:20 P-063

EVALUATION OF NERVE FUNCTION IMPAIRMENT (NFI) IN PAUCIBACILLARY LEPROSY (PB) PATIENTS ON WHO PAUCIBACILLARY MULTIDRUG THERAPY (PB - MDT) ALONG WITH OR WITHOUT CLOFAZIMINE
Presenter: *Chandrakant Poulkar*

Screen 8, 13:20 - 13-30 P-064

SKIN DENERVATION AND CORRELATION TO OBJECTIVE THERMAL SENSORY TEST IN LEPROSY PATIENTS
Presenter: *Prof. Dr Rosa Arantes*

Screen 8, 13:30 - 13-40 P-065

THERMOGRAPHY AS AN EARLY INDICATOR OF NERVE INJURY IN LEPROSY PATIENTS
Presenter: *Dr Isabela M. B. Goulart*

Screen 8, 13:40 - 13:50 P-066

CORRELATION BETWEEN NERVE CONDUCTION VELOCITY RESULTS AND VMT/ST IN PREDICTING THE PROGNOSIS IN PATIENTS WITH ACUTE NEURITIS
Presenter: *Mrinmoy Karmakar*

Screen 8, 13:50 - 14:00 P-067

RELIABILITY OF NERVE FUNCTION ASSESSMENT, INCLUDING THE SURAL AND RADIAL-CUTANEOUS NERVES: A MULTICENTRE, INTER-TESTER STUDY IN FOUR ASIAN COUNTRIES
Presenter: *Erik Post*

Immunology

Screen 9, 12:30 - 12:40 P-105

NEGLIGIBLE IL-12P70 PRODUCTION BY THE DCS FROM LEPROMATOUS PATIENTS
Presenter: *Vânia Brito de Souza*

Screen 9, 12:40 - 12:50 P-106

KROX-20 MODULATION DURING EXPERIMENTAL INFECTION BY MYCOBACTERIUM LEPRAE
Presenter: *Maria Renata Nogueira Costa*

Screen 9, 12:50 - 13:00 P-107

CIRCULATING NEUTROPHILS OF ERYTHEMA NODOSUM LEPROSUM PATIENTS CONSTITUTIVELY EXPRESS CD64
Presenter: *Roberta Pinheiro*

Screen 9, 13:00 - 13:10 P-108

SERUM LEVELS OF NEOPTERIN AND INTERLEUKIN-18 IN PATIENTS ON THE SPECTRUM OF LEPROSY AND IN THE REACTIONAL FORMS
Presenter: *Eliane Silva*

Screen 9, 13:10 - 13:20 P-109

SEROLOGIC PROFILE TO LID-1 AND PGL-I DURING LEPROSY REACTIONS
Presenter: *Mariane Stefani*

Screen 9, 13:20 - 13:30 P-110

DIFFERENTIAL DIAGNOSIS OF MULTIBACILLARY LEPROSY AND OTHER DERMATOSES: POTENTIAL APPLICATION OF SEROLOGY
Presenter: *Mariane Stefani*

Screen 9, 13:30 - 13:40 P-497

A DETRIMENTAL ROLE FOR TH17 AND TREGS SUBSETS IN THE CONTROL OF MYCOBACTERIUM LEPRAE MULTIPLICATION: IN VIVO EVIDENCES FROM KNOCKOUT MICE STRAINS
Presenter: *Patricia S Rosa*

Screen 9, 13:40 - 13:50 P-112

15:30 – 16:00

THE IMPACT OF MULTIDRUG THERAPY ON CELL MEDIATED AND HUMORAL IMMUNE RESPONSES TO MYCOBACTERIUM LEPRAE PROTEIN ANTIGENS
Presenter: *Mariane Stefani*

Screen 9, 13:50 - 14:00 P-113

CASE REPORT: CLINICAL AND SEROLOGICAL PROFILE OF A POSSIBLE RELAPSE OR REINFECTION OBSERVED DURING UNIFORM MULTIDRUG THERAPY TRIAL (U- MDT)
Presenter: *Mariane Stefani*

Stigma

Screen 10, 12:30 - 12:40 P-021

EMPOWERMENT OF LEPROSY AFFECTED PERSONS TO FIGHT AGAINST STIGMA AND DISCRIMINATION
Presenter: *Uday Thakar*

Screen 10, 12:40 - 12:50 P-023

ROLE OF SCHOOL CHILDREN IN REDUCING LEPROSY RELATED STIGMA
Presenter: *Mr David Jaganathan*

Screen 10, 12:50 - 13:00 P-024

PROMOTING TRANSNATIONAL WORLD HERITAGE OF HANSEN'S DISEASE HISTORICAL SITES AND SPIRIT.
Presenter: *Tse-Chun Lai*

Screen 10, 13.00 - 13.10 P-020

COMICS MADE BY PEOPLE AFFECTED BY LEPROSY AS A STIGMA-REDUCTION STRATEGY; LESSON LEARNT
Presenter: *Ruth Peters*

Specialised Centres

Screen 10, 13:10 - 13:20 P-450

EVALUATION OF LEPROSY PATIENT HOSPITAL ADMISSIONS IN AN INFECTIOUS DISEASE REFERENCE HOSPITAL
Presenter: *Dr José Nery*

Screen 10, 13:20 - 13:30 P-452

DERIVING BENCHMARKED COSTS FOR PROVIDING LEPROSY SERVICES IN INDIA
Presenter: *Mr John Kurian George*

Screen 10, 13:30 - 13:40 P-457

LEVEL OF SATISFACTION OF IN-PATIENTS ON THE NURSING CARE PROVIDED TO THOSE AFFECTED BY LEPROSY
Presenter: *Sathish Kumar Paul*

Screen 10, 13:40 - 13:50 P-454

A STUDY ON DELAY IN DIAGNOSIS AND STARTING OF MDT IN 124 NEW CASES OF LEPROSY IN ANDHRA PRADESH, SOUTH INDIA
Presenter: *Dr Aparna Srikantam*

Screen 10, 13:50 - 14:00 P-455

QUALITY LEPROSY CARE THROUGH REFERRAL CENTRE-A WORKING MODEL OF SETTING TERTIARY CARE CENTRE THROUGH GOVERNMENT ORGANISATION(GO) AND NON GOVERNMENTAL ORGANISATIONS (NGO) COLLABORATION
Presenter: *Naveen Kothari*

Reconstructive Surgery

Screen 1, 15:30 - 15:40 P-448

PROVISION OF RECONSTRUCTIVE SURGERY SERVICES TO UNDERSERVED POPULATION IN THE STATE OF ASSAM INDIA UTILISING ALL AVAILABLE RESOURCES AND INVOLVING ALL PARTNERS
Presenter: *Ryinmon Lanong*

Vaccines

Screen 1, 15:40 - 15:50 P-260

BCG IMMUNOTHERAPY AS AN ADJUNCT TO CHEMOTHERAPY IN BL-LL PATIENTS – ITS EFFECT ON CLINICAL REGRESSION, REACTION SEVERITY, NERVE FUNCTION, LEPROMIN CONVERSION, BACTERIAL/ANTIGEN CLEARANCE AND 'PERSISTER' M. LEPRAE
Presenter: *Vanaja Shetty*

Screen 1, 15:50 - 16:00 P-261

EFFICACY OF ANTI-LEPROSY VACCINES AFTER TEN-YEARS OF VACCINATION: COMPARATIVE LEPROSY VACCINE TRIAL IN SOUTH INDIA
Presenter: *Mohan Gupte*

Epidemiological Surveillance

Screen 2, 15:30 - 15:40 P-207

POPULATION BASED LEPROSY REGISTRY AS AN ALTERNATE METHOD TESTED TO ASSESS & DOCUMENT THE MAGNITUDE OF LEPROSY IN URBAN METROPOLIS: ITS MERITS AND DEMERITS
Presenter: *Abraham Selvasekar*

Screen 2, 15:40 - 15:50 P-208

STUDY OF THE INCIDENCE OF LEPROSY IN CHILDREN UNDER 15 YEARS IN STATE REFERENCE CENTER POLYCLINIC OSWALDO CRUZ, PORTO VELHO (RO), 2007-2012
Presenter: *Dr Maria Katia Gomes*

Screen 2, 15:50 - 16:00 P-209

RELAPSE CASES (OR RE-INFECTION) DETECTED SINCE 1997 TO 2012 IN REFERENCE HEALTH UNITS OF PORTO VELHO, RONDONIA, BRAZIL
Presenter: *Dr Maria Katia Gomes*

Eye in Leprosy

Screen 3, 15:30 - 15:40 P-494

CORTISONE INDUCED CATARACTS AND GLAUCOMA IN ETYTHEMA NODOSUM LEPROSUM
Presenter: *Saibaba Alampur*

Other Mycobacterial Diseases

Screen 3, 15:40 - 15:50 P-308

EPIDEMIOLOGY AND CLINICAL CHARACTERISTICS OF BURULI ULCER IN JAPAN
Presenter: *Rie Yotsu*

Genetics and Leprosy

Screen 4, 15:30 - 15:40 P-402

GENETIC VARIANTS IN NOD2,C13ORF31 AND CCDC122 GENES ARE ASSOCIATED WITH LEPROSY IN THE YI CHINESE POPULATION
Presenter: *Dr Yong Ning*

15:30 – 16:00

Screen 4, 15:40 - 15:50 P-403

ON THE AGE OF LEPROSY
Presenter: *Xiang-Yang Han*

Screen 4, 15:50 - 16:00 P-404

INFLUENCE OF IFNG +874 T/A AND IL10 -819 C/T SINGLE NUCLEOTIDE POLYMORPHISMS (SNP) ON THE SUSCEPTIBILITY TO LEPROSY: A FAMILY-BASED STUDY AND META-ANALYSIS
Presenter: *Evaldo Amaral*

Leprosy Control

Screen 5, 15:30 - 15:40 P-436

WORK OF ASOCIACIÓN FONTILLES IN INDIA
Presenter: *Fàtima Moll Cervera*

Screen 5, 15:40 - 15:50 P-437

SOCIO-CULTURAL FACTORS AND NLEP INPUTS FOR PREVENTION OF RECURRENT REACTION AMONG LEPROSY PATIENTS
Presenter: *Annamma John*

Screen 5, 15:50 - 16:00 P-430

EVALUATION OF THE IMPACT OF THE LEPROSY MISSION'S SUPPORT TO LEPROSY CONTROL IN MARADI REGION, NIGER REPUBLIC
Presenter: *Yohanna Abdou*

Detection and Treatment of Reactions

Screen 6, 15:30 - 15:40 P-383

RISK FACTORS FOR LEPROSY REACTIONS IN THREE ENDEMIC COUNTRIES
Presenter: *David Scollard*

Screen 6, 15:40 - 15:50 P-384

ROLE OF THALIDOMIDE IN THE MANAGEMENT OF ERYTHEMA NODOSUM LEPROSUM (ENL) REACTIONS – EXPERIENCES REPORTED FROM REFERRAL HOSPITAL IN DELHI
Presenter: *Meenu Sethi*

Screen 6, 15:50 - 16:00 P-385

IDENTIFICATION OF CLINICAL, EPIDEMIOLOGICAL AND LABORATORY RISK FACTORS FOR LEPROSY REACTIONS DURING AND AFTER MULTIDRUG THERAPY
Presenter: *Dr Isabela M. B. Goulart*

CBR

Screen 7, 15:30 - 15:40 P-480

THE ROLE OF TRADITIONAL LEADERS IN THE REHABILITATION OF PERSONS WITH A DISABILITY IN NORTHERN NIGERIA
Presenter: *Erik Post*

Screen 7, 15:40 - 15:50 P-488

EXPERIENCES WITH PHOTO-VOICE ON IMPLEMENTING CBR IN NEPAL,A STUDY: IDENTIFYING EXISTING BARRIERS FOR SOCIAL INCLUSION OF PWD/LEPROSY, CHANGING COMMUNITIES
Presenter: *Dr. Krishna Prasad Dhakal*

Information, Education, Communication (IEC)

Screen 8, 15:30 - 15:40 P-092

AWARENESS AN IMPORTANT IMPLEMENT TO ELIMINATE HIDDEN LEPROSY
Presenter: *Shesh Dhote*

Screen 8, 15:40 - 15:50 P-093

CAPACITY BUILDING ACTIVITIES FOR MEDICAL OFFICERS OF HEALTH CENTRES IN LEPROSY REVEALING IMPORTANCE OF SIMPLE, PRACTICAL IEC INTERVENTIONS IN TWO DISTRICTS OF ASSAM - INDIA
Presenter: *Natarajan Manimozhi*

Screen 8, 15:50 - 16:00 P-094

FACTORS CONTRIBUTING TO LEPROSY KNOWLEDGE AND PERCEPTION IN THE HIGHT RISK COMMUNITY, THAILAND; THE DEVELOPMENT OF THE INFORMATION, EDUCATION AND COMMUNICATION (IEC) MODEL
Presenter: *Manit Chaninporn*

Immunology

Screen 9, 15:30 - 15:40 P-115

PREDOMINANCE OF CENTRAL MEMORY T CELLS AND PRO-INFLAMMATORY CYTOKINES IN RESPONSE TO MYCOBACTERIUM LEPRAE IN LEPROMATOUS LEPROSY RELAPSED PATIENTS
Presenter: *Danuza Esquenazi*

Screen 9, 15:40 - 15:50 P-116

USE OF AG85A IN IN VITRO T CELL ASSAYS – AN IMMUNE CORRELATE OF PROTECTION IN LEPROSY
Presenter: *Dr Naveenchandra Suryadevara*

Screen 9, 15:50 - 16:00 P-111

IMMUNOHISTOPATHOLOGICAL DIFFERENCES BETWEEN SKIN WITH AND WITHOUT CHANGES OF SENSITIVITY IN LEPROSY
Presenter: *Marco Frade*

Specialised Centres

Screen 10, 15:30 - 15:40 P-456

DIAGNOSIS OF MYCOBACTERIUM LEPRAE IN FONTILLES, SPAIN
Presenter: *Lucrecia Acosta*

Screen 10, 15:40 - 15:50 P-453

CASE DETECTION METHODS OF LEPROSY IN THE PRE INTEGRATION AND POST INTEGRATION PHASES IN A DEFINED GEOGRAPHICAL AREA IN TAMIL NADU, INDIA
Presenter: *Dr Mannam Ebenezer*

Screen 10, 15:50 – 16:00 P-451

THE REFERRAL CENTERS IMPLICATIONS ON EFFICIENCY AND EFFECTIVE DELIVERY OF QUALITY LEPROSY CARE SERVICES IN POST-INTEGRATION AT DISTRICT LEVEL IN ANDHRA PRADESH.
Presenter: *Mr. Marella Sathiraju*

18th

INTERNATIONAL LEPROSY CONGRESS

Hidden challenges

BRUSSELS, 16th-19th SEPTEMBER 2013

Thursday 19 September 2013

Abstracts

PLENARY SPEAKERS

PL – 007

Speaker: **Prof Stewart Cole**
Title: **Mycobacterial and human host genomics in transmission of leprosy**

GENOMICS: THE ORIGIN OF LEPROSY AND ITS FUTURE

Stewart T. Cole,

Global Health Institute, EPFL, CH-1015 Lausanne, Switzerland

Next generation DNA sequencing technologies are revolutionizing our understanding of the evolution of *Mycobacterium leprae* and providing new means to monitor the transmission of leprosy, to follow the emergence of drug resistance and to investigate the relationship of the leprosy bacillus to other pathogenic mycobacteria. Thanks to improvements in sensitivity and throughput, it is now possible to obtain near complete genome sequences of *M. leprae* from the tiny amounts of DNA present in the skin biopsies of multibacillary patients and even from the skeletal remains of long deceased persons affected by the disease. To illustrate this remarkable progress I will present a genomic study of leprosy during the Middle Ages in Europe, when the disease was endemic and a major source of morbidity, and compare the findings with those from contemporary cases of leprosy. There has been remarkable conservation of the *M. leprae* genome during the past 1,000 years, and the comparison reveals a European origin for leprosy in the Americas and the presence in medieval Europe of a strain of *M. leprae* commonly associated with the Middle East today. The practical value of these new methods for working with the leprosy bacillus will be demonstrated by examples of the surveillance of drug-susceptibility and drug-resistance in real-time.

PL – 008

Speaker: Prof Annemiek Geluk

IMMUNODIAGNOSTIC TOOLS FOR LEPROSY: EXPOSURE, INFECTION & DISEASE

A. Geluk [1,*] on behalf of the IDEAL consortium

[1]Infectious Diseases, Leiden University Medical Centre, Leiden, Netherlands

Introduction: Early detection of *M. leprae* infection (before clinical manifestations occur) is vital to reduction of transmission. Current diagnosis can not rely on tests that detect asymptomatic *M. leprae* infection or predict progression to leprosy. Identification of risk factors (immunological- or genetic biomarkers) for disease development and/or onset of leprosy reactions is imperative for efficient diagnosis. Tests simultaneously detecting biomarkers specific for cellular- and humoral immunity are well-suited for diagnosis of different clinical outcomes of leprosy.

Methods: In several cohort studies we have conducted follow-up studies analyzing immune- and genetic profiles in leprosy endemic areas in Nepal, Bangladesh, Brazil and Ethiopia, including leprosy patients, household contacts and healthy controls from areas with high or low leprosy prevalence.

Results: These studies identify several *M. leprae* antigens as biomarker tools to measure *M. leprae* exposure as well as cytokines and genetic profiles that can potentially distinguish pathogenic immune responses from those induced during asymptomatic exposure to *M. leprae*. Field-friendly multiplex formats for diagnostic tests based on these biomarkers are being developed.

Conclusion: In view of the complicated nature of *M. leprae* infections, it is essential to invest in longitudinal studies allowing intra-individual comparison of immune- and genetic biomarkers in various leprosy endemic areas. Diagnostic tests based on such biomarkers can contribute significantly to early detection of leprosy (reactions) thus helping reduce nerve damage.

PL – 009

Speaker: **Prof Jan Henrik Richardus**
Title: **The research challenge to reduce transmission**

CONTACT CENTRED STRATEGIES TO REDUCE TRANSMISSION OF *M. LEPRAE*

Prof. Jan Hendrik Richardus, MD, PhD

Department of Public Health, Erasmus MC, University Medical Center Rotterdam, Rotterdam, the Netherlands

The basis of leprosy control has been case detection and treatment. MDT led to a dramatic reduction in the prevalence of registered cases of leprosy to less than 1 in 10,000 population by the end of the year 2000, after which the focus of control has shifted from registered prevalence to new case detection and to reducing the burden of disease. The global number of new cases per year has been static for the last 5 years at around 250,000. Population-based approaches to case detection are no longer cost-effective. A new strategy is now indicated that is appropriate to the current epidemiological situation. The main risk of exposure to leprosy is in close contacts of new, untreated cases and the risk of exposure to leprosy in the general community is very low. An increasing proportion of new cases will be from household contacts. The aim of the new control strategy is to reduce transmission to exposed contacts of new cases. BCG vaccine is effective in preventing transmission of *M. leprae* and the development of new vaccines is in progress. Also, single-dose rifampicin chemoprophylaxis gives over 50% reduction in transmission in contacts. The research challenge is to improve the effectiveness of reduction of transmission in contacts through development of tests of infection and exposure to *M. leprae* to better target interventions; and to improve the interventions based on immune-prophylaxis and chemoprophylaxis to reduce transmission of leprosy in contacts.

SYMPOSIUM LEADERS

L-010

Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Leprosy Control**
Presenter: Dr P Krishnamurthy

LEPROSY CONTROL: PROGRAMME ACCELERATION, THE NEED AND THE WHEREWITHAL

Leprosy control is claimed be a good example of a public health programme implemented with a robust technology, remarkable collaboration, strong political will and forceful strategy. The result is reduction in leprosy prevalence. But it has not led to a stronger impact on leprosy burden in terms of new cases detected. For the last five years globally and in majority of endemic countries, new case detection has not shown a perceptible decline. It could be due to lack of sustained effort. Against the background of the agreed mandate to reduce G2Damong new cases by 2015, the issue becomes all the more important. At this stage, strategic reorientation is possible if there are new intervention tools. In the absence of effective primary prevention tools and with limited strategic options (early diagnosis and prompt treatment with MDT) one may have to direct one's efforts on focused accelerated action on early diagnosis which includes improving diagnostic validity through new tools and techniques and efficiency through sustainability of expertise, and reducing the gap between onset and detection. Intense case finding would reduce G2D but would certainly increase the number of new cases, at least in the initial years. It could surely be directed at " at risk individuals" (contacts), or "at risk population groups"(under served populations). Locally adapted special actions could be planned in each of these locations with the collaboration and partnership with other Government departments, NGOs, civil society, affected persons, to mobilize expertise, resources and render the process cost effective. At the same time research to identify new interventions and new strategies should be fast tracked.

L-011

Presentation Time: **Thursday 19/09/2013 at 14:00 – 15:30**
Symposium Session: **Community Based Rehabilitation (CBR)**
Presenter: Dr Sunil Deepak

COMMUNITY BASED REHABILITATION (CBR)

Dr Sunil Deepak

Introduction: CBR approach has been experimented in the field for more than thirty years. Documents and guidelines from the World Health Organisation (WHO) and International Federation of Anti-leprosy Associations (ILEP) have been discussing the feasibility of adopting CBR approach for rehabilitation of persons with disabilities due to leprosy for a long time.
Thus it is important to understand the progress made, the challenges faced and the key related issues in implementing CBR approach for inclusion of persons affected leprosy.

Key Issues: Development and implementation of CBR are linked to Alma Ata declaration. CBR Matrix defines the areas of interventions under CBR. Persons with disabilities are expected to play an active role in different aspects of their own rehabilitation.

On the other hand, rehabilitation of persons with disabilities due to leprosy have developed mainly in the context of health care institutions. Only recently leprosy programmes have engaged with issues of participation of leprosy affected persons in their own care and the roles of organisations of leprosy affected persons.

Thus, the encounter between CBR programmes and leprosy-rehabilitation programmes has two main areas that need research and understanding:

(1) Issues related to adoption of CBR approach in leprosy-rehabilitation programme;

(2) Issues related to inclusion of persons affected with leprosy in CBR programmes.

CBR approach in leprosy-rehabilitation programmes

Majority of research in this area is about self-care groups for prevention of disabilities, self-help groups for peer support, loans, vocational training and income generation. In terms of CBR matrix, there are many other areas such as role of leprosy DPOs that have not been explored or inadequately explored so far.

Inclusion of persons affected with leprosy in CBR

In this area published research is extremely limited. There are different areas such as advantages and disadvantages of participation of leprosy affected persons in DPOs and self-help groups composed of persons with different disabilities, about which research is needed. It is not clear what percentage of persons with leprosy related disabilities are involved in cross-disabilities CBR programmes.

Conclusions: The interface between leprosy and CBR has different key areas on both sides of the divide that merit greater understanding and research. Published research on these issues has been limited to certain aspects of leprosy-rehabilitation programmes that have adopted CBR approach.

ORAL PRESENTATIONS

0-199

Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Detection and Treatment of Reactions in Leprosy**
Presenter: Vivek Pai

DETECTION AND TREATMENT OF REACTIONS IN LEPROSY

V. V. Pai [1,*]

[1]Leprosy and Dermatology, Bombay Leprosy Project, Mumbai, India

Introduction: Clinical manifestations of leprosy depend on host's response to live *M leprae* or its antigens. Apparently uneventful response to chemotherapy is marked by clinically disturbing episodes encountered in about 20-30% of patients and these phenomena are called reactions contributing to the development of new disabilities in leprosy.

Methods: Generally reactions are classified as reversal reaction / type I and ENL / type II. Type I reaction (characterized by inflammation of lesions, appearance of new inflamed lesions, with / without neuritis) is commonly encountered in BT leprosy. Type II reaction (debilitating, multisystem disorder characterized by fever, malaise and crops of painful erythematous cutaneous nodules. ENL also causes nerve impairment, arthritis, bone pain, orchitis, hepatitis and iritis) seen in (BL and LL). Reactions can occur at any time either during the course of treatment or during the surveillance or at times before the treatment. The Physicians and field staff should remain alert at all times for suspecting and detecting signs of reactions on the skin as well as in the nerves (tenderness) and possibly the patients at risk may be cautioned and educated about the signs of reaction. Clinical features of reactions for detection can be divided as follows:

A) Cutaneous manifestations · Type II reactions in LL and BL, ENL, Erythema multiforme, Erythema necroticans, subcutaneous nodules and Lepromatous exacerbation
B) Type I reactions in Borderline and Tuberculoid leprosy
C) Other manifestations· Lymphadenitis, Oedema of hands and feet and Ocular lesions
D) Sequelae of reactions – Paralytic deformities, non paralytic deformities, extensive scarring
E) Identification of risk factors – Various factors like pregnancy, adolescence and puberty, inter-current infections, psychological stress and vaccination can influence the immune system pre disposing the patient to risk of reaction.

Peripheral neuropathy · Peripheral nerve damage is one of the worst consequences of reactional states in leprosy.

Silent Neuropathy – can be identified as sensory or motor impairment without obvious skin signs of reversal reaction or ENL without evident nerve tenderness and neuropathic pain.

Treatment · The use of steroid therapy in the management of reactions and neuritis in leprosy is now gaining importance in view of the possible nerve function impairment. Standard steroid schedules using Prednisolone are useful in reducing the recurrences of reactions and to improve the nerve function. Other anti inflammatory (NSAIDS) and immunosuppressive drugs include Clofazimine, Thalidomide and newer drugs like Pentoxiphylline, Azathioprine, Cyclosporine, Leucotriene inhibitors etc

Results: Reaction is an unpredictable event having a predilection for skin and nerves and associated with tissue damage when accompanied by systemic involvement.

Conclusion: Treatment with standard schedule of steroids viz Prednisolone is proved to be very effective and should be made available at field levels and clinic for all patients with reactions. It is therefore necessary to detect reactions and institute treatment early to prevent nerve damage and its consequences like deformity which is the root cause of stigma.

0-200

Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Detection and Treatment of Reactions in Leprosy**
Presenter: Sérgio Luiz Antunes

POST-MDT LEPROSY NEUROPATHY: DIFFERENTIALLY DIAGNOSING REACTIONAL NEURITIS AND RELAPSES.

S. L. G. Antunes [1,*], M. R. Jardim [1], R. T. Vital [1], J. A. D. C. Nery [1], A. M. Sales [1], E. N. Sarno [1]

[1]Leprosy Laboratory, Oswaldo Cruz Institute (FIOCRUZ), Rio de Janeiro, Brazil

Introduction: In leprosy, aggravation of newly appearing nerve damage emerging after MDT poses difficulty to differential diagnosis, between reactional neuritis and relapse. In addition, a neuropathy other than leprosy can not be ruled out. The confirmation of a relapse requires retreatment, however, the criteria for relapse diagnosis with this presentation have not been clearly established in the literature yet. The objective of this study was to ascertain the role of the nerve biopsy in the differential diagnosis of the post-MDT leprosy neuropathy based on histological alterations across the selected groups.

Methods: We examined 50 post-MDT nerve biopsy samples (23 reactional neuritis and 27 relapse samples). The nerve sampling was guided by a careful clinical evaluation and the finding of neuroelectrophysiological alterations, such as disturbances of conduction velocity and/or action potential amplitude. Relapse diagnosis was suspected in face of persistence of the symptoms more than 5 years after treatment, refractoriness to anti-reactional treatment, aggravation of the impairment of neurological function. Using these criteria, reactional neuritis was assigned to the nerve sample whenever AFB was absent and relapse, when AFB was found in the nerve. The presence x absence of each histopathological alteration was attributed to each nerve sample examined. Statistical tests K2 of Pearson and Fisher (corrected) were employed in the analysis of the frequencies across the groups

Results: The following histological alterations were more frequently found in the relapse than in the reactional neuritis group : perineurial infiltrate ($p < 0.05$ and); foamy macrophages ($p < 0.00000$); epineurial, perineurial and endoneurial fibrosis ($p < 0.02$); perineurial hyperplasia $p < 0.04$), reduction in the number of myelinated nerve fibers in both paraffin ($p < 0.004$) and epon-embedded sections ($p < 0.03$). No significant differences were found in respect of epithelioid granuloma, remyelination, axonal a regeneration of nerve fibers across the groups.

Conclusion: The differences in the frequency of alteration across the samples could reflect distinct pathobiological courses of reactional neuritis versus relapse, however a more in depth knowledge of biology of *M leprae* infection is required to interpret these results. We could conclude that nerve biopsy is useful as a tool for the differential diagnosis of post-MDT peripheral neuropathy given that detection of acid-fast bacilli in the samples may favor the decision regarding relapse; however this decision should be strongly supported by clinical and neuroelectrophysiological data.

0-201

Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Detection and Treatment of Reactions in Leprosy**
Presenter: Kathryn Dupnik

GLOBAL GENE EXPRESSION STUDIES OF PBMC DURING REVERSAL REACTIONS SHOW INCREASED EXPRESSION OF MICROBIAL RECOGNITION RECEPTORS

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Introduction: Leprosy remains a significant health problem, particularly in endemic countries such as Brazil. The pathologic immune reactions, including reversal reaction (RR), are an additional burden for the 30% of leprosy patients who develop them. RR is thought to be an augmentation of the Th1 response which manifests in skin and nerves and is characterized by recurrent episodes and additional disability. Long-term corticosteroid treatment is needed to control RR. The study objective was to characterize the global gene expression profile in the peripheral blood during RR with the goal of identifying novel therapeutic targets. The hypothesis was that there would be upregulation of genes related to an augmented Th1 response.

Methods: Individuals being treated for leprosy were recruited from leprosy referral centers in Rio Grande do Norte, Brazil. Cases had diagnoses of leprosy and reversal reaction (RR). Controls were people with leprosy without RR selected by incidence density matching for sex, age, leprosy clinical form, and stage of leprosy therapy. Peripheral blood mononuclear cells (PBMC) were extracted from blood of cases and controls, before the initiation of corticosteroids. RNA was extracted using a Trizol-based protocol and column-purified. For the first phase of the study, Illumina HT12v4 profiles were determined for 11 RR and 11 matched controls. Expression values were normalized to the baseline and RR and control groups were compared using ANOVA for each gene. For the second phase of the study, a custom TLDA array (Life Technologies) including 48 genes per sample was designed based on the microarray findings. The original panel and an additional 11 RR cases (n=22 RR) and 7 matched controls (n=18 controls) were run in duplicate. Expression levels were normalized and case and control groups compared. P-values less than 0.05 were considered to be statistically significant.

Results: In the Illumina array, there were 180 genes with a fold-change (FC) difference of >= 1.5 between leprosy patients with and without RR and p-value < 0.05. Within the set of

significant genes, the KEGG pathway most strongly associated with differences between RR cases and controls was the complement cascade (p_{adj}=0.00028). Expression of C1q (FC 1.57, p=0.065), C2 (FC 2.17, p=0.018), C5L2 (FC 1.60, p=0.022), and C1 esterase inhibitor (FC 2.01, p=0.015) were increased in the RR group. Expression of C1q, C2, and C1 esterase inhibitor remained significantly elevated in the RR group in the TLDA panel. Immunoglobulin and microbial recognition receptors most commonly found on monocytes were also increased in the RR group. These included FcγRI (FC 2.58, p=0.005), formyl peptide receptors (FPR1 FC 1.70, p=0.017 and FPR2 FC 2.0, p=0.014), and MARCO (FC 1.84, p=0.036). These genes remained significantly increased in the validation panel. Dectin·1, which approached statistical significance in the array (FC 1.52, p=0.11) was significantly different between leprosy patients with and without RR in the TLDA panel (p=0.0043).

Conclusion: There were differences in gene expression levels in PBMC of people with borderline-type leprosy with and without RR. Increased expression in the classical complement pathway and of FcγRI suggests roles for antigen-antibody complexes and their recognition by complement and blood monocyte receptors during RR. Further study of upregulated microbial recognition receptors may help identify the antigen types involved in RR. Studies to correlate these findings with expression levels in skin lesions during RR are ongoing.

O-202

Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Detection and Treatment of Reactions in Leprosy**
Presenter: Saba Lambert

RCT ASSESSING CICLOSPORIN IN TYPE 1 REACTION TREATMENT, IN ETHIOPIA

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Introduction: T1R are treated with corticosteroids; the efficacy is variable, around 60% of patients improve neurologically. There is an urgent need to assess alternative treatment in Prednisolone-resistant or Prednisolone dependent cases of T1R.
Ciclosporin is a potent immunosuppressant that has been successfully used as a treatment in immunological conditions. A pilot study in severe T1Rs showed that Ciclosporin produced improvement of skin lesions and nerve function. We conducted an RCT in order to systematically assess Ciclosporin for safety, tolerability and efficacy in T1R.

Methods: A double blind controlled clinical trial randomizing patients with new T1R to treatment either with Prednisolone alone or Prednisolone and Ciclosporin combination. Treatment period was 20 weeks and final follow up at 32 weeks. Clinical response through T1R symptoms and signs, nerve function and additional treatments were measured as well as recording adverse events, haematological, renal and hepatic functions and quality of life. Outcome measures were: change in Reaction Score (skin, motor function and sensory function); time to recurrence of T1R after initial control; numbers and severity of T1R recurrences; amount of extra prednisolone needed to control symptoms and frequency and type of adverse events.

Results: 85 patients have been recruited and will complete follow up period in April 2013. Data on the change in nerve function impairment and skin lesions, frequency and severity of T1R recurrences and adverse events in the two groups will be presented. To date four SAE have been reported: a patient with severe eye infection in the prednisolone group, a patient with intra-cranial hypertension in the combination group. The two other patients with SAE: one osteomyelitis and one TB re-activation are yet to be unblinded.

Conclusion: Ciclosporin has not been associated significant adverse events and it is a promising safe second line steroid sparing drug in the management of T1R.

Funders: Homes and Hospitals of St Giles

O-203

Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Detection and Treatment of Reactions in Leprosy**
Presenter: Priscila Andrade

MIXED DC/MACROPHAGE LINEAGE PHENOTYPES IN ACTIVATED LEPROMATOUS LESIONS DURING REVERSE REACTION

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Introduction: Leprosy is a chronic inflammatory disease caused by *Mycobacterium leprae*. The outcome of the infection reflects the dynamism of the immune response of the host against the bacteria, leading to different manifestations of the disease. The pathology of leprosy is also aggravated by the emergence of the reactional states known as reverse reaction (RR) and erythema nodosum leprosum (ENL). In the RR there is a spontaneous increase in the reactivity of Th1 lymphocytes against *M. leprae* and the symptomatic shift from the lepromatous pole towards the tuberculoid pole of the disease. RR is a phenomenon incited by the rearrangement of the immune response with new waves of cellular activation and the disruption of the tolerance established by immunosuppression mechanisms. We hypothesized that in the cutaneous environment, these waves of migratory cells might affect different cellular populations in diverse stages of maturation, such as macrophages and dendritic cells. The aim of this study is to characterize the populations that constitute the RR skin lesion and to determine the set of molecules involved in the onset of the episode.

Methods: The expression of macrophage and dendritic cell population markers was evaluated by immunohistochemical (IH) and immunofluorescence (IF) staining of cryosections in skin lesions of BL and LL patients with (n=10) and without RR (n=9), harvested before treatment (prednisone and MDT). The gene expression of immune mediators was assessed in the same samples by real time PCR. The statistical analysis of the gene expression was performed using Mann-Whitney U test and values of $p \leq 0.05$ were considered significant.

Results: The IH analysis showed in BL/LL, as well as RR skin lesions, the presence of specific markers of macrophage and dendritic cell populations, indicating the higher concentration of the dendritic plasmacytoid cell marker CD123. IF analysis showed that the dermal CD123$^+$ also exhibited expression of CD68, CD163, CD11c, CD86, CD14, HLADR, CD1a, CD1b, BDCA2 and BDCA4, without notable difference between BL/LL and RR lesions. Single positive populations were also observed for all the markers. In the RR group was observed an increase in the gene the expression of M-CSF (p=0.0077), GM-CSF (p=0.0033), TNF (p=0.0041) and IFN-γ (p=0.0312), in comparison with the non-reactional group. CD123 gene expression was also increased in the RR patients when compared with the BL/LL group (p=0.0381), corroborating the IH analysis. The same was observed for the gene expression of CD209 (p=0.0394), a dendritic cell marker, and defensin 2 (p=0.0317), a microbicidal peptide. The expression of the enzyme IDO (p=0.3148) was detected in BL/LL and RR lesions and although it seemed higher in the RR group, there was no statistical significance. The expression of the pro-inflammatory cytokines IL-23 (p=0.0317) and IL-17 (p=0.0120) were also higher in the RR group in comparison to the non-reactional group.

Conclusion: Our results showed the predominance of a CD123$^+$ cells in skin lesions on the onset of the RR. This population is described as having potent immune-regulatory properties through the expression of IDO (Munn et al., 2002), and therefore, may have an important role in the pathology of the RR skin lesion. A higher expression of cellular differentiation factors and pro-inflammatory cytokines was also observed in this group, indicating the beginning of a complex activation and differentiation process, as well as the rupture of the immunological tolerance in the cutaneous environment.

O-204

Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Detection and Treatment of Reactions in Leprosy**
Presenter: Dr. Annamma John and Diana Lockwood

RCT OF AZATHIOPRINE VERSUS PREDNISOLONE IN THE TREATMENT OF TYPE 1 REACTION AND NEURITIS

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Introduction: Improvement rates for patients with T1R and leprosy neuritis are about 50% (range 30-70%) Steroids are used but have adverse effects so improved and alternative treatments are needed. We studied the addition of azathioprine (50mg /day fixed dose) to prednisolone treatment for leprosy reactions.

Methods: Double blind RCT comparing placebo, or 24, 36 and 48 weeks of azathioprine added to a 20 week course of prednisolone. Patients with T1R and new neuritis were recruited at 4 Leprosy Mission hospitals in India. Outcome measures were at 48 weeks and comprised skin improvement, motor and sensory function using a validated reaction severity score (CSS).

Results: Among 345 patients recruited, 59 were withdrawn with adverse effects, 82 defaulted and 4 died. 66 patients required extra prednisolone. Analysis done on the remaining 134 patients. There was a significant benefit for all treatments for the skin component of the CSS and adding azathioprine did increase benefit. Treatment with azathioprine produced an improvement in motor scores, but this was not clinically significant. No improvement was seen in sensory scores, 72 patients had recurrences of T1R and neuritis and required a further course of prednisolone. Azathioprine did not reduce recurrences. The data on the adverse effects are being reported separately.

Conclusion: Azathioprine does not improve the skin or sensory outcomes of treatment for T1R. There was also a significant rate of adverse events. New drugs that can switch off leprosy inflammation need to be identified.

O-205

Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Social Aspects and Quality of Life**
Presenter: Bassey Ebenso

LIFE COURSE PERSPECTIVES ON EXPERIENCES OF AND RESPONSES TO LEPROSY-RELATED STIGMA IN WESTERN NIGERIA

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Introduction: Prior to my research, most of what was known about leprosy-related stigma emerged from surveys conducted with health workers, students and the general public. Much of that research employed quantitative questionnaires and/or stigma scales to assess the existence and/or severity of stigma in diverse global contexts. Whilst such studies sought evidence-based solutions for ameliorating the impacts of stigma, they ignored the experiences of persons affected by leprosy. Moreover, little attention was given to understanding the cultural contexts of stigmatization and the political-economic processes which shaped stigmatization. My PhD research therefore aimed to capture the complexity of stigma by investigating the everyday experiences of people affected by leprosy, to understand how socio-cultural, political and economic processes shaped stigmatization of leprosy in Yorubaland, western Nigeria.

Methods: Unraveling the complexity of stigma demanded the use of four qualitative data-collection methods. These were the analysis of the social of history of leprosy, life-history interviews of 21 people affected by leprosy, semi-structured interviews of 26 non-affected community members and a sociolinguistic study of the leprosy phenomenon. The combination of multiple methods, empirical materials and perspectives in a single study added rigour, breadth and depth to the investigation and understanding of the phenomenon in question.

Results: Analysis of the social history of leprosy revealed that the colonization of Nigeria (between 1861 and 1960), drew the Yoruba people into Western ideologies and capitalist modes of production, and significantly altered entrenched cultural beliefs to produce the current moral definitions of leprosy and stigmatizing attitudes of the Yoruba. Analysis of the life-history interviews of affected persons, the interviews with community members and the sociolinguistic study of leprosy all indicated that the forms of expression and severity of stigma were not static but changed over time. The findings further showed that access to effective medical treatment, a supportive family network and a source of livelihood enabled people affected by leprosy to counteract stigmatizing attitudes in the community.

Conclusion: This study provides rich contextual understandings of Yorùbá ideas of leprosy and demonstrates that leprosy and its associated stigma are not reducible to biological problems located in an individual's body. The findings also reveal how culture and macrosocial factors such as colonization, economic/political upheavals and social structures shape people's diverse experiences and responses to leprosy-related stigma. The study also provides compelling theoretical insights for improving policy and practice.

O-206

Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Social Aspects and Quality of Life**
Presenter: Dadun Phui

ASSESSING SOCIAL DISTANCE AS STIGMA PREDICTOR: EXPLORING SILENT STIGMA TOWARDS PEOPLE AFFECTED BY LEPROSY FROM A COMMUNITY PERSPECTIVE IN INDONESIA

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Introduction: Stigma towards people affected by leprosy in high-burden leprosy countries is often a major problem. Stigma can generate socio economic problems, and lessen willingnes of patients to have appropriate treatment. In some communities, stigma is not openly expressed;but people quietly draw virtual lines to restrict involvement people affected in certain activities and opportunities. People have not realized that their social distance towards people affected by leprosyis increased. This study explores social distance towards people affected by leprosy among community members.

Methods: The SARI projectis an intervention studyon reducing stigma related to leprosy.The project was initiated in 2011, covering 30 subdistricts in CirebonDistrict, Indonesia. A mixed-methods approach was implemented to explore and assess the level of stigma from the community perspective.This study selected three community members who lived in the neighbourhoodfor every selected people affected by leprosy.In total,the study recruited 233 respondents.An interview was conducted in the house of respondent. Perceived social distance was measured as proxy for attitude regarding leprosy. Social distance was measured using a 7-item modified Bogardus Scale.A vignette was used describing a leprosy-affected man or woman.The scale has total score ranging from 0-21. The qualitative methods included interviews with key informants, in-depth interviews, group interviews and dialogues with stakeholders including health providers.

Results: The study shows that community members still express negative attitudes against people affected by leprosy.Respondents who stated they were definitely not willing to associate with people affected is relative low (2-13%). However,the proportion of respondentssaying 'probably willing' or 'probably not willing'was more than 70%. The perceived social distance was larger when it related to the personal life of the respondents, such as to marry a child to, introducing the person to a friend, or recommending him or her to a friend for a job. The social distance level was not significantly diferent between sex and age groups; however, respondents without education reported larger social distance compared to respondents with higher education. The mean total score was significant among men (8.7) and among women (9.3). The qualitative results confirmed the situation as 'silent stigma' or 'unspoken stigma'. People tend not to talk about a neighbour's leprosy status even though they know the person has leprosy. On the other hand, the people affected were quite sure that nobody knew about their leprosy status and they never thought to disclose it. It confirmed that the both sides have silent stigma.

Conclusion: Increased social distance towards people affected by leprosy is reported by community members.This social distance could create stigma that restricted people affected by leprosy in various activities and opportunities. The SARI Project is testing the effectiveness of several stigma reduction strategies to reduce leprosy-related stigma in the community.

O-207

Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Social Aspects and Quality of Life**
Presenter: Ruth Peters

UNDERSTANDING ADVERSE EXPERIENCES IN A STIGMA REDUCTION PROJECT IN CIREBON, INDONESIA; DIAGNOSIS AND CONCEALMENT

R. M. H. Peters [1,*], B. Miranda-Galarza [1], .. Dadun [2], M. Lusli [3], M. Zweekhorst [1], W. van Brakel [1], .. Irwanto [3], J. Bunders [1]

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Introduction: The importance of leprosy-related stigma is increasingly acknowledged, but the effectiveness of approaches that aim to address it has not yet been studied well. Hence, there is a need for more research on the impact of stigma-reduction strategies. The Stigma Assessment and Reduction (SARI) project is such a project. It aims to reduce stigma through counselling, contact and socio-economic interventions and assesses the effectiveness of these in Cirebon, Indonesia. Stigmatization takes shape in specific contexts of culture and power. Hence, besides changing attitudes and beliefs, stigma reduction is about changing power relations. This, inevitably brings along adverse experiences in people affected by leprosy.
Adverse experiences related to stigma are common and should be expected, but should be addressed with the utmost care. We wanted to understand these adverse experiences better in order to prevent the preventable and to build capacity to deal with the unpreventable. In this paper we specifically explore the issues around not knowing the diagnosis and concealment.

Methods: The SARI project, initiated in 2010, is a large participatory, mixed-methods intervention study. Throughout the project, notes were made on adverse experiences of participants. In November and December 2012 interviews, group interviews and dialogues with the SARIs staff were conducted to increase our understanding of these experiences. These records resulted in detailed descriptions of cases and revealed the two key themes of this paper.

Results: During the first encounter between SARI staff and potential participants, it was found that a small portion (about 5% (n=650)) were not aware of their leprosy history or status. This raised the question: should the project team inform them? Based on personal judgement, SARI's research assistants either used the term the participant used, such as 'skin disease', or shared the diagnosis. Participants that were informed about the diagnosis responded or felt: i) indifferent in particular when they were already cured, ii) happy or relieved to finally know the truth, iii) concerned especially when they were still on treatment, iv) not willing to accept it, or, sporadically (1 case), iv) upset and angry. The latter was considered an adverse experience.
A key element of SARI's work is visiting people affected by leprosy at home. Being visited by a stranger can make family members, friends and neighbours curious. This is problematic if participants wish to conceal their leprosy history or status. An estimated 5-10% did not tell anybody and a slightly bigger proportion (10-20%) only informed the close family. In a few cases family members found out about the leprosy history or status of a participant, directly or indirectly, through SARI's work. In most cases, this had a positive impact, but in one case a family member took distance. This was also classified as an adverse experience.

Conclusion: The degree of awareness concerning the leprosy history or status of a participant or the people around him or her is important to consider. We suggest that a stigma-reduction project team i) should have a thorough understanding of the local context, ii) decides on forehand on specific principles and practices regarding the diagnosis and concealment and ensures capacity, iii) creates space and an encouraging atmosphere to discuss adverse experiences that nevertheless occur. Projects should aim to prevent adverse experiences but should anticipate that it will be impossible to prevent all.

O-208

Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Social Aspects and Quality of Life**
Presenter: William Hunt

A CASE-CONTROL STUDY COMPARING THE QUALITY OF LIFE OF PATIENTS UNDERGOING LEPROSY TREATMENT TO PEOPLE CURED OF LEPROSY AND CONTROLS IN VIET NAM

W. T. N. Hunt [1,*], V. H. Thái [2], P. H. Hải [2], N. T. Hùng [2], N. N. Truóng [2], V. Nikolaou [1], N. D. Đ. Khoa [2], T. H. Ly [2]

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Introduction: Leprosy is characterised by neurological and cutaneous manifestations which exert a substantial impact on the physical and psychological wellbeing of people affected. Both the WHO Quality of Life-BREF (WHOQOL-BREF) and the Dermatology Life Quality Index (DLQI) have been used in studying quality of life (QOL) in leprosy. The WHOQOL-BREF assesses QOL using 26 questions categorised into four subdomains. The DLQI asks 10 questions on the impact of dermatological disease on QOL.
Our primary aim was to assess and evaluate the QOL of people being treated for leprosy, people cured of leprosy, and controls, in Viet Nam. The secondary aim was to assess the background variables and how they impacted the QOL scales. There are currently no published studies that have reported on QOL using both the WHOQOL-BREF and the DLQI, furthermore, no studies have investigated these groups of participants in Viet Nam.

Methods: 102 (34 matched sets) adult participants were enrolled using a consecutive sampling technique. Patients receiving or <3 months since leprosy treatment (Group A), were enrolled from Ho Chi Minh City and the surrounding province of Dong Nai. People cured of leprosy (Group B) and controls (Group C) were matched to Group A patients by gender, age (within 4 years) and area. Written, informed consent was obtained and then all participants were interviewed owing to the low levels of literacy present. The interviewer completed a proforma that collated background characteristics, self-rated disability and stigma, the validated Vietnamese (VN) DLQI, and the currently unvalidated VN WHOQOL-BREF.
Owing to non-normality, the primary aim was analysed with Kruskal-Wallis (with Wilcoxon as a post test) and the chi2 test determined differences in background variables. Spearman correlation determined the association of background variables with the QOL scales.

Results: The sample's median age was 41; each group had 28 men and 6 women. For the DLQI, Groups A & B had significantly higher (lower QOL) scores from Group C for multiple subdomain scores, including symptoms & feelings (A vs C, p=0.0004; B vs C, p=0.001), work & school (A vs C, p=0.003; B vs C, p=0.006), and the total DLQI score (A vs C, p=0.0009; B vs C, p=0.0025). For the WHOQOL-BREF, the total score was not statistically different (p=0.089), however, the physical health subdomain was significantly different (A 63%, B 69%, C 72%, p=0.043). Significant background variables included the presence of physical disability (37.5% A, 30% B, 9% C, p=0.02) and education level (p=0.0002), with 24% of A, 21% of B and 68% of Group C having attended high school. Self-rated stigma was not different between the groups (p=0.36).
The total DLQI score had a significant positive correlation with employment status (p=0.04), with retired scoring highest. Physical disability was associated with higher total DLQI scores (p=0.001). There was a positive correlation between education level and total WHOQOL-BREF score (p=0.02) and a negative association with physical disability (p=0.01).

Conclusion: The DLQI results shed greater light on the QOL disparity with leprosy. Clinically, Groups A & B's mean total DLQI scores translate that their skin has 'small effect' on their life. The WHOQOL-BREF results were unexpected, we postulated there would be large differences between groups and whilst a bigger sample size would give more power, many of the groups' subdomain scores had similar medians. Another surprise was the stigma assessment being very non-significant. Lastly, in Viet Nam, like in other countries leprosy still affects those with the least education.

O-209

Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Social Aspects and Quality of Life**
Presenter: Mr Royce Kurian

DISABILITY ADJUSTED WORKING LIFE YEARS (DAWLYS) OF LEPROSY AFFECTED PERSONS IN INDIA

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Introduction: Leprosy, a chronic mycobacterium disease is well known to cause irreversible disabilities if not treated early with MDT. Social stigma and widespread misconceptions and ignorance underlie late reporting and progressive disabilities resulting in economic and social disadvantages. Effective rehabilitation and appropriate public health programs require precise data on prevalence, incidence and consequences of leprosy disabilities. Disability-adjusted life years (DALYs) have been accepted as a useful method to estimate the burden of leprosy, and can be adapted to determine the number of productive years lost due to the disability. DALY has been reported for many studies but not for leprosy. Hence this research carried out in three states of India. In view of the fact that in this study, productive working years are used, the term is modified as DAWLY.

Methods: A representative random sample of 150 leprosy affected persons, 50 from each states of Uttar Pradesh, West Bengal and Chhattisgarh, was chosen, and data were collected on detailed work-life history, occupation, time when leprosy was discovered, reported and treatment started, break of job/loss of income due to leprosy. The loss of wages and durations were used to compute the life-years lost due to leprosy, and summarized over the average total duration of 42 years of productive work-life from 18 to 60 years. The percentage losses were determined and differences tested for statistical significance.

Results: The overall mean (SE) disability adjusted working life years was 28.6 (0.67), a reduction of 13.4 years from the ideal productive working life period of 42 years. The youngest patients have a reduction of 41.4%, as compared to the oldest patients. There is a statistically significant increase in loss based on year for those whose disability started earlier (p=0.0024).

Conclusion: On an average, up to 30% of the leprosy affected person's work life could be lost due to disability, which is a serious problem requiring effective and prompt attention to prevent and manage.

O-210

Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Social Aspects and Quality of Life**
Presenter: Mrs Valsa Augustine

LIFE SATISFACTION AND STIGMA PROFILE OF LEPROSY PATIENTS WHO HAVE BEEN RELEASED FROM TREATMENT

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Introduction: Despite advancement in treatment of leprosy, stigma associated with leprosy continues to impact the life of the affected person even after the disease has been cured. At clinical psychology unit of S.I.H-R&LC, Karigiri it has been observed that fairly significant number of RFT patients report with multiple somatic, non specific complaints which when explored reveal underlying psychological stressors. occassionally they need psychiatric consultation for depression and delusional disorder. These observations reinforce the need for counseling regarding their RFT status and to deal with misconceptions about disease status and to deal with problems due to stigma after they are released from treatment.

Methods: It is a descriptive study. Random sampling technique was used for the selection of patients. Chi-square test was used to study the association between socio demographic variables and life satisfaction index and stigma level, analyzed using SPSS, IBM 19 version. Patients released from treatment within the past 5 years,at Karigiri hospital were taken for the study.55 patients were assessed with Life satisfaction Scale and EMIC (Explanatory model interview catalogue) scale for perceived stigma, both standardized tools.In both tools higher the scores, higher the level of life satisfaction and stigma respectively.

Results: Life satisfaction scale scores reveals association between life satisfaction(LS) and age of onset of the disease.63% of the patients below onset at 36 years of age (mean value for age of onset is 36 years) are having high level of life satisfaction and 71.4% of the patients with onset at above 36 years of age are having low level of satisfaction. P value is less that 0.05 level.
EMIC scale scores reveal association between deformity and stigma.43.8 % of the patients having deformity have medium level stigma, 31.3 % have low stigma, 25% have high level stigma.43.5% of the patients without deformity have high and low stigma.Chi value is 6.029, P value is less than 0.05.
EMIC scores reveal association between stress events and stigma.Among the 55 patients 26 have experience of stress and 29 do not have stress experience.50% (n=13) of patients with stress have high level stigma.26.7% (n=7) of patients with stress have medium stigma and patients (48.3%, n=14) who have no stress event have low stigma. The chi value is 7.143, P value is less than 0.05 level

Conclusion: The results show that there is a significant association between onset (age) of disease and life satisfaction. It could be that earlier the onset better the coping as young patients may adapt easily as they are still earning with family and other resources to support.During late onset,the patients may have stopped working, dependent or less family support.Ageing may be an additional burden.The significant association between stress events and stigma again shows that furher exploration of stress experience may help find out if stigma contributes to sress events and provide appropriate counseling support.The significant association between deformity and stigma shows that deformity plays a crucial role in contributing to the stigma. Even those without deformity have both low and high stigma further reiterating the fact that patients with or without deformity need psychological support to cope with stigma.
The RFT patients may benefit from on going Psyhological assessement and provide support periodically if there are problems to help cope with stigma and improve their quality of life.

O-211

Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Genetics in Leprosy**
Presenter: Dr Deanna Hagge

GENETIC SUSCEPTIBILITY AND SKIN CHEMOKINE EXPRESSION ACROSS THE SPECTRUM OF LEPROSY

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Introduction: Although the spectrum of clinical leprosy is characterized by polarized dermal T-cell immune responses, the role of host genetics and cellular mechanisms underlying these distinct states are largely unknown. We and others previously found that Toll-like (TLR) and Nod-like Receptor (NLR) genetic variants are associated with susceptibility to leprosy and its clinical subtypes. We hypothesized that TLR and NLR variants regulate chemokine secretion which leads to differential recruitment of immune cells to leprosy lesions and contributes to T-cell polarization.

Methods: We obtained dermal biopsies from 73 leprosy patients at Anandaban Leprosy Hospital in Nepal. We used a Fluidigm BioMark HD RT-PCR microfluidic platform to compare transcriptional levels of 23 cytokines and chemokines (normalized to GAPDH control) in patients with Ridley-Jopling classification of either Th1 dominant (borderline tuberculoid and tuberculoid, BT/TT, N= 38) or Th2 dominant (borderline lepromatous and lepromatous, BL/LL, (N=35)). We also isolated genomic DNA for genetic studies.

Results: Among 23 cytokines and chemokines, three (CCL18, CCL2, CCL1, and IL10) had higher and one (CCL17) had lower levels when comparing BL/LL to BT/TT subjects (unadjusted P value <0.05). IFN-g demonstrated a trend towards higher expression in BT/TT subjects (P=0.14). After adjusting for multiple comparisons, CCL2, CCL18, and IL10 had statistically significant differences in expression (adjusted P values=0.002, <0.001, 0.022, respectively). The differences in median normalized expression values for BL/LL versus BT/TT were 148.7 vs 30.1, 371.6 vs 39.8, and 60.7 vs 13.8 for CCL2, CCL18, and IL10, respectively.

Conclusion: Several chemokines were differentially expressed in BL/LL and BT/TT skin biopsies. These chemokines mediate several functions that could regulate the dermal immune response including monocyte recruitment (CCL1 & CCL2), T cell recruitment (CCL18), and T cell polarization (CCL17). Studies are underway to examine whether TLR and NLR genetic variants are associated with chemokine expression in leprosy lesions.

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Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Genetics in Leprosy**
Presenter: Mr Venkata Sanjeev Kumar Neela

VITAMIN D RECEPTOR GENE POLYMORPHISMS AND ITS ROLE IN LEPROSY SPECTRUM

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Introduction: Vitamin D Receptor (VDR) belongs to the family of trans-acting transcriptional regulatory factors. Recent studies revealed the immunomodulatory role of Vitamin D apart from its classical role and it exerts its function through VDR. Polymorphisms in VDR gene have been associated with several infectious, genetic and metabolic diseases. There are fewer reports suggesting the association of SNP's in VDR with leprosy on the other hand very limited information explaining their effect on function. In-vitro studies have shown the beneficial role of vitamin D/VDR on immune function but there are no reports on correlation of VDR expression with Cytokines in Leprosy. So investigating role of polymorphisms and VDR together across the leprosy spectrum with simultaneous monitoring of Th1 & Th2 response would be insightful to understand its role. The study aims to ascertain the association of three SNPs, Taq I (rs731236), FokI (rs10735810) & Apa I (rs7975232) of VDR gene with Leprosy disease and correlate VDR gene expression with Th1 (IFN gamma), Th2 (IL10) & IL17 cytokines in clinical forms of leprosy.

Methods: The study group includes 244 participants constituting leprosy patients (n=122) out of which Multibacillary (n=76), Paucibacillary (n=46) and healthy controls (n=122). Genotyping of Taq I, Fok I & Apa I polymorphisms were done using PCR-RFLP technique. To identify the role of VDR 15 participants with 5 tuberculoid (T-Lep), 4 lepromatous (L-Lep) and 6 healthy controls (HC) were recruited in the study. PBMCs were cultured and stimulated with MLSA, VDR gene expression was analysed using RT PCR & cytokine assays in culture supernatants by sandwich ELISA. Analysis of genotype data was performed using **Open Epi software** (version 2.2.1), haplotyping using **Haploview** version 4.2 while F and Pearson correlation test using Graph Pad Prism software, version 5.00.

Results: The frequency of CC & GG genotypes at Taq I & Apa I positions were significantly high ($p<0.05$) in Multibacillary (MB) and Paucibacillary (PB) patients compared to controls indicating a positive association, while the frequency of GG genotype at Apa I position in MB patients and TT, ff & GG genotypes at Taq I, Fok I & Apa I positions in PB patients were significantly low compared to controls indicating a negative association.
Out of 7 haplotype combinations, the haplotype C-F-T and C-f-T (at Taq I, Fok I & Apa I positions) were positively and T-F-G negatively associated with leprosy disease ($p<0.05$).
The VDR gene expression was significantly high in T-lep patients ($p<0.05$) when compared to L-Lep patients and healthy controls. VDR expression was inversely correlated with IL10 levels in L-Lep patients ($r= -0.99$, $p=0.004$) and no correlation was observed with IFN gamma and IL17 cytokine levels.

Conclusion: The genotypes CC & GG at Taq I & Apa I positions were negatively associated with Multibacillary (MB) and Paucibacillary (PB) groups and may offer resistance to leprosy while the genotypes TT, ff & GG at Taq I, Fok I & Apa I positions in PB group and GG genotype at Apa I position in MB group were positively associated and perhaps may be a risk factor for Leprosy. The haplotype combinations C-F-T and C-f-T (at Taq I, Fok I & Apa I positions) offer resistance while T-F-G is a risk factor for Leprosy disease.
VDR expression was high in T-Lep patients with subsequent cell mediated response. The expression of VDR has direct correlate with IL10 in L-Lep patients and further experiments with higher sample number and genotype cytokines correlate may give better idea of VDR role in Leprosy disease and pathogenesis

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Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Genetics in Leprosy**
Presenter: Prof Furen Zhang

GENETIC RESEARCH OF LEPROSY

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Introduction: The narrow host range of *Mycobacterium leprae* and the fact that it is refractory to growth in culture has limited research on and the biologic understanding of leprosy. Host genetic factors are thought to influence susceptibility to infection as well as disease progression, with estimated heritability of up to 57%.

Methods: We conducted out a series of genome-wide association studies (GWAS) by genotyping 706 leprosy patients, 1,225 controls and 4,367 population controls using the Human610-Quad BeadChip (Illumina). Those single-nucleotide polymorphisms (SNPs) that were most strongly associated with the disease in genome-wide association stage were further validated in replication sets totaling 3,301 leprosy patients and 5,299 controls using the Sequenom MassARRAY and Taqman platform. Based on our GWAS datasets, two candidate gene analyses were also performed in the same cohort using the Sequenom MassARRAY platform.

Results: Totally we identified 18 SNPs within 8 susceptibility genes that showed significant associations with leprosy in our GWAS: CCDC122, LACC1, NOD2, TNFSF15, HLA-DR, RIPK2, IL23R and RAB32. In two candidate gene analyses, BCL10, IL12B and IL18RAP/IL18R1 were also identified to exceed the genome wide association threshold (p values $<5.00\times10^{-8}$). Most of these genes feature in the NOD2-mediated regulatory node of innate immunity. And also, seven susceptibility genes (CCDC122, LACC1, NOD2, TNFSF15, IL23R, IL12B and IL18RAP/IL18R1) have been implicated in inflammatory bowel disease (IBD).

Conclusion: Variants of genes in the NOD2-mediated signaling pathway (which regulates the innate immune response by activating NF-κB pathway as a part of the host defense response to infection) are associated with susceptibility to infection with *M. leprae*. The identification of IL23R revealed a potential involvement of autophagocytosis in leprosy pathogenesis. And, our findings also demonstrate the common genetic susceptibility between infectious and inflammatory diseases.

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Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Genetics in Leprosy**
Presenter: Ms Sukanya Wattanapokayakit

GENOTYPE IMPUTATION ANALYSIS OF LEPROSY SUSCEPTIBILITY GENE IN THAI POPULATION

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Introduction: Background: Leprosy is a chronic granulomatous infectious disease caused by *Mycobacterium leprae*. Genome-wide association studies (GWAS) have firmly established roles for host genetic factors in human susceptibility to infection and in the progression of infectious diseases and leprosy is the most successful infectious disease in term of number of novel susceptibility genes identified from GWAS. Imputation algorithm uses reference haplotype panels from the closely related populations for statistical inference of the low quality genotypes data or ungenotyped markers to permit the integration and comparison of the imputed genotypes data in cross-platform or different studies analysis. Imputation is usually assist in fine mapping studies and meta-analysis of GWAS data sets because this technique allow the cross platform association analyses of majority of genetic markers type in individuals in the study.

Methods: In this analysis, 346 leprosy cases and 200 control individuals were genotyped by Illumina Ommi express platform. Normal quality control of genome wide association study was applied by GenABEL. Imputation was carried out by MACH. The concordance rates between the imputed and observed genotypes were used as a measure of imputation accuracy and the proportion of non-missing genotypes as a measure of imputation efficacy. We used three reference panels: CHB panel (45 haplotypes), JPT (45 haplotypes) and combined CHB and JPT from HapMap Phase II using the program MACH for 2 step imputations. The association analyses on the imputed data sets were done and top 50 SNPs with most significant association evidences were selected for replication in the second studies. In the replication data set, 505 leprosy cases and 1013 controls were genotyped by invader assay.

Results: There were statistically convincing differences between leprosy *per se* patients versus controls which showed significantly in *RIPK2* gene located in chromosome 8. Two loci in *RIPK2* gene showed genome-wide significance with susceptibility of leprosy. Top 2 SNPs were rs44xxx (P = 2.16x10^{-08} (odds ratios 1.93 (95% CI 1.42-2.63)) and rs40xxx (P =2.27x10^{-08} (odds ratios 2.20 (95% CI 1.51-3.2)).

Conclusion: This analysis indicated the strong association of *RIPK2* loci with susceptibility to leprosy in Thais and confirmed the usefulness of imputation analyses in GWAS analysis in Thais using existing public Hapmap genotype data.

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Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Genetics in Leprosy**
Presenter: Jean Gaschignard

HUMAN GENETICS OF LEPROSY POLARIZATION

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Introduction: The observation of considerable interindividual clinical variability among individuals exposed to leprosy supports the view of a major contribution of host genetic factors. Linkage and association studies have identified number of genes implicated in the development of leprosy, inside as well as outside the HLA region. Most studies on clinical subtypes of leprosy have compared affected individuals, either paucibacillary or multibacillary, to unaffected individuals. Our study aims at identifying the genes that impact on the polarozation of leprosy *per se* towards a multibacillary or a paucibacillary form of the disease by performing a genome-wide association on familial data from Southern Vietnam.

Methods: Families with at least one child afffected by leprosy were enrolled by local physicians at he Dermato-Venerology Hospital in Ho Chi Minh City, Vietnam. Leprosy status was first classified according to the Ridley Jopling classification (LL, BL, BB, BT, TT) and then binarized as follows: LL, BL and BB individuals were classified as "multibacillary", whereas BT and TT were classified as "paucibacillary". DNA was extracted in Vietnam. Genotyping of more than 600,000 Single Nucleotide Polymorphims (SNPs) was performed using the Illumina Human660W beadchip. Statistical analysis were performed using several softwares including the popular PLINK, FBAT and ROADTRIP.

Results: We enrolled 680 families including a total of 925 individuals and 1310 controls, among which 511 were multibacillary and 395 paucibacillary. Male/female sex ratio was 2.5/1 in accordance with the litterature. Median age at diagnosis was lower than 25 years both for multibacillary and for paucibacillary cases. The vast majority of the individuals (i.e. > 95%) was of Kinh origin. Applying very stringent quality controls led to the selection of more than 450,000 SNPs. When contrasting allele transmission from parents to affected children displaying either the multibacillary or the paucibacillary form of the disease, 32 SNPs reached suggestive genome-wide association significance ($p < 10^{-5}$). Of note, none of these SNPs belonged the HLA region. A small preliminary "internal" replication using the independent set of parents of our sample (130 multibacillary and 80 paucibacillary independent parental cases) confirmed several of the original findings.

Conclusion: Our study is the largest genome-wide association study with familial data on leprosy ever, and the first to directly compare multibacillary to paucibacillary leprosy cases. Preliminary results suggest that genes from the HLA complex do not participate to the polarization of the disease. By contrast, there is clear evidence that previously unnoticed genes account for this polarization. We are currently replicating and validating the most promising SNPs in two population-based case-control samples from Vietnam and Brazil. Functionnal explorations of the most convincingly associated SNPs will then be conducted to disantangle the molecular identity of the implicatd pathways.

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Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Genetics in Leprosy**
Presenter: Adalberto Santos

GENETIC DIVERSION OF NAT2 AND CYP2E1 GENES IN LEPROSY PATIENTS FROM THREE DIFFERENT GEOGRAPHIC REGIONS FROM BRAZIL

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Introduction: Dapsone-Induced adverse drug reactions (ADRs), mainly characterized by blood disorders and less frequently, hepatotoxicity is a relevant subject of investigation. Dapsone metabolization is driven by acetylation followed by an oxidation reaction mediated by N-Acetyltransferase 2 (*NAT2*), *CYP3A4*, *CYP3A5*, *CYP2E1* and *CYP2C9* genes and differences in toxicity have been attributed to polymorphisms in such genes. Phenotypically NAT2 metabolization classifies individuals in slow, intermediate or fast acetylators, which are direct associated with drug serum levels. Basically, slow acetylators are likely to achieve higher serum levels and may be at higher risk for toxicity. In parallel, metabolic products of CYP2E1 are toxic. Our goal was to identify the *NAT2* and *CYP2E1* genetic variations in three different geographic regions from Brazil and to evaluate its possible association with ADRs occurrence in leprosy patients.

Methods: After written consent, 444 leprosy patients residents in the states of Acre, Tocantins and Rondônia (North), Rio Grande do Norte and Pernambuco (Northeast) and Rio de Janeiro, Campos dos Goytacases and Espirito Santo (Southeast) were enrolled in the study. For the association study, patients were stratified into two groups: i) patients that presented any dapsone-induced ADR manifestation during treatment and ii) patients without any drug-induced clinical intercurrence during treatment. Polymorphisms were identified by direct DNA sequencing (*NAT2*) or PCR-RFLP for *CYP2E1* (SNP C-1053T).

Results: The most frequent alleles in the whole population were *NAT2**5B (30%), *NAT2**4 (26%) and *NAT2**6A (21%) corresponding to 43% slow, 41% intermediate and 12% rapid acetylators. Four per cent of the patients could not have the acetylation status determined. Comparison of the acetylation status between North and Northeast was significant different (χ^2=7.0), the same comparison between Southeast and Northeast was also significant (χ^2=10.9). No significant differences was observed upon comparison of Southeast and North (χ^2=2.7). Analysis of the *CYP2E1* alleles or genotype showed no significant differences among the groups in the different sites. In general, no association was found between the studied genotype/phenotype and ADRs occurrence. The finding of a significant difference between North and Northeast, Southeast and Northeast, may have and important implication in the treatment outcome for drugs metabolized by NAT2. A higher number of samples from different regions should be analyzed together to have a better idea about the possible application of pharmacogenetics in treatment consulting for leprosy and other disorders.

Conclusion: As expected, *NAT2* presented a significant difference between geographic regions in Brazil. This observation should be taken into consideration when defining therapeutic schemes for diseases using drugs metabolized by this gene.

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Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Leprosy Control**
Presenter: Thilakavathi Subramanian

PATIENTS' PERCEPTIONS ON DISCLOSURE OF LEPROSY BY HEALTH CARE PROVIDERS IN SOUTH INDIA: RELEVANCE TO LEPROSY CONTROL

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Introduction: Stigma, isolation and discrimination are typically associated with diagnosis of leprosy and its disclosure. Health care providers (HCP) always find it challenging to disclose the diagnosis of leprosy to patients and their family members. Some health workers never disclose their diagnosis to patients and avoid mentioning leprosy. We explored perceptions of leprosy patients in South India regarding disclosure of leprosy disease status to them by health workers.

Methods: From a rural community covering 7 peripheral health facilities (Population size of 200,000 in 148 villages) near Chennai, South India; both pauci-bacillary (PB) and multi-bacillary (MB) patients registered during 1991-1999 or those newly detected during 2008-2011 were considered for inclusion in the qualitative study (n=1,704). A trained investigator obtained written informed consent of the willing respondents and collected information through in-depth interviews in Tamil, the local language. The interview guide covered inquiry about knowledge, attitude and social acceptance in the context of disclosure of leprosy.

Results: We interviewed 155 of 648 purposively selected patients from 53 out of 143 villages in the study area. Of the 155 patients, 31 (20%) reported that they were not informed of their disease by HCP. They were informed to be having skin disease or a skin patch. Of these 31 patients, 23 were women; most of them were PB, except a single case of MB. Seven of these patients (2 male; 5 female) who had not yet started on treatment mentioned "*I did not know it is leprosy; I was told that it is a skin patch; so I did not take it seriously; but I was given tablets for one month; I have kept them safely but not taken even a single dose*"; ..."*I was informed that I have only skin disease and nothing else; why should I take any treatment; there was no need*"; "*Since I was told by the lady who came in the jeep that I have only skin patches ('thembal'* in Tamil), *I did not consider it serious and I have not taken any treatment*".
Seven patients who took treatment when they were young and not informed of having a leprosy patch, even to their parents, (4 male; 3 female) mentioned " *I was told 15 yrs back (when I was 8 years old) that, I had skin patch ('padai') for which I was given treatment; but I don't know for how long... now nobody knows anything about that...*"; "*When I was 10 years of age I took treatment for skin problem; I do not know much about the treatment;*" Non-disclosure about leprosy by HCP was reported by 2 men and 15 women. " *I was told by the health personnel that I have a 'skin disease'*; "*They did not tell us anything about leprosy, she told us only as a skin problem, anyhow, now it is OK, so we are not that much bothered*"

Conclusion: From public health point of view, non-disclosure of leprosy by HCP is an issue. The patients may not get alerted and cautioned about seriousness of the disease. This may adversely affect acceptance and adherence to treatment. Inadequate or lack of treatment can lead to progression of diseases and occurrence of deformity. In the context of general decline in the burden of leprosy in India and lack of expertise in primary health care settings, HCPs need to be re-oriented on disclosure of leprosy to patients and not hiding the disease diagnosis from them in view of its implications on prevention and control of leprosy.

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Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Leprosy Control**
Presenter: Weena Primkaew

COST-EFFECTIVENESS ANALYSIS OF COMBINED ACTIVE AND PASSIVE VERSUS PASSIVE LEPROSY CASE DETECTION ALONE IN THAILAND

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Introduction: Leprosy is one of infectious disease which leads to physical and social consequences for those who affected. Regarding leprosy situation in Thailand, it has been shown that the prevalence rate has been gradually declined from 51.5 cases per 10 000 in 1964 to 0.17 case per 10 000 inhabitants in 2007. According to WHO definition, the prevalence of less than 1 per 10 000 populations means that leprosy is not a public health problem. However, the proportion of new cases with grade 2 disability at the time of diagnosis has not declined which could be interpreted that the delayed diagnosis still exists, since 1984 to 2007 has been between 11.76% and 11.46%.
Case finding is one of the core activities of leprosy elimination and control. There are two methods of case finding which are; active case detection (ACD) and passive case detection (PCD)
As prevalence rate has gradually declined and the budget is limited, appropriate case detection is needed. The researcher, therefore; is interested to carry out a comparative study of passive case detection alone and combined active and passive methods of leprosy case detection, to find out which one is most effective.

Methods: This study is a retrospective analytic study, is focused on the analysis of the cost for combined ACD and PCD versus PCD alone method in which how to calculate the costs for each case detection methods, how to determined as the number of case detection and the data come from primary data, secondary data from the leprosy elimination program of Thailand (2006).

Results: The major objective of this study is to analyze the cost and effectiveness of different case finding activities: Combined active and passive leprosy case detection versus Passive leprosy case detection alone for the year 2006 in Thailand, from provider as well as patient perspectives. In this study, effectiveness in terms of new cases detected is used to find out which method of case finding activity is better. The cost-effectiveness ratios are calculated for non-endemic and endemic areas.
The total cost, from the provider perspective, of the combined ACD and PCD method was 1,427,800.23 Baht and the number of newly detected cases 35. The cost-effectiveness ratio was 40,794.29 Baht. The total cost, from provider perspective, of the PCD alone method was 1,340,230.20 Baht, with 16 newly detected cases. The cost-effectiveness ratio was 83,764.39 Baht. The total costs from a patient perspective were similar in both combinations, higher in non-endemic areas than in endemic areas. The study concludes thatthe combined ACD and PCD method successfully detected more new cases than the PCD alone method. At the time of detection, using ACD, 8.3% cases had a disability of grade 2 compared with 14.3 % and 12.5% using ACD and PCD; and PCD alone method as respectively. This may reflect the delay in case detection using PCD alone method. When we use weight calculation, the result is that the cost-effectiveness ratio of PCD alone method is 1.27, 1.19, and 1.24 times is higher than combined ACD & PCD method in non-endemicarea, endemic area, and region level respectively.

Conclusion: The combined ACD and PCD method successfully detected more number of newly detected case than PCD alone method. At the time of detecting by ACD, 8.7% cases had disability grade 2. This may be a reflection of a delay in case detection of PCD alone method.

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Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Leprosy Control**
Presenter: Mary Gorreth Nabukenya-Mudiope

COPING WITH LEPROSY IN A LOW-ENDEMIC COUNTRY: THE SURVEILLANCE PERSPECTIVE

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Introduction: The Uganda Ministry of Health-National TB/Leprosy Programme (NTLP) has observed a diminishing trend of newly detected leprosy cases since 1992 when the programme was formed. In spite of having achieved the World Health Organization (WHO) leprosy elimination target in 2004, the NTLP still faces challenges of establishing a rationale for focusing programmatic leprosy specific interventions to sustain control activities. In order to address the challenge, we analyzed the trends in the characteristics of new leprosy cases from 2002 to 2011 in Uganda by region of initial registration.

Methods: Patient and disease characteristics of newly diagnosed leprosy cases (2002 to 2011) were retrospectively extracted from the electronic database maintained by German Leprosy and Tuberculosis Relief Association (GLRA)-Uganda. This information was validated by the investigator using copies of NTLP quarterly reports on leprosy control submitted by each district in Uganda kept at the GLRA office. The data were analysed using STATA version 11.2.

Results: From 2002 to 2011, the NTLP registered a total of 4198 new leprosy patients on multidrug therapy (MDT). A sharp increase in the notification of new leprosy cases was observed from 2002 (330 cases) to 2004 (622 cases) and a gradual reduction to 340 cases in 2011. Most of the new cases were between the ages of 25 and 64.9 years. About 10% of annual notifications were children (<15 years). Male to female proportions were similar. Over two-thirds of annual notifications were of Multibacillary (MB) leprosy type with increasing proportion in the last five years. The proportion of new cases presenting with grade 2 disability annually has remained high recording 26% in 2011.
North and North Western zones of NTLP contributed half of the overall notification and 75% of all notified children (<15 years). The productive age group (25<65years) remained predominant in the regions except North East which showed no trend. Four (Kampala, South West, North East and South East) of the nine zones registered more males than females at least in the last 5 years and others showed similar proportions of males to females. The proportion of MB leprosy was lower in North and North Western zones compared to the rest of the zones that registered fewer new cases. Proportion of new cases presenting with grade 2 disability was higher in zones that notified fewer cases annually.

Conclusion: The higher burden of leprosy and children proportion noted in the North and North Western zones of NTLP over the years present them as priority areas for a full range of leprosy

specific interventions. Measures to sustain community and health worker awareness of leprosy with the support of an appropriately integrated referral system are recommended for the zones that notify fewer leprosy cases.

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Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Leprosy Control**
Presenter: Dr Annamma John

EARLY NERVE FUNCTION IMPAIRMENT IN LEPROSY AND ITS CORRELATES IN THE POST ELIMINATION ERA

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Introduction: Leprosy is an infectious disease with a predilection for nerves, which it affects by invasion of Schwann-cells. Motor and sensory nerve function impairment are still the worst complications of leprosy and without early detection and effective treatment may lead to irreversible nerve function impairment (NFI), with subsequent chronic disabilities resulting in serious medical and social problems in the affected person. Despite several studies, mostly operational, and undertaken mainly to manage the complications, the problem of early NFI in leprosy and its association with various social, clinical and epidemiological parameters, has not been thoroughly investigated. This study describes in detail the profile of untreated leprosy patients reporting for treatment in 7 centers from 6 endemic states in the integrated set up of the post-elimination era in India.

Methods: This is a descriptive study of a representative random sample of patients who were reporting for the first time to different Leprosy Mission Referral Centres at Delhi, Purulia, Barabanki, Naini, Kothara, Chandkuri, and Muzaffarpur. The demographic details, along with history, and clinical examination including Voluntary Muscle testing and Sensory Testing (VMT/ST) were done and recorded for all the patients. A semi structured interview regarding extent and causes for delay in reporting was also conducted.

Results: A total of 374 patients were recruited for this study. There were 141 females and 233 males. The age of the patients ranged from 3 years to 80 years, with 66% between 15 and 44 years. There were 35 male and 32 female children. The main occupations were manual laborer/farmer (29%), students (25%), housewife (22%), Skilled labourers (10%), Tradesmen, Clerical / professional (6%) and others (8%) etc. 72% were either illiterate or had only primary education. The reason for visiting the hospital was for a patch 53%, anaesthesia 22%, and reaction 16%, Ulcer and /or deformity 9% and 1 % came for non leprosy symptoms. 52% of the patients came within 6 months of the symptoms, whereas 30% came between 6 months to 1 year and the rest 18%, delayed even upto 5 years. The bacterial Index was 0 in 84% of patients while 6%, had a BI <2+ and 10% had BI above 2.

9% and 14% patients had WHO grade I and II disability respectively at the time of reporting, and 34% were prescribed steroids along with MDT at the first visit. The main cause (58%) for delay was ignorance of the early signs of leprosy.

Conclusion: An analysis of socio demographic aspects of this study population shows that the risk of leprosy is more among illiterate, adult people especially in the 3rd and 4th decades and that more males than the females report for medical care. WHO disability grades show that patients are still delaying before seeking treatment, resulting in impairments and disabilities. 34% had to be given steroids for reaction and neuritis along with Multi Drug Therapy at the first visit, which is a cause for concern.

0-221

Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Leprosy Control**
Presenter: Rupendra Jadhav

EPIDEMIOLOGICAL STUDY OF RESETTLEMENT VILLAGE OF CURED LEPROSY PATIENTS FROM A LOW ENDEMIC AREA IN MAHARASHTRA (INDIA)

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Introduction: The risk of transmission of leprosy is related to the presence of active cases around in the community. Subclinical infection, nasal carriage and indirect exposure could also play important role in the transmission of the disease. Many cross sectional studies have shown widespread exposure to *Mycobacterium leprae* in endemic countries. But significance of such exposure is least understood.
Longitudinal cohort study was undertaken to understand transmission dynamics of *Mycobacterium leprae* by testing nasal carriage and mucosal immune response in subjects from resettlement village of cured leprosy patients.

Methods: 375 subjects in the age group 5-60 years from resettlement village of cured leprosy patients were selected and recruited for the study after obtaining informed consent. Nasal swabs and saliva samples were collected for testing *M. leprae* DNA and *M. leprae* reactive antibodies (ML-IgA) respectively. Subjects were followed four times every three months. Soil samples were collected from 50 different locations for testing *M. leprae*. Whole blood assays (WBA) and humoral immune response (antibodies against ND-O-BSA, native PGL and LAM) were tested for 50 subjects who consented to give blood.

Results: Large number of subjects from all age groups showed presence of nasal *M. leprae* (ranging from 6.6% to 14.1%) in different follow ups. PCR positivity in children was higher than the adults in all follow ups. More than 70% population (ranging from 70.6% to 82%) showed ML-IgA in saliva but the response in children was significantly lower than in adults in all follow ups. No difference was seen in ML-IgA response in male and female subjects. There was no association between MI-IgA status and BCG vaccination history of the subjects. Nasal PCR positivity appeared transient in nature with some subjects showing repeated exposure. In every follow up we found large proportion of PCR positive subjects with history of disease (ranging from 33.3% to 56.6%). 9 out of 50 soil samples showed presence of *M. leprae* DNA. Antibodies (IgG and IgM) against PGL (44% and 42% of the subjects respectively) and LAM (48% and 27% respectively) were also detected. WBA assay showed increased production of TNF-α and IFN-γ when challenged with 35KDa antigen.

Conclusion: Results show that subjects residing in resettlement village are not only widely exposed to *M. leprae* but there is frequent and repeated (direct or indirect) exposure increasing the risk of reinfection.

0-222

Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Leprosy Control**
Presenter: Thomas Doker

HANSEN'S DISEASE TRAINING AND SURVEILLANCE MEASURES IN THE U.S.-AFFILIATED PACIFIC ISLANDS, 2012-2013

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Introduction: In 2011, only three countries in the World Health Organization (WHO) Western Pacific Region Office (WPRO) jurisdiction failed to reach or maintain WHO's Hansen's Disease (HD) prevalence elimination goal of <1 case per 10,000. Two, the Republic of Marshall Islands (RMI) and the Federated States of Micronesia (FSM), are part of the U.S.-Affiliated Pacific Islands (USAPI). Substantial migration occurs between USAPI jurisdictions, as well as to Hawaii and the mainland United States. For example, 93.5% of HD cases diagnosed from 2002-2011 in Guam came from FSM (87%), the Republic of Palau (5.2%), or RMI (1.3%). Furthermore, in 2010, USAPI patients comprised ~20% of U.S. HD cases, a percentage that increased from 2% in 1990. The WPRO, the Centers for Disease Control and Prevention (CDC), the National Hansen's Disease Program (NHDP), and the American Leprosy Missions provided training and evaluated surveillance systems to assist WPRO jurisdictions with Hansen's disease control.

Methods: A training workshop sponsored by WPRO, addressing HD diagnosis, treatment, and surveillance was held in FSM 10-13 September 2012. The other two countries not reaching elimination goals, RMI and Kiribati, also sent representatives. As a result of feedback and in coordination with partners, CDC developed additional tools to assist USAPI jurisdictions with HD surveillance. From 20 January-9 February 2013, WPRO, CDC, and NHDP conducted 3-day training workshops in the Commonwealth of Northern Mariana Islands, the Republic of Palau, and Guam. Pre- and post-tests were used to evaluate training.

Results: Training focus was placed on early diagnosis, early and complete treatment, and prevention of disability. CDC, NHDP, WPRO, and jurisdictional HD program managers presented topics covering diagnosis, treatment, complications, and surveillance at each workshop. Newly developed HD surveillance tools including a patient record card, patient registry, and web-based module were introduced. On average, pre- and post-test scores increased from 34% to 89%.

Conclusion: Although only two USAPI jurisdictions have failed to reach WHO prevalence elimination goals, widespread migration of cases affects all six USAPIs and the United States. A coordinated surveillance system will be valuable in tracking patients through completion of treatment, with the goal of ultimately decreasing HD prevalence in USAPI populations, in turn decreasing the burden of HD in the USAPIs and United States. Significant HD knowledge gaps were evident at each location, which the training was effective in addressing. Future HD health worker training and active surveillance activities are planned to further assist the USAPIs in improving HD program activities.

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Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Reconstructive Surgery**
Presenter: Krishnamurti Kamble

LONG TERM OUTCOME OF TIBIALIS POSTERIOR TRANSFER FOR CORRECTION OF FOOT DROP IN LEPROSY: REPORT FROM REGIONAL LEPROSY TRAINING AND RESEARCH INSTITUTE SERVING AN ENDEMIC AREA IN INDIA

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Introduction: Approximately 25% patients with leprosy have lateral popliteal nerve involvement of variable degree and 2·5% patients with leprosy develop foot drop, a result of paresis of the muscles of the anterior and lateral compartments of the leg. The goal of the corrective surgical procedure is to provide a stable plantigrade foot and restoration of normal gait. We report long term outcomes of circumtibial (CT) transfer of tibialis posterior (TP) in a large number of patients from a single centre.

Methods: Total of 236 patients with median age of 37.27 years underwent posterior tibial tendon transfer by the CT route for leprosy related foot drop (January 2001· December 2011). Of these, 165 procedures were performed at the tertiary referral Institute; 71 procedures were performed by an out · reach team as camps at district hospitals of Chhattisgarh and Madhya Pradesh states of central India. 221 patients with a 225 foot drop were included while 15 patients were excluded in the study as they lost to follow-up. A total of 4 patients underwent bilateral correction of foot drop. The pre and post-operative physical therapy was prearranged for all patients. At the time of reporting, the median follow-up was 4 years(1·10 years). Surgical outcomes and functional improvements were measured using a standard Stanmore system that utilizes scoring from 7 different functional categories for a total score of 100.

Modified Srinivasan's method as described was utilized in all the patients: Tendoachillis is routinely lengthened by percutaneous tenatomy so that the foot can be passively dorsiflexed to at least 60·70^0. After harvesting the tibialis posterior from the navicular bone the tendon bifurcation was carried out 2· 3 cms above the ankle to provide pull vertically. Two slips of tibialis posterior are delivered subcutaneously into the lateral incision instead of medial; this helped reducing the recurrent inversion. The lateral slip is sutured first with the tendon of Extensor Digitorum Longus and peroneus tertius. This will facilitate the eversion at ankle. The medial slip of the tibialis posterior is attached to the tibialis anterior instead of Extensor Hallucis Longus. Proximal shifting of the attachment of medial slip reduced the effective length of the tendon so that the pull becomes more vertical during act of dorsiflexion. The leg and foot were kept in a dorsiflexion splint while suturing the tendons.

Results: Mean postoperative dorsiflexion in 190 males and 31 females was 11.16^0 (SD·2.75). Out of 221patients 191 were MB cases while 30 were PB case. Assessment using the Stanmore system revealed excellent results in the majority of patients. For patients with 1·3 years follow up (n=104), 4·7 years follow up (n=90),and 7·10 years follow up(n=31)optimum surgical correction and functions were achieved in 100%, 97.7% and 94% respectively. Functional comparison between pre-operative and post-operative phases were statistically significant (0.001) following surgery (paired t test). suboptimal outcome in two patients was a result of puckering at surgical wound at medial lower 3rd leg (n=01) and early weight bearing by the patient in the post-operative period (n=01). These two patients developed recurrent inversion at 4 and 7.5 years.

Conclusion: Modified Srinivasan's Method for tibialis posterior transfer is safe and effective that provides better dynamics at the ankle joint and prevents recurrent inversion.

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Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Reconstructive Surgery**
Presenter: Sreepuram Reddy

MODIFICATION OF THE SURGICAL CORRECTION OF LUMBRICAL REPLACEMENT - A LONG TERM FOLLOW UP-

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Introduction: Many surgical techniques have been developed to replace the functions of the intrinsic muscles. Among these intrinsic replacement operation utilizing the Flexor digitorum superficialis muscle (FDS4T) STILES· BUNNEL, Palmaris Longus many·tailed graft (LENNOX) and Brand Extensor to Flexor four tailed graft (EF4T) are using facia lata or plantaris as free graft with Brand anastomosis and are the most commonly used procedures in tendon transfer surgery. H.Srinivasan (1978) mentions (page 628·629 Section VI·Chapter 12 Dharmendra) that with P.Brand's EF4T, which is widely practiced, 60 to 70% successful results can be expected.

The book of A. HERRMANN (1968) has influenced us to focus on recorrection of failed attempts to correct deformities whenever found necessary.
In the original article Re-operation in Failed correction of Claw Fingers Beine (2002) showed that a modification done at index finger in case of failed EF4T changing it into an EF5T operation gave a successful results of the earlier considered failed EF4T.
This way of thinking has guided us to develop new procedures for repair as well as prevention of post operative failures connected with some commonly used reconstructive surgical procedures in leprosy.
During the year 2000·2002 thirty patients who were admitted for reoperation for reclawing of index finger after failed EF4T, FDS4T, and PL4T have undergone this method with good success.
We feel encouraged now to explain the value of the 5 Tailed procedures, the advantages of our modified methods and to present the results of these procedures done by us.

Methods: The present study reports the retrospective analysis of 132 leprosy patients with irreversible ulnar palsy, who underwent reconstructive surgery at Sivananda Rehabilitation Home, Hyderabad, Andhra Pradesh, India, getting done lumbrical replacement restoring the function of intrinsic minus fingers with Flexor digitorum superficialis 5·tailed or Palmaris Longus 5·tailed procedure. The said correcting procedures of claw hand deformity were done during the year 2003 to 2005 and were followed up till 2012.

Results: Details to be checked by Physiotherapist at long term follow up are :
1. During open hand no hyper extension at Index, Middle, Ring and Little finger at MCP Joint.
2. No clawing when hand is kept at Lumbrical position.
3. Ableness to close the fist fully.
4. Ableness to do the pulp to pulp pinching (with three fingers) to opposed thumb.

The presentation of the results of the procedures and correlated view are given with specific patients' factors based on the leprosy patients who underwent FDS4T or PL4T such as ulnar guttering of extensors, ulnar deviation of index finger at MCP joint, derotation of index finger at MCP joint, overriding of index over middle finger, and disturbed three finger pinch etc.
The whole presentation will be illustrated with pre, post, intraoperational figures and long term follow·up data.

Conclusion: As the Modified Surgical Procedures of correction of lumbrical replacement which allow a higher success rate, the 5·tailed Palmaris Longus Transfer and the 5·tailed Sublimis Transfer, will remain the standard procedures of Reconstructive Surgery of Leprosy at our referral Hospital of Sivananda Rehabilitation Home
The modifications of the procedures served the patients concerned well and we are happy to see that this got recognised.

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Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Reconstructive Surgery**
Presenter: Dr Mannam Ebenezer

FACTORS IMPACTING FORM AND FUNCTION OF HAND FOLLOWING CLAW CORRECTION USING LASSO PROCEDURE

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Introduction: The objective of this paper is to study the factors that have an impact on the anatomical and functional outcome of claw hand correction by Lasso procedure. In this procedure the flexor digitorum superficialis tendon of the middle finger is transferred to the A1 pulley by looping the tendon over the pulley. This will enable flexion at the metacarpophalangeal joints which is essential for an effective grip.

Methods: A total of 32 hands in 32 patients who underwent claw hand correction by Lasso procedure at the Schieffelin Institute of Health Research Leprosy Centre were studied prospectively between August 2010 and July 2012. All hands were assessed preoperatively, after postoperative physiotherapy and at three months follow up. The surgical outcomes measured were Brand's Evaluation criteria, grip strength, pinch strength and subjective assessment of the patients through a Visual Analogue Score (VAS). The factors studied for impact were age, gender, duration of paralysis, level of paralysis, degree of contracture, duration of physiotherapy and number of fingers involved.

Results: The overall results showed 82.7% excellent or good results and 17.3% patients had fair or poor results. Under subjective assessment 72.4% were fully satisfied, 10.3% satisfied, 6.9% partially satisfied and 10.3% were unsatisfied. The overall results were comparable with other studies even though other studies did not assess results from subjective assessment of patients. The grip strength (pre = 3.1 kg/post = 6.3 kg) and the pinch strength (pre = 1.8 kg/post = 2.9 kg) showed significant improvement at three months follow up. However grip and pinch strength showed a decrease at postoperative discharge.
Age (p=0.66), number of fingers involved (p=0.91), level of paralysis (p=0.78), preoperative contracture (p=0.94) and duration of pre operative physiotherapy (p= 0.64) did not show any statistically significant difference on the results. Gender (p=0.01), type of leprosy (p=0.004), duration of paralysis (p=0.005) and Long flexor contracture (p=0.02) showed statistically

significant impact on the results when assessed alone. However logistic regression analysis showed that of all the factors long flexor contracture alone had a statistically significant independent effect on the results of surgery.

Conclusion: In conclusion, Lasso procedure using middle finger sublimus tendon gives good anatomical and functional results with presence of long flexor contracture affecting results.

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Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Reconstructive Surgery**
Presenter: Dr Surendra Pati

FEASIBILITY OF RECONSTRUCTIVE SURGERY AND ITS IMPACT IN GENERAL HEALTH CARE INCLUDING EVALUATION RESULT

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Introduction: Reconstructive surgery (RCS) is one of the main components of DPMR and the last resort to correct the disabilities and this service remained limited to premier leprosy institutions. It was viewed as a subject of least priority in GHS. Though MDT services were accepted in PHCs, building RCS facility failed to be integrated. As per the DPMR guidelines, medical colleges and PMR institutions (designated as tertiary centers) are expected to undertake RCS. The distance of these institutions greatly limits the accessibility for the patients. The parts corrected through RCS require patient's cooperation in the form of meticulous self-care of the part for years and some cases lifelong. Hence good counseling and follow up are crucial for the maintenance of corrected positions. The objectives of the present study is to find out, if RCS could be successfully carried out in secondary care centers (district hospitals) and evaluate the long term status of disability correction.

Methods: LEPRA India, the ILEP Coordinator for Odisha, initiated RCS in the GHC system in the state, by visiting surgeons who also trained 14 Govt. surgeons in RCS. This facility was expanded to as many as 11 institutions which included 4 medical colleges (MCs) and 7 district hospitals (DHs). Though all district level centers are continuing the services sharing their general OTs with leprosy cured persons, the services could be continued only in one MC. Patients were identified by the DPMR clinics at PHCs and district hospitals and finally shortlisted as per suitability, jointly by the surgeons and physio-technicians of LEPRA India. Initially there were many challenges. Stigma amongst the health workers, incentive, perceptions as non-priority, shortage of bed are encountered in the institutions. For the disabled persons, wage loss due to long time spent in pre-op preparation and post-op precautions, fear for surgery required long motivation. A follow up assessment was done in the 1st quarter of 2012 with well defined parameters. These included open hand and lumbrical positions and fist for claw fingers; abduction for thumb; inner range of transfer (system 1) & walking pattern (system 2) in foot and measure of lid gap for eye surgeries to be described in detail during presentation.

Results: A total of 1307 surgeries 980 (75%) on males & 327 (25%) on females were conducted during 2006 to 2011. A total of 285 leprosy cured persons (230 MB & 55 PB) with 314 (24%) disabilities corrected by surgeries participated in the assessment process. These included 223 (71%) correction in males & 63 (29%) in females. The beneficiaries mostly (93%) belonged to productive age group of 14-50 yrs were subjected to evaluation for long term impact. Organ wise 180 (57%) hand; 116 (37%) foot and 18 (6%) eye post-op cases were assessed. The assessment result showed 132 (73.3%), 29 (16.1%) & 19 (10.6%) good, fair & poor results respectively in 180 hand cases; 103 (88.8%), 10 (8.6%) & 03 (2.6%) in 116 foot cases while in 18 eye cases similar outcomes were 14 (77.8%), 03 (16.7%) & 01 (5.6%). All organs taken together good, fair and poor results were respectively found in 249 (79.3%), 42 (13.4%) & 23 (7.3%) cases.

Conclusion: Successful RCS is feasible in integrated setup. RCS in district hospitals seems more practical. Males outnumber the females in availing both RCS and follow up services. High proportion availing RCS belong to productive age group. Good outcome is higher in foot surgeries. Initial challenges are considerable in the process.

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Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Reconstructive Surgery**
Presenter: Stanley Kingsley

A LONG TERM ASSESSMENT OF FUNCTIONAL, ECONOMICAL AND SOCIAL BENEFITS OF RECONSTRUCTIVE SURGERY AMONG 125 LEPROSY PATIENTS WITH HAND DEFORMITIES

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Introduction: Leprosy is known to cause physical deformities due to autonomic, sensory and motor neuropathy. These deformities can be partially corrected with physiotherapy and reconstructive surgery (RCS). Often leprosy patients with hand deformities experience limitation in activities of daily living (ADL) and livelihood that restricts their social participation in society. Surgical rehabilitation has made significant advances in correcting visible deformities due to leprosy leading to functional improvement and social acceptance of the leprosy patients. Although short-term results (less than 1 year) of surgery are documented, evidence on long-term benefits is not recorded. This study was aimed to qualitatively assess the progress in functional, economical and social status of the leprosy patients after surgery that is sustained over a long period of time.

Methods: 125 leprosy patients, aged between 16 to 60 years (out of 1277 cases underwent reconstructive surgery during 2001 to 2010 for the correction of hand deformities due to Ulnar & Median nerve palsy) were contacted during 2012. The effect of surgery on hand functions in work related activities as well as changes in economical and social status was assessed using a pre-tested questionnaire tool. Different scales for qualitative measures and grading were used to assess the effect of surgery based on the patients' perception.

Results: 65% of leprosy cases had duration more than 5 years after surgery and 77% were male out of 125 cases assessed. It was observed that 96% of right hands and 87% of left hands had residual deformities with varying degrees at post surgery. 27% of leprosy cases engaged in manual labour before surgery were unable to do the same after surgery. 18% and 9% of leprosy cases with monthly income less than 3,000 and 3001 to 5,000 Indian Rupees respectively had no income after surgery. 60% of cases had difficulty in continuing the work related to hand functions that was not difficult before surgery. 3% and 20% of cases had social problem within family and distant neighbors respectively.

Conclusion: Study revealed that the hand surgery had very limited effect on the functional, economical and social advantage in majority of the leprosy patients during post surgery. These results do emphasize the need for a prolonged post-operative care in order to make difference in the lives of leprosy patients who undergo surgery

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Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Specialised Centres**
Presenter: Dr Premal Das

TIME TRENDS IN MB -PB RATIO AMONG UNTREATED LEPROSY PATIENTS ATTENDING A REFERRAL HOSPITAL IN UP, INDIA DURING 2001 TO 2010

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Introduction: Multibacillary (MB) leprosy patients are the major source of infection and therefore their early detection becomes critical in The National Leprosy Eradication Programme. The Government of India's current thrust is to focus on the New Case Detection Rates and promote early reporting to primary health centres, government dispensaries and other integrated centres. However, this has not yet had significant results as large numbers of new cases are still reporting with disabilities. There may be other issues like stigma, a perception that it may disappear by its own, and many patients are still ignorant of the integration of leprosy into general health services and may still prefer to report to leprosy hospitals that delay reporting.
In order to investigate these issues, a study was done on the time trends in MB:PB ratios of untreated leprosy patients attending a major referral hospital in Uttar Pradesh India during the period 2001 to 2010.

Methods: This is a retrospective study done by record review. The Leprosy Mission Community Hospital at Naini in Allahabad district, U.P., is more than 130 years old hospital, and currently registers the largest number of untreated leprosy patients in any other TLM hospital in India. It has 150 beds, 93 staff, and registers 3000 new cases and 20,000 repeat visits of leprosy cases per year. The medical record department is well organized to register all patients, new and old, ensure complete data entries, both base line and follow-up visits, using a unique registration number for each patient. The hospital has now instituted electronic medical records to capture and review all data for better patient management.
For the purpose of this study, relevant data from the year 2001 to 2010 were extracted from the medical records, entered on to Excel sheets and analyzed using SPSS package: Percentages and Ratios were computed and the differences tested for statistical significance.

Results: The total number of new untreated leprosy cases has increased significantly from 952 in 2005 to 1517 in 2010, though the MB percent among new patients has not shown any noticeable difference statistically over a decade. The proportion of children among new cases was 6.4% in 2001 and almost 7 % (6.98) in 2010 showing no significant change in the trend and the proportion of female cases was 24.4 % in 2001 and 28.6% in 2010 showing an increase of more than 4 % which shows that women are still at a disadvantage in accessing medical care.

Conclusion: Taking into account these factors, the finding in this study that MB proportion shows no significant declining trend indicating that we are no closer to eradication than we were a decade ago, and much greater intervention will be required to promote early detection s of MB cases, whether children or adults, male or female. It is hoped that eradication of leprosy will slowly become a reality in India, but the present data do not substantiate this hope. A similar study should be done in the community which might present a clear picture about the trends of MB proportion in leprosy and would distinguish more clearly the epidemiological factors from the operational.

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Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Specialised Centres**
Presenter: Rajni Singh

DIABETIC STATUS IN LEPROSY PATIENTS IN TWO REFERRAL CENTRE IN BIHAR AND JHARKHAND, INDIA

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Introduction: India having the highest number of diabetic patients in the world, the sugar disease is posing an enormous health problem in the country. Calling India the diabetes capital of the world, the International Journal of Diabetes in Developing Countries says that there is alarming rise in prevalence of diabetes, which has gone beyond epidemic form to a pandemic one.
The International Diabetes Federation estimates that the number of diabetic patients in India more than doubled from 19 million in 1995 to 40.9 million in 2007. It is projected to increase to 69.9 million by 2025. Currently, up to 11 per cent of India's urban population and 3 per cent of rural population above the ages of 15 have diabetes. Diabetes affects all people in the society, not just those who live with it.
India also contributing the highest No. of leprosy cases in the world. The report says 127000 new leprosy cases have been registered in Govt. Health center for treatment. Leprosy diseases produces an aesthesia in foot hand and eye, due to this patients are very much prone to get ulcer in there and hand & Feet. If this attach with diabetic the risk are very high in individual. One of cause for non-healing of Ulcer is diabetic.

The aim of this study is to know the diabetic status in leprosy patients in East Champaran (Bihar) and Dhanbad (Jharkhand).

Methods: Blood Sugar test cum self-care camp will be organized in Little Flower Hospital Sundarpur Raxaul and Ramgadhwa leprosy colony and jamadoba colony in Dhanbad with the support of LEPRA India Bihar and Little Flower Welfare Association. All the patients will be informed about diabetic testing, purpose and taken their written consent.
Firstly all the patients were checked for random blood sugar and those will find positive (140) will be tested again the next day for fasting and PP. One puncher kit and testing kit will be used for only one patient. Those who will find blood sugar high in Fasting and PP (2 hours after meal) will be counseled for their status and will refer to districts hospital for further treatment.

Results: In this study 828 leprosy patients has been examined for random test of blood sugar. 133 person (70 are with no disability and 63 with multiple disability) are found as positive for blood sugar (more than 140), which are more than 15% of tested population. Again these 133 people have tested for fasting and PP in next day. 128 patients are found positive for fasting and PP. The 34% are people with the below the age group of 45. Out of 128 person, 37 person having ulcer in their feet. May be diabetic is the non-healing factor in these 37 cases.

Conclusion: This study revealed that the incidence of diabetes was higher in the leprosy patients. As a result, this study recommends that at least all leprosy patients having disability (WHO Grade I and II) should be screened for diabetes. Further study will require knowing the high incidence of diabetic in leprosy patients.

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Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Specialised Centres**
Presenter: Akshaya Mishra

MONITORING PATIENT UPTAKE AND STRENGTHENING LEPROSY SERVICES THROUGH FAIRMED'S HOSPITAL INFORMATION SYSTEM (HIS)

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Introduction: FAIRMED (FM) is an International Organization based in Switzerland. It has been supporting 5 hospitals in 3 different states of India for the last 5 decades providing tertiary level leprosy services to the affected population. In the post-integration era the role of these hospitals has been redefined to cater mostly to Disability Prevention and Medical Rehabilitation (DPMR) services like management of reactions, ulcers, and reconstructive surgeries. The grant to the FM supported hospitals was being provided to provide leprosy services. FM was keen to enhance provider accountability that resulted in patient satisfaction. Hence, an output-based aid (OBA) mechanism was developed that aimed at providing quality services in a cost-effective manner. This OBA approach includes benchmarking of unit costs at all the hospitals considered for funding.

Objectives: To implement Leprosy related OBA, FM developed an electronic Hospital Information System (HIS) with the following objectives.
a) To improve the record keeping and reporting systems;
b) To assist the program managers monitor the uptake of hospital services; and
c) To enure timely dispersal of grants to hospital partners.

Results: The FM HIS development process started in 2010 with an assessment of the existing data management system in the hospitals. Based on the requirement a web-based HIS database was developed. All the hospital administrators and data managers were trained together in order to have uniform understanding. A helpdesk operating 24 hours every day was established to take care of the initial teething problems. The FM HIS allows entering data on a real time basis and generating reports for the hospital, NLEP program, and also for internal FM purposes. As it is a web-based system, it is possible to visualize and trace the data entry process by the hospitals from any location in the world. The data is protected through a multiple layer security system. An important innovation of the FM HIS is the dashboard which displays key indicators about the achievements against targets. This helps the project holder to monitor and take appropriate action at his level, and the program managers to monitor leprosy services and related costs, and for FM to plan and manage financial resources.

Conclusion: The FM HIS has been operating for 2 years to the satisfaction of all stakeholders. The system improved recording of patient details, tracking of patients, release of grants, and budgeting. It has also facilitated decision making and action to improve quality of leprosy services. By Dec. 2012, 12,634 patients have been registered in the database from all FM supported hospitals that provided both out-patient and in-patient services.

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Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Specialised Centres**
Presenter: John George

FAIRMED'S (FM) OUTPUT BASED AID (OBA): 6 YEARS OF PROVIDING LEPROSY SERVICES IN INDIA

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Introduction: Medical rehabilitation in Leprosy is a key component of the National Leprosy Eradication Program (NLEP) of the Government of India (GoI). The affected communities can avail these services both at the Government establishments as well as the ILEP (International Federation of Anti-Leprosy Associations) supported institutions. FM is one of the founder members of ILEP India that supports 6 Leprosy hospitals across 4 states for the last 5 decades. In order to make these services more cost-effective, FM embarked on a major exercise to scientifically derive costs for these essential services.

Rationale: To scientifically derive per service costs through FM supported hospitals in India.

Objectives:
1) To scientifically derive cost per key leprosy service.
2) To derive cost per hospital and integrate it with their respective hospital budgets.
3) To benchmark and standardize cost per service across all FM supported hospitals.
4) To advice and influence the National Leprosy Program and other stakeholders.
Methodology: A technical team was established that comprised of a cost accountant, FM Berne's Project Division, FM supported project holders, and the North Western University of Health Sciences, Switzerland. The technical team was able to finalize key services that included 8 in-patient (IP) and 3 out-patient (OP) services. Initially in 2006, only 2 hospitals were indentified and their respective costs were evolved. In the following year cost for these hospitals were benchmarked and 2 additional hospitals were included to the initial cohort. In 2009, benchmarking for all the 4 hospitals was undertaken and 1 additional hospital was included. In 2011, benchmarking was undertaken for all the 5 hospitals. Patient uptake of the services was being reported through the customized hospital information system (HIS) based on which grants were being advanced to the projects. Continuous monitoring and support from the technical and finance team was provided to all the hospitals. Quarterly quality circle meetings were held to share and learn from each other.

Results: This exercise has scientifically evolved costs that all stakeholders are comfortable with. The 8 IP service with their respective costs include general treatment (IP_0: INR 1,431); Reaction Treatment (IP_1: INR 3,079); Simple Ulcer (IP_2: INR 2,301); Complicated Ulcer (IP_3: INR 5,098); Septic Ulcer/Amputation (IP_4: INR 9,727); Foot Reconstruction Surgery (IP_5: INR 9,455); Hand Reconstructive Surgery (IP_6: INR 9,736); and Eye Surgery (IP_7: INR 3,244). Likewise, 3 OP services with their respective costs include General Treatment (OP_0: INR 261); Ulcer Treatment (OP_1: INR 341); and Reaction Treatment (OP_2: INR 313).
Currently, all FM supported hospitals receive the OBA budget based on the cost evolved through this exercise. While finalizing the costs, FM had also introduced contingency plans such as supplementary budgets and in extreme cases also included bailout packages that none of our partners availed off. This reflects the validity and internal consistency of the derived costs.

Conclusion: FM intends to build on this initiative to further strengthen the medical rehabilitation services being provided by FM supported hospitals across India. FM has also been proactively influencing other ILEP member hospitals in India to collaborate in this exercise with an ultimate goal to influence the costing of the NLEP program.

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Presentation Time: **Thursday 19/09/2013 at 11:00 – 12:30**
Symposium Session: **Specialised Centres**
Presenter: Shyamala Anand

THE EFFECTIVENESS OF PREVENTION OF IMPAIRMENT AND DISABILITY (POID) IN LEPROSY THROUGH TERTIARY LEPROSY REFERRAL HOSPITALS IN INDIA

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Introduction: The Leprosy Mission Trust India (TLMTI) has 14 Government of India recognised Tertiary Leprosy Referral Hospitals. In 2011, the hospitals saw 6658 newly diagnosed leprosy cases; 15.3% with Grade I and 22.1% with Grade II disability, together constituting 37.4% impairment and disability at time of diagnosis., Around 88% of leprosy admissions in 2011 were for prevention of impairment and disability (POID) and around 72% of new Care after Cure patient registrations were for POID related reasons.
To assess the effectiveness of its POID interventions in the areas of Reactions & Neuritis; Ocular complications of Leprosy and Management of insensitive extremities (hands and feet); and to recommend more effective ways for POID, TLMTI conducted a POID Audit in 2012 in 6 hospitals in 6 states, from which findings have emerged that are relevant to any Tertiary Leprosy Hospital.

Methods: The Audit was designed by a team of POID leprosy experts (internal and external to TLMTI) and field tested in March 2012. The Audit was conducted in 6 hospitals from April - June 2012. Audit teams consisted of physiotherapists, occupational therapists and doctors. Data was collected through Observations, Semi structured interviews and Focus Group Discussions with staff and patients, random sampling of patient records and 5 year data of the hospitals.

Results: Cases of Reaction and Neuritis show decreasing 5 years trends in all 6 hospitals. 34%>54% of reaction and neuritis cases diagnosed in 2011 presented early enough (nerve function impairment <6 months) for steroid and physiotherapy interventions. 1 hospital had an increasing trend of patients reporting with established deformity. While steroid initiating rates were good, ranging from 92% -100%, steroid completion rates were consistently poor ranging from 25% -71% in 2011. Reasons contributing to this have been ascertained. There were very good outcomes for patients who completed their steroid courses. Regarding the 29% - 75% steroid defaulters who did not complete their course with these hospitals, there is no information on status of their condition; whether they were continuing treatment elsewhere or whether they were self dosing on steroids. No hospital has any reliable mechanism or system in place to identify or retrieve steroid defaulters. All 6 hospitals reported decreasing trends of recent onset lagophthalmos and 1 reported an increasing trend of established lagophthalmos. There are large numbers of patients not screened for ocular complications. 5 hospitals show decreasing 5 year trends in newly registered patients with insensitive feet. There is no data available on the insensate hand. All 6 hospitals show decreasing 5 year trends in ulcer admissions. Management of ulcers with POP immobilization (Moulded double rocker shoe, window POP with Bohler Iron, POP slabs for ulcers of lower extremities) is showing a decreasing trend.

Conclusion: Research is needed to understand factors influencing early and late reporting by patients so as to formulate interventions for early reporting to prevent impairment and disability. Reasons for decreasing trends need study- whether cases for POID are actually coming down or being treated elsewhere and correctly. The numbers of steroid defaulters; patients with impairments, deformities and ulcers lost to follow up indicates the urgent need for a functioning Referral System for Leprosy. Building, retaining and transferring expertise for POID in leprosy among healthcare professionals is necessary for hospitals to sustain their role as Tertiary Leprosy Referral Hospitals.

O-234

Presentation Time: **Thursday 19/09/2013 at 14:00 – 15:30**
Symposium Session: **Chemotherapy - Newer Drugs**
Presenter: Robert Gelber

THE DIARYLQUINOLINE BEDAQUILINE IS BACTERICIDAL AGAINST RAPIDLY MULTIPLYING *M. LEPRAE* IN MICE AT LOW DOSE AND ADMINISTERED INTERMITTENTLY

R. Gelber [1,*], R. M. D. Paredes [1], C. E. S. Andaya [1], J. Borgos [1], K. Andries [2] and Chemotherapy

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Introduction: Bedaquiline is a representative of a promising new class of antimicrobials with specificity for mycobacteria and has recently on the basis of efficacy and safety been approved by the US FDA for the treatment of MDR tuberculosis. *In vitro* and in a murine model of tuberculosis bedaquiline has been demonstrated to have powerful bactericidal activity alone and in combination with other active agents, a low MIC and low MBC against active multiplying and dormant *M. tuberculosis*, retains bactericidal activity upon intermittent administration, a low propensity for naturally resistant mutants, and bactericidal activity for MDR tuberculosis.
When bedaquiline was utilized in active tuberculosis patients, significant early bacterial killing was observed which was similar to that obtained with isoniazid and rifampicin. Also, when bedaquiline was added to the standard five drug therapy for MDR tuberculosis, bedaquiline reduced the time to culture negativity and increased the proportion of patients who converted their sputum cultures.
Previously Ji et al demonstrated for 2 strains of *M. leprae* in mice that single doses of both 25 mg/kg and 100 mg/kg 1 day after infection and during dormancy were bactericidal -- equivalent to that found by the most active agents to date, namely rifampin, rifapentine, and moxifloxacin, while being superior to minocycline, PA-824 and linezolid. In order to evaluate the activity of bedaquiline for rapidly multiplying *M. leprae* and assess several different doses and frequencies of administration, we initiated the current study.

Methods: In this study, CBA/J mice were infected in both hind footpads with 5,000 *M. leprae* organisms and treated orally during logarithmic multiplication (day 60 to day 150 after infection). Study mice were (1) untreated controls, (2) or by gavage 5 x weekly 1 mg/kg, 3 mg/kg, 6 mg/kg, 12.5 mg/kg and 25 mg/kg for 3 months, (3) once weekly 25 mg/kg, 30 mg/kg, 50 mg/kg, 100 mg/kg for 3 months, (4) once monthly 25 mg/kg, 50 mg/kg, 100 mg/kg and 120 mg/kg – 3 doses. *M. leprae* was enumerated in hind footpad pools (2 mice, 4 feet) at the completion of therapy (Day 152), 3 months later (Day 238), as well as for some groups on Day 302-367. In the kinetic method, if ≥ 10^5 *M. leprae* are obtained growth is considered to have occurred. By these means, if at the completion of therapy, growth has not occurred treatment is considered inactive; if growth begins immediately thereafter treatment is considered bacteriostatic; and if no growth remains prolonged bactericidal activity is considered to have been obtained.

Results: In the control mice *M. leprae* grew (≥ 10^5 per footpad) on Day 152 and obtained levels of greater than 10^6 on Day 228 and 338. On the other hand, in none of the mice treated with any dosage of bedaquiline, was multiplication of *M. leprae* found on Day 152 and Day 228. Furthermore, prolonged prevention of multiplication by bedaquiline (assessed Day 302-363) was obtained in mice treated once weekly with 30mg/kg, 50mg/kg, and 100mg/kg and monthly with 50mg/kg and 120mg/kg.

Conclusion: As has been previously found for dormant *M. leprae* in mice, in this current study, all dosage schedules of bedaquiline were found in mice consistently bactericidal for rapidly multiplying *M. leprae*. Furthermore, it was observed that bactericidal activity was obtained regularly at exceedingly low dosage and upon intermittent administration, as little as once monthly. Owing to the promise bedaquiline presents to treat leprosy, currently clinical trials in leprosy patients are being planned.

O-235

Presentation Time: **Thursday 19/09/2013 at 14:00 – 15:30**
Symposium Session: **Chemotherapy - Newer Drugs**
Presenter: Joydeepa Darlong

ADVERSE EFFECTS OF AZATHIOPRINE IN AN RCT IN LEPROSY REACTIONS AND NEURITIS

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Introduction: A Double Blind Randomised Controlled Trial comparing placebo, with 24, 36 and 48 weeks of Azathioprine, added to a 20 week course of Prednisolone, for treating Type 1 reaction and neuritis in leprosy was undertaken in 4 leprosy referral hospitals in 4 endemic states in India. This paper describes the adverse effects of Azathioprine encountered during the study.

Methods: Patients with Type 1 Reaction and new neuritis were recruited and assessed for Nerve Function Impairment and allotted randomly to one of four arms with four different regimens of the study.
Azathioprine was given at a dose of 50 mgs daily and Prednisolone was started at a dose of 40 mgs, tapered over a period of 5 months. 276 patients were also taking MDT (Rifampicin, Dapsone and Clofazamine) during the trial. Monitoring of adverse reactions was done fortnightly for first 8 weeks and monthly for the next 10 months. Potential side effects of the drugs were listed in the trial protocols and potential adverse effects were investigated by protocol. If an adverse event was noted, the suspected drug was withdrawn. If the patient recovered he was started back on trial drugs, otherwise he was withdrawn from the study.

Results: 345 patients started the study and 52 patients were withdrawn due to adverse events. Anemia (59.3%) was the commonest reason for withdrawal. There was a significant interaction between patients being on Azathioprine and developing Anemia ($p < 0.05$) and the commonest time for this was at 8-16 weeks of treatment .There was a lower rate of anaemia in patients who had completed MDT and had been Released From Treatment (RFT) and so were not on Dapsone: 3 (8.6%) versus 24 (91.4%), patients who were on MDT
The other complaints were nausea, vomiting, gastritis, loss of weight and ill-health which affected 9 patients sufficiently to require withdrawal. 4 patients developed infections including multi-dermatomal herpes zoster (2), infective gastroenteritis and jaundice respectively.

4 patients died during the study. The cause of death in 1 patient could be attributed to Azathioprine and steroids. 2 patients died within the first 2 weeks into the study period, so their deaths could not be attributed to the trial drugs.

Conclusion: Azathioprine is associated with a high rate of adverse effects and has a significant interaction with Dapsone. It should be used with caution in a low resource setting.

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Presentation Time: **Thursday 19/09/2013 at 14:00 – 15:30**
Symposium Session: **Chemotherapy - Newer Drugs**
Presenter: Amar Kant Jha Amar

2 MONTHS OFLOXACIN & SPARFLOXACIN FOLLOWED BY 12 MONTHS MB MDT IN LL TYPE LEPROSY WITH BI FIVE TO SIX

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Introduction: In routine programme MB MDT is given as blisterpack for 12 months (28 days a month), BI or MI is not routinely done. About 30% of cases of LL type respond poorly to routine therapy at RFT stage. Unresponsive cases show positive MI at this stage and respond properly once MDT is prolonged for another 12 or 24 pulses. This envisages modification in routine MDT with addition of newer drugs for intiial two months to optimise the effect for better result.

Methods: 680 Cases of Hansens disease in the age group of 15-60 years (450 Males & 230 Females) with initial BI 5 or 6 were randomised in 2 treatment groups :
Group A (340): MDT (MB) Adult blister packs for 12 months + Ofloxacin (400 mg) OD & Sparfloxacin (500mg) OD for initial 2 months
Group B (340): Routine MB MDT Adult for 12 months
Cases were evaluated on the parameters of (a) Decrease in size & No. Count (b) Decrease in anaesthesia (c) Imrovement in nerve thickening/tenderness (d) B1,M1,SFG Indices (e) Histopathology on the grade of good/average/poor (3 to 1) [Max grading point 15 & Minimum 0] every 3 months upto 12 months.

Results:	Group A	Group B
Completing Therapy	290	320
Drop Out	50	20
Completely Cured	180/290	310/320
Cure Rate (MI becoming Zero)		
Relapse	30	10
Reaction (Type 2)	25	02

Conclusion: Addition of Ofloxacin & Sparfloxacin daily for first two months to routine MB MDT (adult) results in more effective treatment regimen in highly bacillary load cases of HD (LL)

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Presentation Time: **Thursday 19/09/2013 at 14:00 – 15:30**
Symposium Session: **Chemotherapy - Newer Drugs**
Presenter: Flavio Lara

EFFICACY OF STATINS IN THE CONTROL OF *M. LEPRAE* AND M. TUBERCULOSIS INFECTION.

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Introduction: It was recently described that *M. leprae* is able to induce lipid body biogenesis in macrophage and Schwann cells, and that these corpuscles are recruited to the phagosome containing the mycobacterium. Furthermore, it was observed that inhibition of this recruitment significantly reduced the viability of intracellular *M. leprae*.Given these resultswe investigated the efficacy of drugs that inhibit cholesterol synthesis (statins) and their effects on intracellular survival of *M. leprae*, *M. tuberculosis and M. bovis BCG* pathogens.

Methods: Macrophage cultures infectedor not with viable *M. leprae*, *M. bovis* (BCG) or *M. tuberculosis* were treated with atorvastatin or sinvastatin during 72 h. Analysis of the viability of mycobacteria was carried out by real-time PCR (*M. leprae*) and CFU counting (*M. tuberculosis* and *M. bovis*). BalbC mice were infected with *M. leprae* following Sheppard´s model and treated with atorvastatin during 6 months before bacillar count.Furthermore, the cytotoxicity of different treatments was checked by MTT assays and seric transaminase activity in cells and mice, respectively. Statistic analysis was performed using ANOVA test with Prism software.

Results: We observeda decrease in viability of mycobacteria after incubation with both statins. Atorvastatin had the highest effect against *M. leprae* and *M. tuberculosis* at 1mg/ml dose, while simvastatin showed better results against *M. Bovis BCG* at the same dose. In *Sheppard* model we observed atorvastatin efficacy against *M. leprae* in a dose of 80mg/kg/week. Both drugsshowed a synergistic effect when combined with rifampicin.The drugs do not interfere in the cellular viability or increase transaminase activity; on the other hand, they efficiently reduce cholesterol levels, in cells and animal serum.

Conclusion: Statinspresent bactericidal activity against *M. leprae* and *M. tuberculosis in vitro* and *in vivo*. Its association with multidrug therapy can bring benefits to patients of both diseases, and its efficacy against MDR *M. tuberculosis* and atypical mycobacterium strains are under investigation.

O-238

Presentation Time: **Thursday 19/09/2013 at 14:00 – 15:30**
Symposium Session: **Chemotherapy - Newer Drugs**
Presenter: Robert Gelber

THE ACTIVITY OF SEVERAL NEWER ANTIMICROBIALS AGAINST LOGARITHMICLY MULTIPLYING *M. LEPRAE* IN MICE

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Introduction: Moxifloxacin, rifampicin, rifapentine, linezolid, and PA 824, alone and in combination, have been previously administered, as single doses and five times daily doses, to *M. leprae* infected mice during lag phase multiplication (dormancy) and were each found to have some bactericidal activity. Both moxifloxacin and gatifloxacin, both representative of a newer unique class of fluoroquinolones, 8-methoxyquinolones, have proved superior against *M. tuberculosis* in mice to other quinolones, and approximate the bactericidal activity of rifampicin.

Methods: The fluroquinolones, ofloxacin, moxifloxacin and gatifloxacin (50 mg/kg, 150 mg/kg and 300 mg/kg) and the rifamycins (5 mg/kg, 10 mg/kg, and 20 mg/kg), rifampicin and rifapentine, were evaluated on five times weekly administration alone and in combination each at their lowest doages for bactericidal activity against *M. leprae* using the mouse footpad model during logarithmic multiplication. Linezolid (25 mg/kg, 50 mg/kg, and 100 mg/kg) and PA 824 (several dosages between 3.2-100 mg/kg) were similarly evaluated alone and linezolid in combination with rifampicin (5 mg/kg), minocycline (0.01% in diet) and ofloxacin (50 mg/kg). These present studies utilized the kinetic technique of Shepard. Untreated control mice and treated mice were infected with 5,000 *M. leprae* and treated from Day 60 to 150. Growth was considered to have occurred if $>10^5$ bacilli / footpad were found. Drugs were considered inactive on Day 150 if *M. leprae* growth occurred at the same rate as in untreated control mice, bacteriostatic if growth began immediately upon drug discontinuation, and bactericidal if growth of *M. leprae* was further delayed, at times up to nine months after the completion of therapy.

Results: The three fluroquinolones and rifamycins were found alone and in combination to be bactericidal at all dosage schedules. PA 824 had no activity against *M. leprae*, while linezolid at a dose of 25 mg/kg was bacteriostatic, and progressively more bactericidal at doses of 50 mg/kg and 100 mg/kg. No antagonisms were detected between any drugs when used in combination, while the antimicrobial activity of all combinations of linezolid studied were additive.

Conclusion: Ofloxacin, moxifloxacin, gatifloxacin, rifapentine and linezolid were found bactericidal against rapidly multiplying *M. leprae*. Previously, we had found that oflaxacin 50 mg/kg daily was less effective than was found in this present study, thus limiting our ability to establish herein if equivalent doses of moxifloxacin and gatifloxacin were superior.
PA 824 administered five times weekly at dosages between 3.2 mg/kg to 100 mg/kg was consistently inactive. Previously, Ji found PA 824 to be modestly bactericidal during “stationary phase” multiplication. Our results in rapidly multiplying *M. leprae* mimic those of Manjunatha et al. who found it inactive against murine leprosy, a result found in accord with their findings that *M. leprae* lacks the genes necessary to convert PA 824 to its active moiety.
In clinical trials moxifloxacin was profoundly bactericidal for *M. leprae* and matched in this respect only by rifampicin. The finding that rifamycins and moxifloxicin are not antagonistic suggests for a future generation of MDT that combination has particular potential.

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Presentation Time: **Thursday 19/09/2013 at 14:00 – 15:30**
Symposium Session: **Chemotherapy - Newer Drugs**
Presenter: Vivek Pai

MOXIFLOXACIN BASED REGIMENS IN LEPROSY – OBSERVATIONS ON OCCURRENCE OF REACTIONS AND BACTERIAL DECLINE

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Introduction: Clinical trials in leprosy using Moxifloxacin based regimens were reported for the first time in 2009 (Ganapati et al 2009). The fluoroquinolone Moxifloxacin has been shown to be powerful bactericidal agent against *M leprae*. It is a synthetic broad spectrum 8-methoxy-fluoroquinolone antibacterial agent. We now report further observations based on this regimen on a larger sample of patients.

Methods: The study was aimed to make observations on a selected sample of 224 patients with 47 patients smear positivity (43 male and 4 female patients belonging to the age group of 10 to 63 years) and 95 patients smear positivity (78 male and 17 female patients belonging to the age group of 16 to 70 years) in an ongoing clinical trial receiving Moxifloxacin 400mg, Rifampicin 600mg and Minocycline 200mg (MRM) at monthly intervals for 12 months. In the comprehensive clinical trial, there was a comparative group (MRMC) receiving Clofazimine to judge its anti-inflammatory property in preventing reactions. This group received 300mg under supervision along with MRM followed by unsupervised doses of 50mg daily clofazimine. Patients available for analysis of reaction for a follow up period of 2years were selected. Though the sample of bacillated patients in MRM and MRMC groups is being increased the bacteriological status as measured by BI of all patients at 12th month and 24th month was assessed in both groups.

Results: It was observed that a high proportion of patients underwent reactions 15 (34.8%) in smear positive 47 patients of MRM group, 6 (6.9%) in 89 patients of PB group and 22 (24%) in 92 smear positive and negative patients though they were not severe and was controllable with conventional treatment. The addition of Clofazimine had no particular influence on the occurrence of reactions. Long term observations need to be made in due course of investigations which are in progress. During the period of the study average BI of all patients in both groups with initial mean BI of > 3.0+ showed a steady decline.

Conclusion: The study is in progress and further observations on the rate of decline of BI on a larger sample of patients in both groups of patients after the stoppage of treatment as well as relapses will need to be observed and reported.

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Presentation Time: **Thursday 19/09/2013 at 14:00 – 15:30**
Symposium Session: **Human Rights and Advocacy**
Presenter: Sian Arulanantham

ADDRESSING INEQUALITY AND EXCLUSION - PEOPLE AFFECTED BY LEPROSY'S OPINIONS AS TO WHAT SHOULD BE INCLUDED IN ANY POST MILLENNIUM DEVELOPMENT GOAL FRAMEWORK

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Introduction: The UN declaration on which the Millennium Development Goals (MDGs) were based upholds the principles of human dignity, equality and equity. However, although the declaration highlights the need to ensure the most vulnerable are included in the development process, the lack of specific reference to leprosy, neglected tropical diseases or disability has resulted in some of the world's most marginalised people having limited access to development. With the MDGs coming to an end in 2015, and recognising that people affected by leprosy in most places have still yet to be mainstreamed into development programmes, The Leprosy Mission (TLM) has committed to advocate for a post 2015 framework that addresses the priorities of people affected by leprosy. In order to ensure its advocacy effort is legitimate, there was a need to consult with people affected by leprosy in leprosy-endemic countries to identify their future development priorities.

Methods: TLM's field staff undertook 95 group consultations which included 4,797 people affected by leprosy from across nine leprosy-endemic countries (Bangladesh, DR Congo, Ethiopia, India, Mozambique, Myanmar, Nepal, Niger, Nigeria). Focus group discussions were used to gather qualitative data representing the changes they had experienced over the last 10 years and their development priorities. Sampling of participants included purposive methods, as the study specifically targeted people affected by leprosy. In addition, convenience methods were used as the research targeted communities that field staff had planned to visit for other purposes, or out-patients departments at specialist leprosy hospitals where large numbers of people affected by leprosy were present. Records of the meetings were reviewed to identify common themes across groups in each country and then these findings were compared across the nine countries to identify the common development priorities.

Results: There were common improvements and key development areas identified across the nine leprosy-endemic countries. Common improvements in the lives of people affected by leprosy over the past 10 years include access to primary health care, education and stigma reduction. However, these still remain issues in most communities represented by participants in this study. The top five development issues of people affected by leprosy in each country in the study were combined and highlighted 10 priority development areas, namely: inclusive employment; affordable quality health care; education and training; stigma reduction; safety net support; disability-friendly infrastructure; awareness on leprosy; housing, water and sanitation; food security; and technology and communication.

Conclusion: This study has enabled 4,797 people affected by leprosy from across nine leprosy-endemic countries to share their development priorities for the coming years. It is proposed that the 10 priority areas (inclusive employment; affordable quality health care; education and training; stigma reduction; safety net support; disability-friendly infrastructure; awareness on leprosy; housing, water and sanitation; food security; and technology and communication) be used by organisations working on behalf of people affected by leprosy to inform the content of their advocacy on the Post-2015 development framework (for proposed recommendations see the full paper).

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Presentation Time: **Thursday 19/09/2013 at 14:00 – 15:30**
Symposium Session: **Human Rights and Advocacy**
Presenter: Mr Jose Ramirez, Jr

LOVE AND LEPROSY: IMAGES OF PAIN AND/OR COMFORT

J. Ramirez, Jr [1,*], M. S. Ramirez [1]

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Introduction: The diagnosis of Hansen's disease (HD) can immediately force images in the mind of those affected ans others impacted. Those impacted may include the immediate and extended family. Similar to the instant loading of videos and emails, a person who first hears the word «leprosy» is prone to quickly activate the brain to view only stereoptypic and negative images of persons affected by this illness. Two licensed social workers, one affected and one impacted, will discuss the challenges confronted by those newly diagnosed, as well as strategeis for lessening the trauma of the diagnosis. The presentation will be via power point, examples ans disucssion.

Methods: Based on personal and professional experiences, the two social workers will introduce a model that can be used by couples to lessen the pain of stigma when one or both are initially diagnosed with HD.This model with the acronym of IMAGES, can also be used by other professionals in medicine, psychology and social work to address psychosocial issues that can confront those with HD. IMAGES stands for information, medication, access, guard, education and success.

Results: The co-presenters have successfully utilized this model on self and others who have been affected. There is sufficient evidence in the literature to show that those who become self advocates have experienced some or all of the activities referenced in IMAGES. Additionally, this model has been used by the presenters with other illnesses/conditions. One possible drawback to this model is the geographic/cultural differences that exist in the world of leprosy. However, wtih the appropriate language/nuances/changes this model can be implemented almost anywhere, e.g., use the word treatment instead of the word medication; family and faith instead of access; and self-care instead of guard.

Conclusion: The number of HD cases world-wide has decreased significantly in the last 40 years. However, stigma has remained stable or even increased in some parts of the globe. Stigma, associated with HD can be controlled or lessened when the IMAGES Model is implemented consistently. One of the many unique things about this model is that it does not have to be presented in chronological order for succes to occur. A second unique thing about IMAGES is that it can also be used with other stigmatizing illnesses.

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Presentation Time: **Thursday 19/09/2013 at 14:00 – 15:30**
Symposium Session: **Human Rights and Advocacy**
Presenter: Mr Jacob Oommen

CHALLENGES OF EMBRACING A RIGHTS-BASED APPROACH TO DEVELOPMENT WHEN WORKING WITH PEOPLE AFFECTED BY LEPROSY

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Introduction: Article 1 of the Universal Declaration of Human Rights says, 'All human beings are born free and equal in dignity and rights'. More recently, the UN developed 'Principles and Guidelines for the Elimination of Discrimination against People Affected by Leprosy and their Family Members'. However, stigma against people affected by leprosy has been engrained within Indian culture for thousands of years. This stigma results in numerous acts of discrimination,

both legal and social. Many people affected by leprosy have reported violation of their rights, including rights to food, education and employment.
To help address discrimination against people affected by leprosy in India, The Leprosy Mission (TLM) developed a project focused on raising rights awareness and mobilising people affected by leprosy to challenge injustice. However, the project has faced many challenges whilst encouraging people affected by leprosy to embrace a rights-based approach to development. These experiences needed to be documented and analysed so that this learning can be used by organisations in planning and implementing Community Based Rehabilitation.

Methods: In order to provide qualitative data to inform project planning, 'incidents of engagement' that highlighted the challenges staff were facing, when using a rights-based approach with people affected by leprosy, were documented. The tool of 'learning reflection' was then used to discuss this qualitative data, to better understand the challenges faced by TLM staff and the communities themselves.

Results: The 'incidents of engagement' approach revealed 17 challenges faced when implementing a rights-based approach. They are: 1) Fatalistic attitude of people affected by leprosy; 2) Self-stigma and lack of self-belief/self-confidence; 3) Culture of begging and lack of interest in rights issues; 4) Illiteracy and lack of education; 5) Lack of knowledge of their rights and entitlements; 6) Lack of understanding of government processes; 7) Lack of strong visionary leadership; 8) Lack of unity among leprosy colony residents; 9) Lack of willingness to accept leadership from outside their colonies; 10) Leaders pursuing their own interests, not motivated to serve their community; 11) Existing grassroots networks still charity-focused rather than rights-focused; 12) Difficulties in engaging with people affected by leprosy living outside the colonies; 13) Communities' lack of faith in development workers; 14) Legislation changes seen irrelevant, people focused on survival; 15) General community have little understanding of leprosy-related human rights issues and therefore not engaged with the issue; 16) Lack of media interest; 17) Other NGOs working with people affected by leprosy encouraging a welfare approach.

Conclusion: Reducing stigma and discrimination will, no doubt, be a long process. However, recognition of the challenges faced by people and communities affected by leprosy and the NGOs working with them is the first step in the process of people affected by leprosy accessing their rights and entitlements. These 17 challenges in implementing a rights-based approach to development with people affected by leprosy need to be addressed by community development programmes, if people affected by leprosy are going to move from dependence on charity to being empowered to challenge injustice. Learning from reflection on the 'incidents of engagement' provides insight not only into the challenges experienced but also on potential approaches for intervention.

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Presentation Time: **Thursday 19/09/2013 at 14:00 – 15:30**
Symposium Session: **Human Rights and Advocacy**
Presenter: Ms Miyoji Morimoto

CREATING AN INCLUSIVE SOCIETY

M. Morimoto [1,*]

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Introduction: There are about 2,000 residents living at the 13 National Hansen's Disease Sanatoria in Japan. Their average age is over 82. Most of them live lonely lives as they have no contact with their family, being isolated in the sanatorium until 1996. When they die, they will be buried in community cemeteries at the sanatoria. No newly diagnosed patients are being admitted now, and thus by 2020, the number of the residents at the National Hansen's Disease Sanatoria is expected to decrease to 600. Following the lawsuit against the government in 1998 that charged serious human rights violations against people affected by Hansen's disease in Japan, the Japanese government guaranteed that the lives of the residents would be protected until the last day of the last resident. However, their actions have proven otherwise. For example, they have tried combining some sanatoria, based on the fact that the number of residents was decreasing. This has caused great anxiety among the residents who are being forced to leave the place they regard as home.

Methods: Rather than accept the government's actions, and learning from other countries such as Philippines and Thailand, Zen Ryo Kyo (the national network of residents of Hansen's disease sanatoria) in collaboration with groups of plaintiffs, lawyers, and many other supporting organizations, approached the government. They argued that having the sanatoria open to anyone in the community was the best way to sustain the sanatoria in the community.

Results: The initiative by Zen Ryo Kyo to create an inclusive society, where the Hansen's disease sanatoria can be used not only by the people affected by Hansen's disease but also by people with other diseases, problems or special needs, resulted in a newly-enacted law promoting solutions to problems faced by people who have had Hansen's disease. In a step towards more inclusion, last year, pre-schools were set up at the sanatoria in Tokyo and in Kumamoto. This brought much happiness to the residents, as we had not been allowed to have children ourselves.

Conclusion: The abolition of the Leprosy Prevention Law did not solve all of our problems. For example, on the medical front, we are still facing serious problems. Reflecting the administrative and fiscal reform, doctors, nurses and care givers are in great shortage. The aged residents are protesting against the government and have publicly stated that they are ready to go on a hunger strike in order to maintain the quality of life until the very end of their lives. We have to continually protest injustice, organize ourselves to ensure our human rights, and use legal means when necessary to create real change, not just legislative change.

O-244

Presentation Time: **Thursday 19/09/2013 at 14:00 – 15:30**
Symposium Session: **Human Rights and Advocacy**
Presenter: Ms Anwei Law

AN EXPECTATION OF JUSTICE: 160 YEARS OF ADVOCACY AND RESISTANCE BY INDIVIDUALS DENIED THEIR HUMAN RIGHTS BECAUSE THEY HAD LEPROSY

A. Skinsnes Law [1,*]

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Introduction: Archival documents reveal that individuals whose lives have been challenged by leprosy have been advocating for their rights and resisting the erasure of their identities for at least 160 years. Historian Michelle Moran has observed that resistance by people with leprosy predates more well-known social movements aimed at "democratizing medicine", such as those associated with HIV/AIDS and breast cancer which have been largely viewed as a "distinctively late-twentieth-century phenomena."

Methods: Research was conducted into correspondence, petitions, oral histories and published and unpublished accounts of individuals from several countries, including South Africa, the Hawaiian Kingdom, Japan, Swaziland, USA, Colombia and Brazil. This information was then analyzed in the context of the rights outlined in the Universal Declaration of Human Rights to gain a better understanding of the extent to which leprosy has been used as a justification for the denial of basic human rights.

Results: Records in the Capetown Archives show that as early as 1853, individuals sent to Robben Island protested being detained against their will. In the early 1890s, Kaluaikoolau, a Native Hawaiian, and Frans Jacobs from South Africa, protested the separation of families, each saying that their marriage vows (the law of God) were greater than the isolation policies (the law of man). Research by Bill McCoy into letters written by Madolwane Maziya from Swaziland shows how she conducted a strong, persuasive letter writing campaign in the 1930's to members of the Government in which she objected to her relocation to South Africa and also insisted on the ability of people with leprosy to care for themselves. Individuals in Japan have a long history of individual and collective resistance against oppression. This has included hunger strikes such as that staged as part of the "Get Promin" movement. In the USA, efforts by Stanley Stein in the 1940's resulted in the abolition of the law that denied people with leprosy the right to vote. In Colombia, women in Agua de Dios formed their own religious community when they were not allowed to join the existing religious order because they had leprosy. As a child, Cristiano Torres from Brazil distributed protest literature describing the situation he and others were forced to live in and continues to advocate against the prejudice, discrimination and loss of freedom experienced by people today. Members of the older generation in a number of countries are currently protesting plans to relocate them and close the places they have come to regard as home.

Conclusion: The Universal Declaration of Human Rights was adopted in 1948 to formally outline and protect the basic human rights and freedoms of the world's citizens. These included the right to be free from: cruel, inhuman or degrading treatment; arbitrary arrest, detention or exile; arbitrary interference with privacy, family, home or correspondence; attacks upon a person's honor and reputation; as well as the right to freedom of movement, nationality, home and family. A diagnosis of leprosy has often been used as justification for denying these rights, usually in the name of public health policies. However, human rights advocates from amongst those who had leprosy, many of whom promoted universal rights and freedoms long before the adoption of the Universal Declaration of Human Rights, have left a clear record that shows how isolation policies were often abused and hardships imposed that denied an individual's rights, persisted long after the discovery of a cure, and continue into modern times.

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Presentation Time: **Thursday 19/09/2013 at 14:00 – 15:30**
Symposium Session: **Human Rights and Advocacy**
Presenter: Ms Kofi Nyarko

REUNITING FAMILIES IN GHANA – AN IMPORTANT STEP IN ENSURING HUMAN RIGHTS AND ELIMINATING STIGMA

K. Nyarko [1, 2,*]

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Introduction: The Universal Declaration of Human Rights, adopted in 1948, states that "The family is the natural and fundamental group unit of society and is entitled to protection by society and the State." (Article 16) Countless numbers of people around the world have been deprived of their families due to isolation policies and the stigma associated with leprosy. Despite the fact that there is a cure for leprosy, thousands of people still live in isolated leprosy communities. The United Nations Guidelines for the Elimination of Discrimination Against Persons Affected by

Leprosy and Their Families, adopted in 2010, states that "States should, where possible, support the reunification of families separated in the past as a result of policies and practices relating to persons diagnosed with leprosy." When discussions are held regarding the return of individuals to their homes, it is often said that either these individuals do not want to return home, fearing rejection by family and society, or that families will not accept them due to the stigma and because they are regarded as a burden. Activities in Ghana challenge these two ideas.

Methods: A concerted effort has been made in Ghana to educate the public through the media and other public education efforts. This has paved the way for more than 350 people to return to their homes and families. Members of IDEA Ghana have visited the home towns of people who have been living separated in leprosy camps for as long as 56 years. They visit the families and also the chief of the village in order to discuss the return of those who have been separated because they had leprosy. This is done in preparation for either having the family or chief come to get the person (in villages located close to the camps), or for a member of IDEA Ghana to accompany a person back home when distances are greater.

Results: More than 350 people who have lived in leprosy camps in Ghana for most of their lives have returned to their homes and families. In a number of cases, those who have returned home find that they are the oldest surviving member of their village and immediately become respected for their knowledge of its history. Others have been asked to serve as advisors to the chiefs of their village. Upon returning home in 2012, Victoria Sapon said: "As you know, I was in a leprosy camp when I was 16 years, but now I am 63 years old, so I have spent 47 years in the leprosy camp. Some years ago there was a lot of stigma in Ghana but now there is no more, that is why I said I will come back home. See the people around me because of my coming home!"
Atoo Kwamena returned home after living in a leprosy camp for 32 years. The chief of his village commented: "We are so happy to have Atoo Kwamena back. He is older than anybody in this village and there are a lot of things we need to learn from him. For him to come home is a blessing." There are currently about 125 people of varying ages waiting to return home. Some are older while others are only in their 40's, with a lifetime ahead of them.

Conclusion: The experience of IDEA Ghana shows that with encouragement, support and correct information, individuals who have been living in separated leprosy camps for most of their lives are increasingly returning to their home towns. The desire to return home has increased as people see their friends successfully being reunited with their families and communities. Returning individuals to their communities is a major step in overcoming stigma and ensuring a person's right to home and family.

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Presentation Time: **Thursday 19/09/2013 at 14:00 – 15:30**
Symposium Session: **Immunology 3**
Presenter: Roberta Pinheiro

THE EFFECT OF APOPTOTIC CELL RECOGNITION ON MACROPHAGE POLARIZATION AND MYCOBACTERIAL PERSISTENCE

T. D. O. Fulco [1], P. R. Andrade [1], M. G. D. M. Barbosa [1], P. F. Ferreira [1], H. Ferreira [1], S. Corte-Real [1], E. N. Sarno [1], R. O. Pinheiro [1,*]

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Introduction: The concept of phenotypes, while useful, is oversimplified, because macrophages exhibit substantial plasticity, with markers and functions readily altered by external signals. Previous studies demonstrated increased percentages of apoptotic cells in lesions from paucibacillary when compared to multibacillary leprosy patients. *In vitro*, we have previously demonstrated that *M. leprae* induces monocyte apoptosis by a TNF-dependent mechanism. However, the effect of apoptotic cell removal on *M. leprae*–stimulated cells has not been fully elucidated. *In vitro* studies suggest that macrophages are capable of transitioning from a proinflammatory to an alternatively activated, or reparative, phenotype. Here, we investigate whether apoptotic cell removal (efferocytosis) induces different phenotypes in *in vitro* differentiated pro-(MΦ1) and anti-(MΦ2) inflammatory macrophages.

Methods: To generate MΦ1 and MΦ2 cells, monocytes were resuspended in complete RPMI 1640 medium containing GM-CSF or M-CSF respectively and, cultured for 6 days. Irradiated armadillo-derived *M. leprae* whole cells was added to the cultures at a MOI (multiplicity of infection) of 10 bacteria : 1 cell for 90 minutes or 24 hours in presence or not of apoptotic cells. Apoptotic Jurkat T cells were obtained by exposing cells to UV irradiation at 254 nm for 10 min and culturing without serum for 3h in 5% CO_2/37°C. Jurkat T cells were used when more than 80% apoptotic cells were obtained. CD163, SRA-I, arginase I were evaluated by immunohistochemical staining and flow cytometry. Bax and Bcl-2 genes in skin lesion cells were evaluated by real-time PCR. Arginase and PPARγ were evaluated both by real-time PCR and immunoblotting. Cytokines (IL-6, IL-10, IL-15, TGF-B and PGE_2) were evaluated by ELISA. *M. leprae* uptake was evaluated by confocal and electron microscopy.

Results: Lesion skin cells from tuberculoid (BT) patients presented increased gene expression of Bax when comparing with lepromatous (LL) lesions. In contrast, lepromatous lesions presented increased gene expression of Bcl-2. To investigate the effect of apoptotic uptake in *M. leprae*–stimulated macrophages, we stimulated differentiated MΦ1 or MΦ2 macrophages with *M. leprae* in the presence or not of apoptotic cells. Upon recognition of apoptotic cells, MΦ2 macrophages did not significantly alter their phenotype or cytokine secretion profile. However, MΦ1 macrophages changed their phenotype toward an MΦ2 with increased CD163 and SRA-I expression and increased phagocytic capacity. Reduced IL-15 and IL-6 production were observed when MΦ1 cells were stimulated with both *M. leprae* and apoptotic cells. It was accompanied by an increase in the secretion of TGF-B, PGE_2 and IL-10. Analysis of skin biopsies of leprosy patients demonstrated that cells in multibacillary lesions have increased expression of MΦ2 markers SRA-I, CD163, and Arginase I when compared to paucibacillary lesions, which present MΦ2 markers at lower levels. In addition, PPAR-γ, a nuclear receptor that primes human monocytes toward an MΦ2 phenotype, was also increased in multibacillary lesions, but it is present in paucibacillary lesions at lower levels.

Conclusion: These results suggest that MΦ1 cells are more susceptible to phenotype changes after apoptotic stimuli when compared to MΦ2 cells. Based on these data, we may also suggest that in paucibacillary patients, efferocytosis contribute to mycobacterial persistence instead of the presence of an effective cellular immune response by maintaining an MΦ2 phenotype at lower levels in the skin lesions.

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Presentation Time: **Thursday 19/09/2013 at 14:00 – 15:30**
Symposium Session: **Immunology 3**
Presenter: Vedithi Chaitanya

CIRCULATORY AND LOCALIZED MRNA EXPRESSION PROFILES OF INTERLEUKIN 17F AND INTERLEUKIN 23 IN TYPE 1 (REVERSAL) REACTIONS OF LEPROSY

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Introduction: Leprosy is a chronic infectious disease which mainly affects skin and peripheral nerves. In the borderline immunological spectrum of the disease, patients experience episodes of delayed type hypersensitivity reactions called Type 1 or reversal reactions which cause nerve damage leading to deformities. Early detection of these reactions will help in early treatment intervention and prevention of nerve damage. Interleukin 17F (IL 17F) and Interleukin 23 (IL 23) are the proinflammatory cytokines that play a crucial role in the regulation of peripheral inflammations. We investigated the possible association of serum circulatory levels and lesional skin mRNA expression levels of IL 17F and IL 23 with manifestation of type 1 Reactions in Leprosy.

Methods: Serum levels of IL 17F and IL 23 were measured in 80 leprosy cases in Type 1 reactions (T1R) and 80 leprosy cases without reactions (NR) using commercial ELISA Kits (R & D Systems) and Skin Biopsy samples were collected from 30 leprosy cases in T1R and 30 leprosy cases without reactions (NR). Total RNA was extracted from skin biopsies and 1µg was converted to cDNA. IL 17F & IL 23 coding genes were amplified in realtime in RotorGene Q (Qiagen Inc.) and acquired on green channel using SYBR Green dye with an annealing temperature of 60°C. C_T values of IL 17F and IL 23 gene targets were normalized with those of GAPDH (Reference Gene). The fold difference in expression is measured by Livak's ($2^{-\Delta\Delta CT}$) Method after performing appropriate validations.

Results: We identified an average of 4.11 fold ($p<0.05$) increase in IL 17F mRNA expression in T1R when compared to that of NR skin lesions and mean IL 17F levels in serum significantly increased in cases with T1R when compared to NR (405.66 pg/ml Vs 198.95 pg/ml, $p<0.05$). However, IL 23 mRNA is expressed 2.37 ($p=0.06$) fold higher in T1R when compared to NR skin lesions and there was no significant difference in the mean serum levels of IL 23 between the T1R and NR cases (153.60 pg/ml vs 113.69 pg/ml, $p>0.05$).

Conclusion: Our results indicated that the localized inflammation in type 1 reactions is regulated in part by the differential mRNA expression of proinflammatory cytokines IL17F and IL 23 and further functional analysis of these cytokines may aid in identifying their potential role as serological and in-vivo markers for early detection of nerve damage and reactions in leprosy.

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Presentation Time: **Thursday 19/09/2013 at 14:00 – 15:30**
Symposium Session: **Immunology 3**
Presenter: Cristiana Macedo

METABOLOMICS REVEALS DRASTIC CHANGES IN IMMUNOMODULATORY POLYUNSATURATED FATTY ACIDS DURING LEPROSY AND UNCOVERS POTENTIAL MECHANISMS OF DISEASE TOLERANCE

J. J. Amaral [1,2], C. S. de Macedo [1,3,*], L. C. M. Antunes [4,5], K. A. D. Mattos [1], J. Han [6], J. Pan [6], A. L. P. Candéa [7], M. D. G. M. O. Henriques [7], C. Borchers [6], E. N. Sarno [8], P. T. Bozza [9], B. Finlay [5], M. C. V. Pessolani [1]

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Introduction: Despite considerable efforts over the last decades, our understanding of leprosy pathogenesis remains limited. The complex interplay between pathogens and hosts has profound effects on host metabolism. To explore the metabolic perturbations associated with leprosy, we analyzed the serum metabolome of leprosy patients.

Methods: Samples collected from lepromatous and tuberculoid patients before and immediately after the conclusion of multidrug therapy (MDT) were subjected to high-throughput metabolomic analyses.

Results: Our results show marked metabolic alterations during leprosy that subside at the conclusion of MDT. Pathways showing the highest modulation were related to polyunsaturated fatty acid (PUFA) metabolism, with emphasis on anti-inflammatory, pro-resolving omega-3 fatty acids. These results were confirmed by eicosanoid measurements through enzyme-linked immunoassays. Corroborating the repertoire of metabolites altered in sera, metabolomic analysis of skin specimens revealed alterations in the levels of lipids derived from lipase activity, including PUFAs, suggesting a high lipid turnover in highly-infected lesions. MALDI Imaging Mass Spectrometry (IMS) of lipids on skin biopsies before and after MDT supported metabolomics data on altered lipid metabolism in skin.

Conclusion: Our data suggest that omega-6 and omega-3, PUFA-derived, pro-resolving lipid mediators contribute to host tolerance and survival by decreasing immunopathology during leprosy. The results demonstrate the utility of a comprehensive metabolomic approach for identifying potential contributors to disease pathology that may facilitate the development of more targeted treatments for leprosy and other inflammatory diseases.

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Presentation Time: **Thursday 19/09/2013 at 14:00 – 15:30**
Symposium Session: **Immunology 3**
Presenter: Luciana Rodrigues

INSULIN-LIKE GROWTH FACTOR-I IN LEPROSY: POSSIBLE ROLE ON MACROPHAGE DEACTIVATION AND INTRACELLULAR MYCOBACTERIUM LEPRAE PERSISTENCE

L. R. Silva [1], L. S. Rodrigues [1,*], F. M. R. Costa [1], M. R. S. N. Costa [2], Á. D. C. Vivarini [3], K. A. Mattos [1], U. G. Lopes [3], E. N. Sarno [4], M. C. V. Pessolani [1]

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Introduction: Lepromatous skin lesions are characterized by the presence of highly infected foamy macrophages. *Mycobacterium lepra*e, an obligate intracellular pathogen, is able to subvert macrophage microbicidal mechanisms and replicate within these cells. However, the molecular mechanisms involved in this deactivation are not completely understood. In a previous study, we have shown that *M. leprae* induces insulin-like growth factor-I (IGF-I), a hormone with anti-inflammatory and anti-apoptotic activities, in human Schwann cells as a strategy to maintain the host cell survival. In the present work, we investigated the IGF-I expression in macrophages and its potencial involvement on macrophage deactivation and mycobacterial survival.

Methods: IGF-I expression was evaluated in skin biopsies from tuberculoid (BT) and lepromatous (LL) patients by quantitative RT-PCR and immunohistochemical analysis. Human monocyte-derived macrophages (MDM) or murine RAW 264.7 lineage were infected with *M. leprae* in order to evaluate IGF-I induction. The effect of IGF-I in mycobacterium-induced inducible nitric oxide synthases (iNOS) expression and nitric oxide (NO) generation was also investigated and bacterial survival was monitored by colony-forming unit (CFU) or Live/Dead bacterial viability kit.

Results: Our data have shown IGF-I mRNA up-regulation and abundant IGF-I protein expression in LL skin lesions when compared to BT lesions. Subsequent *in vitro* experiments have confirmed that *M. leprae* is able to induce IGF-I expression and production in human and murine macrophages. Exogenous IGF-I added to macrophages was able to partially block the expression of iNOS and NO production induced by *Mycobacterium smegmatis* and *Mycobacterium bovis* BCG. *M. leprae* was unable to induce iNOS and NO production in macrophages above the constitutive levels. However, the addition of neutralizing antibody against IGF type 1 receptor (IGF-1R) was able to rescue the capacity of *M. leprae* to generate reactive nitrogen species in murine macrophages. The same result was obtained using RAW 264.7 macrophages transiently transfected with an iNOS promoter luciferase construct. Finally, we observed that IGF-I added to murine macrophages cultures contributed to intracellular survival of *M. smegmatis*, *M. bovis* BCG and *M. leprae*.

Conclusion: Our results suggest that IGF-I induced by *M. leprae* in macrophages may contribute to mycobacterial persistence by down-regulating the host innate response during infection. Currently, we are investigating the potencial mechanisms involved in the IGF-I-induced macrophage deactivation.

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Presentation Time: **Thursday 19/09/2013 at 14:00 – 15:30**
Symposium Session: **Immunology 3**
Presenter: Mayara Barbosa

ENROLLMENT OF IRON IN THE IMMUNOPATHOGENESIS OF LEPROMATOUS LEPROSY

M. G. D. M. Barbosa [1,*], H. Ferreira [1], P. R. Andrade [1], E. B. D. Oliveira [1], É. M. Macena [1], C. G. F. D. Lima [2], A. M. Sales [1], J. A. D. C. Nery [1], E. N. Sarno [1], R. O. Pinheiro [1]

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Introduction: The lepromatous form of leprosy is characterized by low or absent specific immune response to antigens from *Mycobacterium leprae* and intense bacterial proliferation. Lepromatous macrophages have a regulatory phenotype that contributes to the immunosuppression observed in leprosy. Our previous work have demonstrated that CD163, a scavenger receptor that recognizes hemoglobin-haptoglobin complexes is expressed at higher levels in lepromatous when compared to tuberculoid cells and favors *Mycobacterium leprae* survival and persistence by promoting increased regulatory pathways and iron storage. In the present study, we investigated the role of iron in lepromatous leprosy pathogenesis.

Methods: Skin biopsies of leprosy patients classified by the Ridley-Jopling method were analyzed by optical microscopy following to stains with Prussian Blue, Wade staining and immunohistochemistry analysis of ferritin light chain (FTL), CD163, heme oxygenase-1 (HO-1), hemoglobin (Hb), haptoglobin (Hp) and transferrin receptor-1 (TfR1). The gene expression of TfR1 and Ferroportin-1 (Fpn-1) in skin lesions of leprosy patients were evaluated by real time PCR. Peripheral blood mononuclear cells (PBMC) or monocytes from health donors were stimulated with $FeSO_4$ (100 μM), Hemin (10 μM), CoPP (10 μM) and/or *M. leprae* (10:1) for 24 hours. The supernatants were measured to IL-1β, IL-4, IL-6, IL- 10, IL-12p70, IL-17, IL-23, IFN-γ, TNF-α and TGF-β by ELISA. In addition, monocytes stimulated with $FeSO_4$ were stained by flow cytometry to intracellular indoleamine 2,3-dioxygenase (IDO) and IDO activity also was evaluated in culture supernatants by high-performance liquid chromatography.

Results: We observed that skin biopsies from lepromatous patients exhibit a higher expression of proteins related to iron uptake and metabolism, as well as increased iron deposition in the form of ferritin and hemosiderin in foamy macrophages, where the bacilli are located. Analysis of gene expression by real time PCR demonstrated that TfR1 expression was increased in lepromatous lesion cells when compared with tuberculoid ones. Fpn-1, in contrast, was reduced in lepromatous cells, suggesting that increased iron storages in lepromatous macrophages were due to low iron exportation. Antioxidants can increase Fpn-1 in infected macrophages. We tested the effect of CoPP (HO-1 inducer) on cytokine production in *M. leprae*-stimulated monocytes. We observed that in *M. leprae*–stimulated cells CoPP increased IL-1β. In addition, CoPP also increased IL-6 levels independently of *M. leprae* stimulation. Cultures of monocytes stimulated with hemin at 10 mM and *M. leprae* increased IL-6 levels when compared to controls. We also tested the effect of free iron ($FeSO_4$) treatment in healthy donors cells stimulated with *M. leprae*. The addition of FeSO4 was able to modulate the cytokine production, increasing the secretion of IL-12p70 and IL-10 in monocytes, and IL-6 in cultures of PBMC stimulated with *M. leprae*. The addition of exogenous iron, as FeSO4 treatment, was also able to reduce the expression and activity of indoleamine 2,3-dioxygenase induced by *M. leprae* in monocytes of healthy donors.

Conclusion: Our results demonstrated that in lepromatous macrophages iron presents a dual role, creating a favorable environment for the mycobacteria or increasing pro-inflammatory cytokines that may contribute to activation of antimicrobial pathways in macrophages.

O-251

Presentation Time: **Thursday 19/09/2013 at 14:00 – 15:30**
Symposium Session: **Immunology 3**
Presenter: Itu Singh

MOLECULAR MIMICRY BETWEEN MYCOBACTERIAL ANTIGENS AND HOST MYELIN BASIC PROTEIN

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Introduction: Autoantibodies against various components of host molecules are known to occur in TB and leprosy. Present study was carried out to find out the level of autoantibodies against myelin basic protein (MBP) in leprosy patients, to identify and characterize the mimicking epitopes of mycobacterial antigens and MBP, experimental induction of autoimmune response in experimental animals by *M. leprae* sonicated antigens (MLSA).

Methods: A total of 124 leprosy patients (LP) (20 BT, 21 BB, 23 BL, 29 LL, 21 BT with T1R and 10 BL/LL with ENL reaction) and 43 healthy controls (HC) attending the OPD of NJIL&OMD,

Agra were included in this study. Anti-MBP antibodies were measured in sera of LP and HC by ELISA. Cross-reactive areas of mycobacteria and MBP were identified by western blot (WB) using anti-MBP rabbit sera or anti-*M. leprae* rabbit sera. These cross-reactive regions were further characterized by 2D gel electrophoresis and WB. Cross-reactive spots were identified by MALDI-TOF/TOF. B cell epitopes were predicted by BCPRED Server 1.0 and aligned by Clustal W server. 3-dimensional structure of mimicking protein/s of *M. leprae* and MBP was modeled by CPH server and all the similar B cell epitopes were highlighted to find out whether, these epitopes are on the surface of the protein. Inbred strains of BALB/c mice were subcutaneously inoculated with MLSA and sensitized immune cells of these mice were adoptively transferred to naïve mice.

Results: Level of anti-MBP antibodies was significantly higher in leprosy patients across the spectrum compared to HC. The presence of cross reactive region of MBP reacting to anti -*M. leprae* rabbit sera was found to be at ~ 20kDa, pI value of ~10 while of *M. leprae* antigen was at 51kDa, pI ~5·5 and 30kDa, and pI ~ 6.0. It was found that myelin A1 protein and 50S ribosomal protein L2 and Lysyl-tRNA synthetase of *M. leprae* are cross-reactive proteins. It was observed that 2 B cell epitopes of both the proteins were similar which were mimicking. It was very interesting to find out that autoimmune response raised in mice is adoptively transferred to naïve mice.

Conclusion: Our findings suggested that myelin A1 protein and 50S ribosomal protein, Lysyl-tRNA synthetase of *M. leprae* are mimicking proteins and 2 B cell epitopes of both the protein may be responsible for the autoantibody production in leprosy patients. Autoimmune response is adoptively transferrable to naïve mice by sensitized immune cells.

O-252

Presentation Time: **Thursday 19/09/2013 at 14:00 – 15:30**
Symposium Session: **Innovative Approaches**
Presenter: Carolina Talhari

CONTROL AND PREVENTION OF LEPROSY IN DIFFICULT TO REACH AREAS OF AMAZONAS, BRAZIL THROUGH TELEHEALTH TECHNOLOGY

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Introduction: The Brazilian state of Amazonas is the largest one in the country and has a total of 3,483.985 inhabitants with a population density of 2,23 inhabitants/km^2. The state capital is Manaus and most of the other 61 municipalities are only accessible by boat or plane. In 2011, 586 new cases of leprosy were detected in the state of Amazonas. The coefficient detection for leprosy was 16.56/100,000 inhabitants. An important percentage of those cases, 317 (54,1%), were detected outside Manaus. Although an important decrease of leprosy detection rate (76.2%) was seen in the past 23 years, the state of Amazonas still presents areas with high endemicity. Due to the difficulty in reaching most of the high endemicity areas in Amazonas state, a pilot project using telehealth technology was implemented in partnership with Afredo da Matta Foundation, State University of Amazonas, MORHAN (a Brazilian non-governmental organization for leprosy) and Novartis Foundation for Sustainable Development. The aims are to control and prevent leprosy in difficult to reach areas of Amazonas through virtual community health workers training and distance monitoring.

Methods: Two municipalities from Amazonas state, Lábrea and Parintins, were included in the pilot project due to their high detection rate of leprosy cases. Both municipalities have a telehealth center provided and maintained by the State University of Amazonas. Training, virtual consultations and monitoring of epidemiological leprosy parameters are to be made through teleconference. An initial visit by Alfredo da Matta Foundation technicians are to be made in each area. One dermatologist, one nurse and two paramedics with training in dermatology are responsible for giving a 5-day theoretical and practical course in leprosy. After that, all consultations and monitoring are to be made through teleconference for the next 12 months.

Results: After initial virtual and in loco conferences with local health authorities, primary care attention health workers and community representatives, the pilot project was initiated. Initially, a training on telehealth technology equipment was performed since most of local health workers were not familiar with such technology. The theoretical and practical courses in leprosy were scheduled to happen within the next months in the two municipalities.

Conclusion: This pilot project consists in a partnership between public - Alfredo da Matta Foundation, State University and MORHAN – and a private initiative – Novartis Foundation for Sustainable Development which is funding the project. In difficult to reach areas, new approaches are to be tried to increase leprosy detection rate, to augment the percentage of leprosy household contacts examined, increase the cure percentage and consequently prevent incapacities due to leprosy. Telehealth technology is a well-established tool worldwide and a real possibility to promote health in such a large and difficult to reach state as Amazonas.

O-253

Presentation Time: **Thursday 19/09/2013 at 14:00 – 15:30**
Symposium Session: **Innovative Approaches**
Presenter: Burchard Rwamtoga

ROLE OF SCHOOL CHILDREN IN LEPROSY CONTROL

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Introduction: Leprosy control can be achieved by strengthening the prevention of disability services to people affected by leprosy. This can be made possible by empowering school children and other members of the community in early identification of new cases rather than depending entirely on health workers. Early identification, diagnosis and treatment before leprosy suspects have developed disabilities enables leprosy patients to be cured without disability and hence can live a life to their fullest potential in the community.

Methods: Methodologies used in spreading the leprosy education and awareness to school children and other members of the community include a robust and inclusive array of activities. Such as, social marketing through drama groups, school clubs, peer education lecture sessions in schools and village sensitization meetings by the use of village prevention of disabilities (POD) committees. Drama groups and POD committees include former leprosy patients. Every person involved in this program works on a voluntary. All persons involved in this program works and are expected to continue working on voluntary basis

Results: Over a one year period, 60 POD committee members have been working as volunteers and 55 villages and 65 schools were reached. Leprosy knowledge was spread to 36,157 adults and 38,167 school children. 174 suspects self-reported to health facilities and or leprosy centers and 30 were confirmed by leprosy experts as new leprosy cases and put on treatment.15 self-care groups of members ranging from 6 to 10 were formed. People Affected by Leprosy have shown a positive response in the proper use of foot wear.

Conclusion: Spreading leprosy knowledge to school children and members of the community has proved to be a vital methodology in controlling leprosy and hence case finding has scaled up. As more and more people become knowledgeable in leprosy we can see an increase in self-reporting of those suspected with leprosy. It is of no doubt that when school children and other members of the community are empowered in suspecting leprosy we can move more easily towards eliminating the disease.

O-254

Presentation Time: **Thursday 19/09/2013 at 14:00 – 15:30**
Symposium Session: **Innovative Approaches**
Presenter: Dr Mannam Ebenezer

ROLE OF CONTACT SURVEY AND RING SURVEY IN DETECTING NEW CASES OF LEPROSY IN THE PRESENT SCENARIO

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Introduction: The leprosy situation in India is passing through an important transition phase-from a high burden country to a low burden country, from a partial vertical programme to a more integrated one; from active case finding to voluntary reporting. Even though India has achieved the leprosy elimination target it is doubtful whether all the leprosy cases are being diagnosed. This study aims to identify the number of previously unrecognized leprosy cases that can be identified by using contact survey and ring survey.

Methods: the Schieffelin Institute of Health-Research and Leprosy Centre, Karigiri provides care for persons affected by Leprosy in four blocks of Vellore district- Katpadi, K V Kuppam, Gudiyatham and Pernambet. The overall population of Vellore district is 8, 21,452. All new cases detected by voluntary reporting for five years from-2008-2012 from all the four blocks were listed out for the contact survey and ring survey.
Contact survey-The household contacts of these index cases were enumerated and senior paramedical staff would then visit each of their houses and examine the households for leprosy. Those who were suspected to have leprosy were referred to the base hospital for confirmation.
Ring survey- 25 houses around the index case were listed and their inhabitants were enumerated. These households would be visited by the paramedical workers and examined for leprosy. Suspect cases were referred to the base hospital for confirmation of diagnosis.

Results: -Contact Survey- A total number of 205 index cases had been registered in the past five years from four blocks in Vellore district, out of which 177 cases (86.3%) were taken up for contact survey. The number of persons enumerated for the contact survey was 681, the number of contacts examined was 642 (94.2%).The total numbers of cases identified by contact survey was 11 (6.2% of the index cases), of which 6 cases were Multibacillary leprosy (MB Rate- 54.55%).

and 5 cases were Paucibacillary leprosy (PB Rate· 45.45%). There was only 1 case with Grade 1 disability (Disability rate·9.09%).Child rate was·36.36%
Ring survey· was conducted on 135 index cases from all the four blocks. The number of persons enumerated was 9622. The number of persons examined was 7846 (81.5%). The number of cases identified by ring survey was 12 cases of leprosy (8.88% of the index cases), of which 3 cases were Multibacillary leprosy (MB Rate·25%) and 9 cases were Paucibacillary leprosy (PB Rate·75%). There were no cases with disability. Child rate·25%

Conclusion: Thus Contact survey and Ring survey together with school survey provides additional methods of detecting cases in the community when active case finding is not being done.

O-255

Presentation Time: **Thursday 19/09/2013 at 14:00 – 15:30**
Symposium Session: **Innovative Approaches**
Presenter: Sheikh Hadi

LOW COST EXTENDED CONTACT SURVEY FOR LEPROSY

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Introduction: Bangladesh remained as the fourth highest leprosy burden country in the world before adoption of the 1991 World Health Assembly resolution to eliminate leprosy. The country's strategy was revised following adoption of that resolution. Basic leprosy services were integrated into general primary health care and expanded throughout the country upto the sub-district levels. Bangladesh achieved the elimination target in 1998 at national level though endemicity continuing in few districts. At the beginning of elimination, registered prevalence was 0.87/10,000 population and grade 2 disability rate was 8.9% among the newly detected cases. At the end of 2012, registered prevalence came down further to 0.20/10,000 population but disability grade 2 and proportion of MB cases showed increasing trend.
It is thought that extended contact survey is more effective for early case detection in pockets of leprosy, which may help to keep the disability rate to a targeted level. Extended contact survey (ECS) also provides an opportunity to increase community awareness through formal health education sessions. Recently an ECS was organized in one of the few remaining endemic districts in the northern region of the country.

Methods: Seven sub-districts of Gaibandha district were selected for the ECS. Information of 274 patients under treatment (index cases) was collected from each upazila health complex for mapping. Preparatory meetings and orientation of field workers on procedure of data collection were organized. Seven survey teams were formed involving national and local level leprosy experts. Meetings were organized engaging the villagers at the common places and around the index cases. Posters, leaflets, flipcharts and atlas of leprosy were used to disseminate leprosy information among the participants. Forty household members around an index case were invited in each of the meetings. Household contacts of index cases were examined for leprosy. In addition to household contacts, villagers with skin lesions were invited for physical examination upon getting verbal consent.

Results: about a total of 48,708 subjects who lived in and around the 274 index cases were screened from 272 villages of 7 sub-districts (upazila) of the district and a total of 120 (PB: 95 MB: 25) new leprosy cases were detected. Among them 63 were adult female, 49 adult male, 6 female children and 2 male children. A total of 109 persons with suspected leprosy lesions were recorded for observation to be followed up afterwards. The total survey cost was US $ 6250 (500,000 Taka). It included training/orientation on leprosy and conduction of survey and data collection by the 210 field level leprosy workers from both GOB and local NGO. So the cost per new case detected stood at only US $ 14.2 (Taka 1138/-).

Conclusion: The cost for extended contact survey around index case was low but was quite effective in finding new cases. This approach further facilitates in early case detection promoting prevention of further disability among leprosy cases and interruption of transmission. Countries with low case detection of leprosy with high rates of disability grade 2 might be benefited from such approach.

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Presentation Time: **Thursday 19/09/2013 at 14:00 – 15:30**
Symposium Session: **Innovative Approaches**
Presenter: Diane Santos

KINSHIP AND LEPROSY IN CONTACTS OF LEPROSY PATIENTS. COHORT AT THE SOUZA ARAÚJO OUTPATIENT CLINIC, RIO DE JANEIRO, RJ, 1987-2010.

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Introduction: Leprosy in Brazil remains unsatisfactorily controlled despite significant reductions in detection and prevalence rates. The elevated risk of disease among leprosy contacts can be attributed, in part, to genetic characteristics related to kinship. The aim of the present epidemiological study was to assess the relationship of kinship and illness in a cohort of treated leprosy patient contacts under surveillance at a leprosy referral center for care and research in leprosy by analyzing its database of a 24-year follow-up period.

Methods: Data from 7,174 contacts of leprosy patients under surveillance at a leprosy outpatient clinic in Rio de Janeiro, Brazil between 1987-2010, were analyzed to investigate the effect of kinship on leprosy while taking into account individual and contextual factors. Two outcomes were considered: the incidence and prevalence of leprosy among contacts. To evaluated kinship a variable was constructed stratifying the categories according to consanguinity and degrees of kinship. Variables relate to the socio-demographic and epidemiological factors tied to individual, index case, and household factors were considered: skin color; childhood BCG, and second BCG vaccine (only in incidence analysis) taken during follow-up; age; sex; years of schooling; household/non-household relationship; index case variables included: bacteriological index; operational classification; disability grade; and length of time of close association with the index case. Prevalence analysis was done using logistic regression to obtain the odds ratio (OR) and Incidence analysis was performed by Poisson regression to obtain relative risks (RR). Multivariate analyses were performed using a robust estimation method due to the cluster of contacts related to each index case. The level of statistical significance was 5%.

Results: In the prevalence analysis, close kinship showed a significant association, there was a significant association between prevalence and sibling (OR=2.75, 95%CI=1.65-4.57) and offspring (OR=2.00, 95%CI=0.22-0.41). Moreover, the categories uncle, nephew, cousin, grandparent, and grandchild (OR=1.70, 95%CI=0.98-2.94); parents (OR=1.69, 95%CI=0.97-2.96) have no statistical significance as did spouse, boyfriend/girlfriend, and bride/groom (OR=1.25, 95%CI=0.74-2.11). Factors associated with the prevalence also included socio-economic factors (schooling of up to 4 years) and duration of exposure to the bacillus (close proximity to the index case for more than five years). While in the incidence, once initiated treatment of the index case, these factors have lost their significance and index case BI and BCG protection have greater impact on the risk of illness. In the incidence analysis a variety of different significant risks were found for all categories of kinship: parents (RR=10.93, 95%CI=3.48-34.27); spouse, boyfriend/girlfriend, and bride/groom (RR=7.53, 95%CI = 2.51-22.57); sibling (RR = 7.03, 95%CI = 2.41-20.46); offspring (RR=5.34, 95 %CI = 1.74-16.38); and uncle, nephew, cousin, grandparent, and grandchild (RR = 3.71, 95%CI = 1.24-11.06).

Conclusion: A correlation with leprosy in both consanguineous and non-consanguineous contacts was observed, which mitigates the ability to fully clarify the issues of genetic susceptibility and physical exposure. The results suggested that both these issues play an important role in the epidemiology of leprosy. But, due to the complexity of factors involved in the disease, other analyses of its development are needed.

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Presentation Time: **Thursday 19/09/2013 at 14:00 – 15:30**
Symposium Session: **Innovative Approaches**
Presenter: Dr. Joilda Nery et al

EVALUATION THE IMPACT OF THE CONDITIONAL CASH TRANSFER PROGRAM "BOLSA FAMÍLIA" ON THE DETECTION RATE OF LEPROSY IN BRAZIL

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Introduction: Social determinants can affect the transmission of leprosy and unfavorable socioeconomic conditions are considered risk factors for this neglected disease. Little is known about the effectiveness of welfare policies, such as the conditional cash transfer program "Bolsa Família" (BFP) in Brazil, on the reduction of poverty related diseases such as leprosy. Objective: To evaluate the impact of the BFP on the detection rate of leprosy in Brazil.

Methods: We conducted a longitudinal ecological study in the period 2004 - 2011, with the Brazilian municipalities as units of analysis. Data were obtained from national databases with information about socio - demographic conditions and morbidity from leprosy. The main

independent variable was the BFP coverage of the poor eligible individuals in the municipality and the outcome was the detection rate of leprosy. The covariates selected were: municipal coverage of the Family Health Program (FHP, the main primary health care program of the country, percent of the population younger than 15 years, average income per capita, illiteracy rate, unemployment rate, urbanization rate and average number of residents per household. We used fixed-effects negative binomial models for panel data, crude and adjusted for the covariates, and explored these associations using continuous and categorized variables. Analyses were performed using Stata version 10.

Results: A total of 5.483 municipalities were included in the totaling 43.864 observations during the considered years. During the period under study, there was an increase in the coverage of BFP and FHP, in the average per capita income and urbanization rate. The detection rate of leprosy was decreasing, as the mean percentage of under 15 years, the illiteracy rate, the unemployment rate and the average number of residents per household. Preliminary results indicate that municipalities with higher BFP coverage has statistically significant reduction in the detection rate of leprosy in crude models (BFP coverage higher 70%; RR=0. 74 95% CI = 0.71– 0.78) and adjusted for selected covariates (BFP coverage higher 70%; RR=0.80 95% CI = 0.77 – 0.84).

Conclusion: Preliminary results suggest a positive impact of Bolsa Família Program in the reduction of the incidence of leprosy in the period 2004-2011.

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Presentation Time: **Thursday 19/09/2013 at 14:00 – 15:30**
Symposium Session: **Community Based Rehabilitation**
Presenter: Pim Kuipers

BENCH TO BASTI: A FRAMEWORK FOR TRANSLATIONAL RESEARCH IN LEPROSY

P. Kuipers [1,*], P. S. Rao [2], M. S. Raju [2], A. John [2], L. P. Sabuni [3]

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Introduction: As reflected in the ILEP five-year research strategy, there is a great need for translational research in the area of leprosy. This presentation argues that an important foundation for such research is to develop a coherent and relevant research framework to integrate a number of disparate aspects.

Methods: Such a framework is outlined. It comprises a five-phase psychosocial and service-related research programme using the Ottawa Model of Research Utilisation and draws from complexity theory to identify barriers and enablers to translation. Relevant aspects of the Ottawa Model of Research Utilisation and complexity theory are described.
Methodologically, the proposed sequential research programme includes traditional and participatory strategies, and culminates in a participatory implementation of findings. The proposed programme is characterised by exploring intervention-related, adopter and stakeholder-related, as well as contextual dimensions of knowledge translation. It also draws from complexity theory and explores processes and consequences of implementation, localised responses and actions, incentives, psychosocial linkages and the roles of key individuals and institutions in the translation of leprosy research into community practice.

Results: Anticipated results of the proposed programme are outlined

Conclusion: Recognising the complex, multifaceted and often ambiguous reality of translating leprosy research into community practice, the collaborative project will draw evidence from multiple and diverse sources, focus on negotiation and action, and will foster negotiated understandings.

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Presentation Time: **Thursday 19/09/2013 at 14:00 – 15:30**
Symposium Session: **Community Based Rehabilitation**
Presenter: Shirish Shegaonkar

IMPACT OF COMMUNITY BASED INTERVENTIONS ON IMPROVING THE QUALITY OF LIFE OF PEOPLE AFFECTED BY LEPROSY AND GENERAL DISABILITY.

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Introduction: The Choice, Dignity & integration (CDI) projectwas initiated in 2008 in four blocks of Belgaum District (Saundatti, Raibag, Hukerri and Gokak), Karnataka, India. This project focuses on poverty reduction and facilitates the social integration of people affected by leprosy, general disabilities, devadasi (*Although illegal, the devadasi custom has been in place for centuries and involves dedicating young girls at the temple so they are able to 'provide sexual services' to the men of their community. Belgaum District in the north of Karnataka, India has been a traditional home of the devadasi practice.*) and marginalized people into mainstream society. The Project is based on a social model of disability and explores the option of Self-help Groups as a means of getting disadvantaged people to work together to advance both economically as well as socially. The SHGs in the project constitute a platform that not only plan, organize, implement and evaluate economical programs of its members, but also promote sustainable Social, Health & Educational development of the every member in the group. The study aims at highlighting the impact of Community Based interventions on improving the quality of life of people affected by leprosy and general disability.

Methods: *Data was collected through Convergent interviews* · Discuss with Key informants – those involved in the implementation of the project (volunteers, anganwadi workers, Panchayat members) through structured and unstructured interviews and a systematic process was used to refine the information collected from stakeholders involved at different phases of the programme. *In-depth interview*· were conducted with the 100 beneficiaries identified. *Participatory tools*· (PRA, Mapping, transacts, FGD, etc) were used to get a feedback from SHGs of which the beneficiaries are members.

Results: The study shows that 80% of those affected with leprosy have increased independence in daily life through additional earning from Community Based rehabilitation (CBR) Programmes and 65% demonstrate an increase in their ability to meet common needs (Health, Childrens' Education etc). 80% people affected with leprosy have reported increased social acceptance enjoying community facilities.

Conclusion: Community Based Rehabilitation is an effective intervention to increase community participation & social acceptance of leprosy affected. It is instrumental in improving the quality of life of those affected by leprosy by having positive impact on psychological well-being, interpersonal relationships, personal development, empowerment, physical and material well-being and access to rights for people affected by leprosy and general disabilities.

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Presentation Time: **Thursday 19/09/2013 at 14:00 – 15:30**
Symposium Session: **Community Based Rehabilitation**
Presenter: Shivakumar Mugudalabetta

LONG TERM IMPACT OF SOCIO ECONOMIC ASSISTANCE TO IMPROVE THE LIVELIHOOD OF PERSONS AFFECTED BY LEPROSY IN INDIA

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Introduction: Persons affected by leprosy with disability face socio economic barriers mainly due to stigma and discrimination within their families, community and work place. Socio economic assistance could help them to improve their livelihood options and raise their status in the community. Damien Foundation has initiated its socio economic rehabilitation program in India in the year 2007. The support was provided in the form of livestock like cow or goats and self employment assistance. The aim of this study is to assess the long term impact of the socio economic assistance in improving the livelihood of the affected people.

Methods: Damien Foundation India has conducted a cross sectional survey using a semi structured interview schedule to study the socio-demographic profile of the beneficiaries, impact of the socio economic support and access to government entitlements. Beneficiaries supported in the year 2008, 2009 and 2010 were interviewed by the field staff. In case of absence of beneficiary, family members were interviewed. The support provided is considered to have long term added value if it is utilized by the beneficiary or family members currently for generating income or the support provided is sold and invested in to another activity. The support provided is considered to have no long term added value if the support provided is completely sold or all the livestock has died. The data was entered and analyzed using Epi Info™ 7.

Results: We have contacted 315 beneficiaries supported in 2008-10. Among them 266 (84.4%) persons are available for the interview, 37 (11.7%) died and remaining migrated or not traceable. The mean age of the beneficiaries is 52 years and 81% of them are above 40 years. Support was provided to 121 (38%) women. Around 55% of beneficiaries are from socially deprived groups. Majority of them are Illiterate (71%), has own house (89.5%) and do not own land (69%). Around 10% of beneficiaries are living in leprosy colonies. Around 50% of the beneficiaries receive disability or old age or widow pension from government. Beneficiaries were supported with live stock like cow/buffalo (20.5%), goat/sheep (48%) and other self employment (31%). Among those received livestock 10% has died. The program has long term added value among 71% of the beneficiaries in improving their livelihood option. The support provided in the form of goats and beneficiaries from leprosy colony was found to be significantly associated with poor outcomes.

Conclusion: The program has long term added value to improve the livelihood options of persons affected by leprosy.

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Presentation Time: **Thursday 19/09/2013 at 14:00 – 15:30**
Symposium Session: **Community Based Rehabilitation**
Presenter: Mr Bob Bowers

ULTRA POVERTY ASSESSMENT AND INTERVENTIONS AMONG PEOPLE WITH LEPROSY RELATED DISABILITIES IN NORTH WEST BANGLADESH

B. Bowers [1, 2,*], P. Kuipers [3], S. Singh [4]

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Introduction: The commonly used World Bank definition of extreme poverty (1 USD per capita per day) seems unimaginably low to those from more developed nations, while being all too believable to many in less developed regions. Despite decades of experience and planning, few interventions have effectively targeted those in extreme poverty, and even fewer have adequately targeted those well beneath this threshold (the ultra-poor), in part, due to definitional and assessment difficulties. This presentation will operationally define ultra-poverty from an energy intake perspective, which is market flexible. Recognizing that people affected by leprosy are disproportionately represented among the ultra-poor, a survey and poverty alleviation initiative with people with leprosy related disabilities was conducted. The initiative sought to prepare people living in ultra-poverty to more fully engage in a group based Community Based Rehabilitation Project.

Methods: The Leprosy Mission surveyed 2100 people with leprosy related disabilities in North-west Bangladesh over the past 4 years using the energy intake criterion as the entry point to a unique participatory poverty alleviation project. Individual plans were developed with each person identified as subsisting under the ultra-poverty line. Tailored poverty interventions were implemented and reassessed annually.

Results: Results from this ongoing work show a significant number of people living under the ultra-poverty line. Data from participants in the study, including education level, land holdings and sanitation are presented with poverty data to provide an overview of the lives of people affected by leprosy who are ultra-poor. Initial results indicate that the proportion of people now living above the ultra-poverty line after involvement in the project is significant.

Conclusion: Understanding and addressing poverty and ultra-poverty in a relevant and effective manner is a hidden challenge for organizations working with people with leprosy related disabilities. This study which identified a considerable number of people living below the ultra-poverty line in north-west Bangladesh should encourage others to similarly assess both extreme poverty and ultra-poverty, in order to more effectively target interventions.

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Presentation Time: **Thursday 19/09/2013 at 14:00 – 15:30**
Symposium Session: **Community Based Rehabilitation**
Presenter: Mr Bob Bowers

UNEXPECTED FINDINGS IN A STUDY OF PARTICIPATION AND STIGMA: COMPARING PERSPECTIVES OF PEOPLE WITH LEPROSY AND OTHER DISABILITIES WITH PERSPECTIVES OF COMMUNITY MEMBERS

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Introduction: One of the major constraining factors for people affected by leprosy is the social stigma that often accompanies Leprosy. *The International Classification of Functioning, Disability and Health* (ICF) describes disability as an impairment, activity limitation, or participation restriction. Participation restrictions can be due to physical or social barriers or social barriers. Thus the stigma alone can be seen as a disabling factor. Social barriers to participation can be hidden but very powerful, including negative attitudes, beliefs and stigma from others. It is also recognized that some people also experience self-stigma. They may withdraw themselves in fear of what they anticipate.

Methods: The P scale was administered to over 1300 people who are current members of community based rehabilitation (CBR) self-help group or future members of planned CBR groups. The P-Scale is a commonly used measure of participation restrictions among people with leprosy, based on the perspective of the person with the disability. Those who had leprosy were also given the SALSA, a measure of activity limitations. In addition, a community stigma assessment tool originally developed for research with people with HIV/AIDS was modified to assess leprosy stigma. Community members, without leprosy or disabilities matched for geographical location were selected using a GIS program, and asked to complete the community stigma assessment.

Results: Initial analyses of P-Scale scores yielded surprisingly low levels of perceived stigma among people affected by leprosy. Details of scores and subscale scores for study populations are provided. Subsequent analyses were conducted to explore this apparent anomaly in the following ways.
Comparison of P-Scale scores with SALSA scores and socioeconomic variables.
Comparison of P-Scale assessments of stigma with community perspectives of stigma.
Comparison of participants scores across sites.

Conclusion: Perceived and projected stigma and its effect on participation is complex. Based on findings, recommendations are made regarding the incorporation of perceived and projected stigma in community based research with people affected by leprosy.

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Presentation Time: **Thursday 19/09/2013 at 14:00 – 15:30**
Symposium Session: **The Eye in Leprosy**
Presenter: Ebenezer Daniel

QUANTUM OF MYCOBACTERIA LEPRAE AND INCIDENT OCULAR COMPLICATIONS IN MULTI-BACILLARY LEPROSY

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Introduction: The WHO definition of multi-bacillary leprosy is based on easily identifiable clinical characteristics and includes all patients having more than 5 patches irrespective of their skin smear and all patients whose skin smears are positive for *Mycobacterium leprae*. It is not known whether the amount of bacteria in newly diagnosed multi-bacillary patients undergoing treatment with the multi-drug therapy is associated with incident ocular complications.

Methods: Multi-bacillary leprosy patients who were newly diagnosed according to the WHO clinical classification by active case finding from a defined geographical area in South India and who were willing to undergo two-year multi-drug therapy (MDT) and five year follow up after completion of MDT were assessed for leprosy characteristics at enrollment that included standard skin smear bacterial index (BI), deformity grading, reactions and face patches. The patients had ocular examinations every six months that included determining visual acuity and intraocular pressure and documenting the presence or absence of orbicularis oculi weakness, lagophthalmos, ectropion, entropion, corneal opacity, punctate keratitis, corneal ulcer, corneal nerve beading, scleritis, episcleritis, flare and cells, keratic precipitates, iris atrophy and cataract at every visit. Incidence of each of the ocular complications and their adjusted hazards ratios (aHR) with 95% Confidence Intervals (CI) were estimated during the MDT period and the 5-year post-MDT follow up period by using the Cox proportional hazards model and step wise multi-regression analysis. The association of baseline BI as a risk factor in the development of these ocular complications is presented.

Results: At baseline, of the 301 multi-bacillary patients enrolled, 55 (18.3%) were skin smear negative for *Mycobacterium leprae* and 246 (81.7%) were skin smear positive. Among those who were skin smear positive, 96 (39%) had BI <1.00, 61 (25%) had BI between 1.00 and 1.99, 33 (13%) had BI between 2.00 and 2.99, 27 (11%) had BI between 3.00 and 3.99 and the remaining 29 (12%) had BI above 4.00.

During two year MDT, only the incidence of corneal nerve beading was associated with higher BI (aHR 4.22 95% CI 1.28, 13.88, p=0.018). After completing MDT, baseline smear positivity vs smear negativity predicted uveal involvement (aHR 2.38 95% CI 1.02, 5.52, p=0.044) and potentially blinding leprosy related ocular pathology (PBLROP) (aHR 2.42 95% CI 1.04,5.6, p=0.041). Stepwise multiple regression also confirmed the association of smear positivity (aHR 3.50 95% CI 1.33,9.25, p=0.011) with iris atrophy occurring after completion of MDT.

Conclusion: In this population, corneal nerve beading tends to occur in patients harboring large quantities of mycobacteria and may be an indication of sensory nerve fiber loss. Patients who were smear positive at baseline (before starting MDT) were more likely to develop uveal involvement after completion of MDT. This suggests the need to prioritize the active follow up of leprosy patients who are smear positive at enrolment.

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Presentation Time: **Thursday 19/09/2013 at 14:00 – 15:30**
Symposium Session: **The Eye in Leprosy**
Presenter: Krishnamurti Kamble

EFFICACY OF STEROID AND PHYSIOTHERAPY IN EARLY REPORTED LAGOPHTHALMOS

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Introduction: Leprosy is a chronic infectious disease that involves skin and peripheral nerves resulting in to disability and deformities. Lagophthalmos is one of the well-known complications of leprosy due to involvement of the facial nerve. About 15-20% of the leprosy affected individuals develop lagophthalmos. In the early stages, lagophthalmos is treated like any other case of neuritis with steroids.The objective is to study the role of early intervention with steroid and simultaneous physical therapy in early reported lagophthalmos at tertiary referral institute under Disability Prevention and Medical rehabilitation (DPMR) programe.

Methods: During April 2009 to March 2011, 33 patients reported with lagophthalmos. These patients were examined clinically and details were noted in pretested Performa. The standard dosages of the steroids were given to patients as per guidelines. Lid gaps on direct gaze and with both gentle and forced closure were assessed using standard measuring technique by a physiotherapist. During follow-up period the patients were imparted active and passive physiotherapy and any change in the lid gap was recorded. Data were analysed and appropriate test of significance was applied.

Results: A total of 1910 patients were diagnosed as new case of leprosy of which, 816(42.72%) were MB cases, while 1029 (57.28 %) were PB cases. 1249 (65.40%) were males while 661 (34.60%) were female. Of the total newly diagnosed cases, the proportion of cases with lagophthalmos was 2.40 %(33). These 33 patients visited the Institute within six months of the appearance of symptomsThere were 27 (81.81%) males and 6 (18.18%) female. The male to female ratio was 4.5:1.Out of total lagophthalmos patients, 29 (87.87%) were receiving MDT and 04 (12.12%) had been released from treatment (RFT). Only 5 (15.15%) lagophthalmos cases were from the PB category, while rest i.e. 28 (84.84%) were from MB category. In MB cases, 16 (48.48%) patients had skin lesions over the face and also on other parts of the body. Out of 33 patients only one patient had facial palsy.Twenty patients reported within 3 months of appearance of the signs and symptoms while 13 had reported between 3 and 6 months. Irregular physiotherapy and incomplete steroid intake was noted among three patients. The lid gap persisted after six months in the three steroid defaulter patients.

Conclusion: With the use of the steroid and regular physiotherapy early detected lagophthalmos in initial stages shows significant improvement in the lid gap reduction. Early detection of the upper eye lid muscle weakness by asking every patient during each visit will definitely prevent development of lagophthalmos. Adequate management of lagophthalmos will prevent complications like exposure keratitis, corneal ulcer and blindness.

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Presentation Time: **Thursday 19/09/2013 at 14:00 – 15:30**
Symposium Session: **The Eye in Leprosy**
Presenter: Dr Sundar Rao

INCIDENT OCULAR COMPLICATIONS ARE ASSOCIATED WITH HAND AND FEET DEFORMITIES IN MULTI-BACILLARY LEPROSY PATIENTS

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Introduction: Disabilities associated with leprosy continue to be a major challenge facing leprosy control efforts worldwide. Depending upon the location and the quality of data collection, deformities in newly diagnosed multi-bacillary leprosy patients have been reported to be in the range of 18% to 34%. Vision threatening ocular complications can lead to blindness with catastrophic results in already physically disabled patients.

Methods: Deformities of hands and feet of 301 newly diagnosed multi-bacillary patients were graded at enrollment according to the WHO classification as no deformity, grade 1 deformity and grade 2 deformities. These patients were followed up with detailed ocular examinations every six months during 2 years of multi-drug therapy and the following 5 year period. Incident ocular complications that included lagophthalmos, corneal opacities, uveitis, iris atrophy and cataract, were estimated using the Cox proportional hazards model. Adjusted hazard ratios (aHR) with 95% Confidence Intervals (CI) were generated. The association of these incident ocular complications with several candidate risk factors including limb deformities at baseline was investigated.

Results: At baseline no limb deformities were observed in 35.2 % of the 301 patients, 146 (48.5%) had either grade 1 or grade 2 deformity in one or more limbs, 49 (16.3%) had either grade 1 or grade 2 deformity in all the limbs, 37 (24.3%) had grade 1 deformity in all the limbs while 9 patients (3%) had grade 2 deformity in all the limbs. During MDT, lagophthalmos (aHR12.84 95% CI 1.32, 124.60 p=0.028), uveal involvement (aHR 5.54 95% CI 1.20,25.68 p=0.029) and potentially blinding leprosy related ocular problems (PBLROP) (aHR 4.74 95% CI 1.11, 20.31 p=0.036) were associated with grade 2 deformity in all limbs. After MDT, corneal opacities (aHR=1.86, 95% CI 1.15, 3.00) and uveal involvement (aHR=3.03, 95% CI 1.08, 8.53) and PBLROP (aHR 3.20 95% CI 0.98, 10.42 p=0.054) were associated with grade 2 deformity.

Conclusion: Multi-bacillary patients with severe hands and feet deformities at baseline are at a higher risk for developing potentially blinding ocular complications, notably corneal opacities and uveal involvement, during their MDT and after completion of the MDT. Patients with multiple grade 2 deformity are particularly at risk and need to be followed up with ocular examinations on a regular basis.

ePOSTER PRESENTATIONS

P-304

Presentation Time: **Thursday 19/09/2013 at 10:30 – 10:40**
Abstract Topic Name: **Surgical Rehabilitation**
Presentation Screen Number: **1**
Presenter: J.A. Garbino

PROPOSAL FOR A PROSPECTIVE, RANDOMIZED TRIAL TO DETERMINE THE ROLE OF NERVE DECOMPRESSION IN LEPROSY NEUROPATHY

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Introduction: Leprosy patients may present damage to nerve trunks leading to deformities.The pathophysiology of this neuropathy includ edema, fibrosis with enlargement of the nerve. There may be also external compression nerve leading to ischemia and loss of function. In spite of many publications on nerve surgery it is still not clear whether surgical decompression alone or combined with corticosteroids is better than corticosteroids alone. Therefore, this proposal to conduct a prospective, randomized trial to determine the value ofsurgical nerve decompression in leprosy neuropathy in association with corticosteroids treatment.

Methods: Patients presenting nerve function impairment is started on standard prednisone and limb splinting. If after 4 weeks there is no improvement or worsening of nerve function, the case is randomized to a Clinical Group (prednisone) or a Surgical Group (prednisone plus surgical decompression). Nerve function testing will be done until 5 years and include sensory test, voluntary muscle testing, a VAS for pain and nerve conduction velocity

Results: So far 131cases have been assessed. Only thirty-six cases were included for steroid treatment. Fifteen cases with active neuritis were excluded due to Diabetes and hypothyroidism, Sjogreen Disease, type 2 reaction and DVT and 80 did not showed active neuritis. These 36 cases represented 49 nerves that were randomized. One case with two nerves was lost to and, two cases presented Diabetes and one hypothyroidism after randomization and were excluded, representing five nerves. The final total was 44 nerves. Out of them 27 were at random allotted to surgical group and 17 to clinical group. Major problem in follow up is the difficulty retrieval of cases for assessment due to economic restriction access. NCV has been considered the most sensible test for assessing the evolution of the nerve function in the pre and post randomization period.

Conclusion: Although difficult to implement, a randomized trial to explore the role of surgical decompression in leprosy related neuritis is important. So far the preset study has proved to be feasible.

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Presentation Time: **Thursday 19/09/2013 at 10:40 – 10:50**
Abstract Topic Name: **Surgical Rehabilitation**
Presentation Screen Number: **1**
Presenter: Krishnamurti Kamble

DYNAMIC RECONSTRUCTION FOR PARALYTIC LAGOPHTHALMOS OF LEPROSY WITH TEMPORALIS MUSCLE TENDON TRANSFER

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Introduction: Involvement of facial and trigeminal nerves resulting in lagophthalmos is seen in 2-3% patients with leprosy. The resultant blindness has widespread quality of life and socioeconomic consequences. As a part of health initiative by Govt. of India, ophthalmic reconstructive surgery was initiated in tribal region of central India in April 2005.The follow up period ranged from 1 year to 7 years. The long term outcome of this initiative is being presented

Methods: A total of 80 patients with 86 lagophthalmos underwent reconstructive surgery between April 2005 and December 2011. Standard WHO definition defined lagopthalmos and its grade. Preoperatively, lid gap measurement along with assessment of vision and corneal sensation was performed. Patients with active ocular infection, visual impairment from other cause and lagophthalmos of less than 6 months duration were excluded. We have used modified Johnson's method which is based on principal of closure of an oval aperture by pulling along its long axis. In this procedure the temporalis tendon is augmented either with Palmaris longus graft or Tensor fascia lata graft and re-routed through upper and lower eyelid and then sutured at the medial palpebral ligament. The procedure was performed under local/regional anesthesia in 71 patients; 9 patients required general anesthesia for harvesting TFL graft.
To avoid chewing the patients were kept on liquid diet postoperatively for the period of 3 weeks. After the 3 weeks patients are taught about the Think and blink reflex by physiotherapist. The upper eye lid closes like a shutter when patient clinches the teeth.

Results: The median age was 30 years with male preponderance (male, female ratio of 11:1). All patients had WHO grade II lagophthalmos and corneal sensation was absent in 21 (28%). Epiphora was present in 50% patients. This procedure provided excellent result in 97.4% cases. The median duration of surgery was 40 minutes. The result were superior in patients who understood the think and blink concept. In 2(2.6%) patients there was failure of tension in grafted tendon; one patient developed skin infection at the site of temporalis tendon harvest. All patients have received systemic treatment for leprosy.

Conclusion: Temporalis muscle tendon transfer provides excellent correction of paralytic lagophthalmos of leprosy. The procedure is safe, effective and provides dynamic function.

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Presentation Time: **Thursday 19/09/2013 at 10:50 – 11:00**
Abstract Topic Name: **Surgical Rehabilitation**
Presentation Screen Number: **1**
Presenter: Sajid Husain

DOES THE DECOMPRESSION OF THE PERIPHERAL NERVE MAY PREVENT THE PROGRESSION OF THE DEFORMITY IN LEPROSY

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Introduction: Peripheral nerve involvement results in deformities formation in leprosy. High doses of (40-60 mg) steroids along with the anti leprosy drugs is the preferred , even though the 70-75% cases develop deformity with above treatment.

Methods: A surgical intervention in the form of epineurotomy by multiple longitudinal incisions and external decompression to relieve the internal pressure through out the involved segment is considered the treatment of choice after "steroids failure".
772 ulnar nerves, 120 median nerve and 108 posterior tibial nerves not responding to above medical treatment in 12 weeks, were under taken for external and internal nerve trunk decompression. These cases were followed- up for 5-20 years at various intervals.

Results: The pain in nerve (neuritis) recovered in all cases of ulnar, median and posterior tibial nerves. Full sensory recovery with pin prick / feather or cotton wool touch was seen in 50% cases of all the three nerves. 20% cases maintain the preoperative levels of sensory status. Plantar ulcers healed with in 6 months after decompression of posterior tibial nerve. Only 6 cases showed reoccurrence.
Over all motor recovery in ulnar nerve was seen 89% and 70% in median nerve.

Conclusion: The over all observation suggests that along with basic care of hands & feet, the cases not responding to steroid therapy of 12 weeks or more who had nerve decompression showed better functional hands and feet which would not have been possible with out timely surgical intervention.

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Presentation Time: **Thursday 19/09/2013 at 10:30 – 10:40**
Abstract Topic Name: **Epidemiological Surveillance**
Presentation Screen Number: **2**
Presenter: Michel Sawadogo

TENDANCES DE LA DÉTECTION DES NOUVEAUX CAS DE LÈPRE PAR PROVINCES DE 2007 À 2012 AU BURUNDI

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Introduction: Une évaluation de la détection a été faite au Burundi en vue de dégager les tendances de la détection des nouveaux cas de lèpre au Burundi tout en assurant une analyse par provinces. La période considérée va de 2007 à 2012. L'objectif primordial est de décrire les tendances épidémiologiques de la lèpre à travers l'incidence de la lèpre par provinces.

Methods: Il s'agit d'une étude évaluative qui concerne toutes les dix-sept (17) provinces du pays. En partant des données collectées en routine par le Programme National Lèpre et Tuberculose de 2007 à 2012, nous avons analysés les cas dépistés en fonctions des provinces.

Results: Les données sur la situation de la lèpre montrent qu'en 2007, 248 cas ont été notifiés avec 225 cas MB et 20 cas parmi les enfants. En 2008, 280 nouveaux cas de lèpre ont été notifiés, avec 83% de formes multi bacillaires et 5% de cas d'enfants. La proportion des cas avec degré d'infirmité II était de 14%. En 2009, on note une augmentation du nombre de cas à 343, avec 93.5 % de formes contagieuses, 5,2% de cas d'enfants et 19,82% comme proportion de degré d'infirmité II. Les données de 2010 montre que 534 nouveaux cas ont été dépistés soit 91% de forme MB. La proportion d'enfant est de 4,5%, celle des nouveaux cas avec degré 2 d'infirmité est de 16,33%.
De façon générale, huit (8) provinces présentent en 2011 une détection au-dessus d'un (01) cas pour 10.000 habitants contre 2 en 2007. Ainsi on note une augmentation de cet indicateur dans la plupart des provinces : Bubanza (de 0,3 à 1,0 pour 10.000 hab.), Bururi (de 0,4 à 1,8 pour 10.000 hab.), Cibitoke (de 1,0 à 2,0 pour 10.000 hab.), Makamba (de 0,3 à 1,0 pour 10.000 hab.), Rutana (de 1,0 à 3,0 pour 10.000 hab.), Bujumbura ville (de 0,2 à 1,1 pour 10.000 hab.), et Ruyigi (de 0,7 à 1,0 pour 10.000 hab.).

Conclusion: La lutte contre la lèpre constitue encore un défi pour le Burundi. Le nombre de provinces ayant plus d'un cas pour 10.000 habitants est en augmentation. Aux provinces s'est ajoutée la ville de Bujumbura. Au-delà de l'amélioration des capacités de diagnostic du Programme, d'autres facteurs expliquant cette évolution devraient être recherchées par le Programme National Lèpre et Tuberculose en vue d'assurer une maitrise de la lèpre.

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Presentation Time: **Thursday 19/09/2013 at 10:40 – 10:50**
Abstract Topic Name: **Epidemiological Surveillance**
Presentation Screen Number: **2**
Presenter: Balachandra Ankad

TRENDS OF TRANSMISSION OF LEPROSY IN THE ERA OF ONE YEAR MULTIDRUG THERAPY

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Introduction: Background- The incidence and prevalence of leprosy all over the world is decreased tremendously after the introduction of multidrug therapy (MDT) in 1985. India has played a major role in this decline as India had half of the case load of the entire world. Our aim was to study the current trends of occurrence of new cases after the operational changes in National Leprosy Elimination Programme (NLEP) were made in the form of shortening the duration of MDT for multibacillary leprosy cases to 12 months and stopping the post treatment follow up.

Methods: Materials and methods- It is a retrospective study from 2006 to 2012. It was conducted in S.Nijalingappa medical college, Bagalkot, Southern India. The percentage of new cases of leprosy attending outpatient department (OPD) of medical college was calculated from the hospital records. The diagnosis was done on clinical grounds as well as slit skin smear examination and skin biopsy. The OPD data was matched with data of the district hospital of Bagalkot district. Statistical analysis was done using SPSS (15.0 version) and chi-square test was applied for proportions.

Results: It was observed that the annual new case detection rate was reduced by 35%.There was decline in prevalence rate by 28%.Similarly in our OPD, the proportion of newly diagnosed cases was 0.64% and it was reduced to 0.1% during the study period (2006 to 2012) resulting in 16% reduction of leprosy cases. The percentage of multibacillary cases was found to be more than the paucibacillary cases in the district hospital. There was no statistically significant ($p>0.05$) difference in the proportions of multibacillary and paucibacillary cases registered in district hospital as well as in OPD of medical college.

Conclusion: There was decline in the trends of transmission of leprosy. However, the increased percentage of multibacillary cases suggests that the transmission of disease is still going on in the community. There was no significant difference between district hospital and OPD of medical college in respect with proportion of multibacillary and paucibacillary cases.

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Presentation Time: **Thursday 19/09/2013 at 10:50 – 11:00**
Abstract Topic Name: **Epidemiological Surveillance**
Presentation Screen Number: **2**
Presenter: Mr Gao Yanwei and Mr Shen Yunliang

STUDY ON THE DISCRIMINATION AND KNOWLEDGE OF MEDICAL STAFF IN LEPROSY CONTROL AGENCY TOWARDS LEPROSY

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Introduction: To evaluate the knowledge of medical staff in leprosy control agency and their discrimination towards leprosy, as well as the methods of eliminating iatrogenic stigma.

Methods: The questionnaire survey was carried out among 77 medical personnel worked in leprosy control agencies in Zhejiang.

Results: The knowledge score of medical personnel ranged from 0 to 10, with an average score of 5.82 ± 2.32. During the recent 5 years, 61 out of 77 persons accepted leprosy training, accounted for 79.22%.The staffs were deficient in the knowledge including leprosy diagnosis criteria, treatment drugs of leprosy and reaction, et al. Among 77 staffs, 4 staffs (5.19 %)felt fear when contacting leprosy patient, 18 (23.38 %) felt a little fear and 55 (71.43 %) without any fear.The common discriminations in leprosy control agencies were as follows: delaying medical examination for the patient (79.22%), treating patients with isolated manner (70.13%), special disinfection after checking up the patient (68.83%), last providing treatment for the patient (67.53%), not keeping patients' disease secret from other people (53.25%).The treating patients apathetically, (23.38%) or wrong referring patients to others (18.18%)were very rare. About 40.26% medical personnel felt that strengthening the training of medical staff is the most effective method to eliminate iatrogenic stigma towards leprosy.

Conclusion: The discrimination towards leprosy in leprosy control agency is common. Strengthening the training of medical staff is much necessary in leprosy discrimination intervention.

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Presentation Time: **Thursday 19/09/2013 at 10:30 – 10:40**
Abstract Topic Name: **ENL Reaction 2 and Dermatology**
Presentation Screen Number: **3**
Presenter: Mara Dasco

LEPROMATOUS LEPROSY PRESENTING AS A TYPE 1 (REVERSAL) REACTION WITH ACUTE EDEMA AND PARESTHESIAS

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Introduction: Uncommonly, leprosy can present as a type 1 (reversal) reaction. We present a case of a 77-year old caucasian male from Texas with an approximately 3-month history of acute edema of both hands with concomitant sensory deficit. He had been evaluated by the cardiology and nephrology departments for evaluation of the acute edema without finding a clear etiology. Upon evaluation in the dermatology clinic, the patient was afebrile, and had bilateral non-pitting edema of the hands and feet associated with numbness. He was also noted to have an asymptomatic skin rash, which the patient had only noticed one month prior. The rash was characterized by multiple annular erythematous plaques on the trunk and upper and lower extremities. Punch biopsy of one of the lesions demonstrated sarcoidal granulomata with large histiocytes containing numerous acid-fast positive bacilli consistent with lepromatous leprosy. The diagnosis of lepromatous leprosy in the context of a type 1 (reversal) reaction was made based on the histopathologic and clinical presentation. Although uncommon, lepromatous leprosy can present as a reversal reaction with acute edema and sensory deficits, without any obvious skin findings. This case highlights the importance of considering leprosy among the etiologies of acute hand and foot edema with paresthesias. The diagnosis of leprosy can therefore be overlooked and potentially misdiagnosed by practitioners. It is imperative to initiate systemic corticosteroids in addition to multi-drug therapy in these cases in order to avoid permanent nerve damage.

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Presentation Time: **Thursday 19/09/2013 at 10:40 – 10:50**
Abstract Topic Name: **ENL Reaction 2 and Dermatology**
Presentation Screen Number: **3**
Presenter: Dr Apolonio Nascimento

B LYMPHOMA AND BL LEPROSY - CLINICAL AND HISTOPATHOLOGICAL CORRELATION

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Introduction: Clinical case of patient S.R.R.G., 66 years old, male, resident in Belém·Pará, Brazil. He looked for Dermatology Service of Universidade Federal do Pará in February 2011, complaining inflamatory lesions spreaded on the body since 2009, without sintomatology.
He had done a preview histopathological ec
examination with a result that suggested lymphocitic infiltrate Jessner type. Another one showed a B lymphoproliferative process. Both were done in 2009. Baciloscopy was negative in this period.
Immunohistochemical staining:

KI67	Positive
CD10	Positive
CD20	Positive
CD23	Negative
CD3 .	Negative
CICLINE D1	Negative
BCL2	Positive
BCL6	Positive

On clinical examination we noticed nodular lesions on upper back and face. And Erythematous and Infiltrated lesions on lower back.The patient was referred to the Unidade de Referência Dr. Marcello Candia to confirm Leprosy Diagnosis.

Material and Methods: We intended to do the clinical and pathological correlation of both pathologies, because they use to be differential diagnosis one to each other whether from clinical and pathological points of view.
Clinical Evaluation, laboratory analysis and histopathological. Compare the results and do the diagnosis.
Establish associated therapies

Results: Clinical Evaluation with diagnostic suspicion of B Lymphoma and BL Leprosy associated Histopathological examination confirmed both pathologies.
The importance of a good differential diagnosis and pathological correlation of the different types of lesions.

Conclusion: The patient was submitted to both specific treatments with a very good result: lesions of B lymphoma disappeared and BL Leprosy lesions became only residual.
The patient continues to be followed by medical visits in Dermatology and Oncology.

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Presentation Time: **Thursday 19/09/2013 at 10:50 – 11:00**
Abstract Topic Name: **ENL Reaction 2 and Dermatology**
Presentation Screen Number: **3**
Presenter: Erik Post

COMMON SKIN DISEASES AND HEALTH SEEKING BEHAVIOUR IN KANO STATE, NORTHERN NIGERIA

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Introduction: In recent years, OPD staff of "leprosy" hospitals in northern Nigeria was trained in dermatology to diversify their work. State control teams requested and received similar training as such skills are frequently demanded during field visits. But this can be taken some steps further. Management of common skin diseases at the "1st ports of call" might complement stretched TB·Leprosy services. While enhancing knowledge and skills of basic health providers, referral of difficult cases (also leprosy) could be done to referral health centres.Preparing a pilot project, we looked at health seeking behaviour for common skin diseases to explore which health care providers are chosen as the 1st·port·of·call.

Methods: We used semi·structured questionnaires for the general public and for patients, triangulated by 4 FGDs with male and 4 with female participants. Six wards in two districts were randomly selected, then streets were randomly selected, where all present residents were interviewed (N=164). Photos of common skin diseases were used in the interviews.
The contributions are acknowledged of Kabir Bello Dumbulun, from the Department of Sociology, Bayero University, Kano.

Results: Age, education, income, and occupation represented the general population, although women were underrepresented (around 30%). Respondents resided for 85·90% within 4 km from a basic.Rural respondents make use of traditional healers (TH, mostly herbalists)(37%), patent medicine vendors (PMV)(26%), and OPDs of general hospitals or busy health centres (27%), but they make little use of PHC facilities (11%). Urban respondents have a preference for OPDs of hospitals and busy health centres (70%). Both rural and urban respondents increasingly go to hospitals or busy health centres in case the 1st·choice consultations fail to produce results.FGDs showed similar patterns.
Patients presenting with skin conditions in OPDs of 2 general hospitals followed a similar pathway; they used herbalists (18%), pharmacy shops (24%) and busy clinics (39%) as the most important 1st port·of·call, and skipped PHC facilities (3%). Most patients delayed more than 4 weeks before arriving at the OPDs, some delayed several months.
Patients said to be taking their own decisions in all health seeking steps, but in the FGD and the general public interviews, many other decision makers were mentioned, such as parents, husbands, elders, neighbors, community leaders, friends, and siblings.

Conclusion: 1st·port·of·call providers as seen from the community perspective might have to be included in community dermatology approaches. People with skin problems (including initial leprosy) go to a variety of health providers: traditional healers, patent medicine vendors, and busy health facilities. These providers could be useful targets for basic training. The results of the study were taken as the starting point for a pilot project in community dermatology.

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Presentation Time: **Thursday 19/09/2013 at 10:30 – 10:40**
Abstract Topic Name: **Relapse and Drug Resistance**
Presentation Screen Number: **4**
Presenter: Tarun Narang

PERSISTENCE OF VIABLE *M. LEPRAE* AFTER MDT (MBR) IN MULTIBACILLARY LEPROSY PATIENTS. IS THIS THE MISSING LINK IN LEPROSY ERADICATION?

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Introduction: The multi·drug therapy (MDT) as advocated by World Health Oreganization (WHO) has worked successfully against leprosy for the last three decades however its use has not solved the problem of persistence of *M. leprae*. These persisters are responsible for the relapses and resistance. At this stage drug resistance poses a serious impediment to leprosy eradication. There is scarcity of studies that have addressed the issue of viable bacilli after completion of MDT. Slit skin smear (SSS) examination especially morphological index (MI) has been shown to correlate with infectivity in mice and with bacillary ATP content and fall of MI is an important parameter for monitoring the progress of chemotherapy.

Methods: The main aim of this study was to observe the clinical, bacteriological and histopathological changes in multibacillary leprosy (MB) patients following treatment with MDT MB regimen (MBR).
All cases of MB leprosy registered at our leprosy clinic over a period of 6 years, from 2007 to 2012, were included in the study. Socio·demographic details and clinical features were recorded on a standard proforma. In each case, bacteriological index (BI) and MI of skin smears from 4 sites were calculated at baseline and 6 monthly. Skin biopsy and fite stain was done at the end of treatment and thereafter at one year in cases with a positive BI.

Results: Out of total 434 cases of leprosy seen over this period, 274 (63.13%) were diagnosed as having MB and 160 as paucibacillary disease. Fifteen cases (5.47 %) of MB leprosy were identified who had a positive MI after treatment with 12 months MDT MBR. The clinical diagnosis in these patients was lepromatous leprosy (LL) – 10, borderline lepromatous (BL) – 3 and Histoid hansen 2 patients. Despite adequate compliance, these patients had a positive MI (2·4%) at the end of one year of treatment with MDT MBR. Four of these patiens who were referred to our center after receiving MDT MBR from some other hospitals had no decline in BI or MI even after one year of stopping 12 months MDT MBR. The clinical examination in these patients revealed that most of the lesions were still active, the old plaques and nodules were still infiltrated and even new lesions had appeared during the course of treatment. None of the cases showed any histopathological evidence of upgrading, where as downgrading of BB to BL occurred in 2 cases. Five (33.3%) of the LL patients had chronic persistent erythema nodosum leprosum (ENL) and we were unable to taper prednisolone below 40mg/day. All these patients were started on alternative treatment with minocycline and ofloxacin following which the MI became zero and the lesions improved by 1 year of this therapy. All case with type 2 reaction also responed favourably with no ENL after 6 months of initiation of therapy.

Conclusion: Our study highlights the problem of bacteriological persistence despite adequate WHO MDT MBR in a subset of MB patients. These patients represent the high infection pool and pose a potential threat to elimination. SSS is simple and easy investigative tool which can prove to be useful in the post elimination era to identify this subset who have a high risk of relapse or resistance. We suggest all stake holders to urgently take up project of drug resistance studies and formulate policy to deal with such cases. Also practice of SSS should be revived in leprosy control programes.

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Presentation Time: **Thursday 19/09/2013 at 10:40 – 10:50**
Abstract Topic Name: **Relapse and Drug Resistance**
Presentation Screen Number: **4**
Presenter: Noboru Nakata

MUTATION ANALYSIS OF MYCOBACTERIUM LEPRAE GENES AND DRUG RESISTANCE USING CULTIVABLE MYCOBACTERIA.

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Introduction: Dapsone, rifampicin, and fluoroquinolones are major drugs used to treat leprosy. Mutations in the *Mycobacterium leprae folP1*, *rpoB*, and *gyrA* genes are known to be associated with resistances to dapsone, rifampicin, and fluoroquinolones, respectively. Because *M. leprae* has not yet been cultured on artificial media; it requires 11 to 14 days to double in experimentally infected mice, it is difficult to determine the drug susceptibilities of *M. leprae* isolates. It would be very helpful for the molecular diagnosis if mutations responsible for the drug resistances could be determined without using *M. leprae* cells.

Methods: *Mycobacterium smegmatis* mc^{2}155 and *Mycobacterium bovis* BCG Tokyo were used as hosts to produce strains for drug susceptibility testing. The wild-type *folP1*, *rpoB*, and *gyrBA* genes of *M. leprae* were amplified from *M. leprae* Thai-53 DNA by PCR and cloned into shuttle plasmids. To introduce mutations into the genes, site-directed mutagenesis was performed by using PCR. *M. smegmatis* and *M. bovis* BCG cells were transformed with plasmids carrying the *M. leprae folP1*, *rpoB*, or *gyrBA* with or without a point mutation. The transformants were subjected to allelic exchange using a temperature-sensitive mycobacteriophage to disrupt the *folP*, *rpoB*, or *gyrBA* on their own chromosome. The MIC values for the recombinant strains were determined by culture on Middlebrook 7H10 agar plates containing 2-fold serial dilutions of the antibacterial drugs.

Results: Twenty-one point mutations in the *M. leprae folP1* and eleven point mutations in the *M. leprae rpoB* were tested using *M. smegmatis*. Several mutations detected from *M. leprae* clinical specimens did not give rise to the drug resistance. Functional replacement of the *M. smegmatis gyrBA* with the *M. leprae* counterpart was not successful. Therefore, instead of *M. smegmatis*, we tried to use *M. bovis* BCG as a host bacterium for the fluoroquinolone-susceptibility testing. The *M. leprae gyrBA* successfully replaced the *M. bovis BCG gyrBA*.

Conclusion: Molecular methods designed to detect drug resistance have some limitations. In some cases, the identified mutations are not related to the acquisition of resistance. We established a method to determine the mutations responsible for the drug resistances of *M. leprae* using recombinant cultivable mycobacterial strains. This method can directly assess the influence of designated mutations in the *M. leprae* genes.

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Presentation Time: **Thursday 19/09/2013 at 10:50 – 11:00**
Abstract Topic Name: **Relapse and Drug Resistance**
Presentation Screen Number: **4**
Presenter: Thomas Gillis

DRUG RESISTANCE MONITORING OF LEPROSY PATIENTS IN THE UNITED STATES

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Introduction: Although resistance of *Mycobacterium leprae* to antileprosy drug therapy has been observed in many highly endemic countries of world, global prevalence rates have not been well established. Recently a global surveillance program has been established, coordinated by the WHO, to monitor leprosy drug resistance. This program does not however, include low endemic countries such as the United States even though the majority of US patients have origins in many of the endemic areas of the world where drug resistance has been identified, including India, Brazil, Southeast Asia, and Africa. Because early case detection and multidrug therapy are the only current effective means to control this disease, determining leprosy drug resistance trends in the US is important. Preliminary work at the NHDP has identified drug-resistant strains of M. leprae which has also lead to the development of rapid molecular assays for identification of drug resistant leprosy from crude biological tissues. Recently we identified a case of primary multi-drug-resistant leprosy in the US, a country where the disease is rare and is therefore a cause for concern. The objective of this study was to begin to define the rates of M. leprae drug resistance in US leprosy patients, thereby providing valuable information not only to improve patient treatment outcome but in the global context of leprosy drug resistance monitoring.

Methods: Skin biopsies from 50 patients who presented to the NHDP Disease Program clinics or participating sites during 2011-2012 were included in this study. These patients were new patients or MDT-treated patients with suspected relapse and included both paucibacillary (PB) and multibacillary (MB) disease. DNA was purified from paraffin-embedded sections or ethanol-fixed biopsy specimens using DNeasy Kit and initially tested for the presence of *M. leprae* RLEP sequences using a molecular RLEP qPCR Taqman assay. Positive samples were then tested for the presence of mutations in the drug resistance determining regions (DRDR) of *rpoB* (associated with rifampin resistance) and *folP1* (associated with dapsone resistance) using a *M. leprae* DRDR Biplex PCR/direct DNA sequencing assay. Alignments to drug-susceptible *M. leprae* DRDRs were made using ClustalW and mutations were identified. When resistance to either of these drugs was observed the DRDR of *gyrA* gene was amplified and evaluated for mutations associated with ofloxacin resistance.

Results: Of the 50 RLEP-positive biopsies tested, 80% were obtained from MB and 20% from PB leprosy patients. Only 1/10 (10%) of PB biopsies were positive for amplification of both *folP1* and *rpoB* DRDRs. However 38/40 (95%) MB biopsies were positive for amplification of both *rpoB* and *folP1* DRDRs. No resistance was found in the PB patient. However, 2/38 (5.3%) MB patients harbored *M. leprae* with mutations in the *folP1* DRDR consistent with dapsone resistance and 1/38 (2.6%) MB patient had a mutation in the *rpoB* DRDR consistent with rifampin-resistant leprosy. No ofloxacin resistance was observed.

Conclusion: Resistance to both rifampin and dapsone was observed in US leprosy patients. Resistance levels were comparable to those found in global surveillance study.

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Presentation Time: **Thursday 19/09/2013 at 10:30 – 10:40**
Abstract Topic Name: **Leprosy Control**
Presentation Screen Number: **5**
Presenter: Shivakumar Mugudalabetta

ENHANCING THE ACCESS AND SUSTAINABILITY OF LEPROSY SERVICES IN PARTNERSHIP WITH CIVIL SOCIETY ORGANIZATIONS: EXPERIENCE FROM INDIA.

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Introduction: Declining expertise and commitment among General Health Staff in leprosy poses serious challenge in improving the access and sustainability of leprosy services in India. So there is an urgent need to develop sustainable leprosy service delivery model with increased participation and empowerment of local community.

Methods: Damien Foundation in India conducted an observational study to examine the feasibility of involving civil society organizations to implement sustainable leprosy services in Krishnagiri district, Tamil Nadu in the year 2012. Four developmental NGOs with good network at the grass root level were identified to cover the whole district. These NGOs are mainly involved in women empowerment through facilitating self help groups in villages to deliver microfinance services, rural development, education of children and health education. NGO with experience in leprosy control was made as nodal NGO with the mandate to select NGOs, train them in self care and identification of suspects, establish coordination with the government health system, also the monitoring and supervision of four local NGOs. The Local NGOs were requested to submit the monthly reports to nodal NGO. The intervention package for the involvement of local NGOs includes updating the disability register; visit persons affected by leprosy with disability to support and motivate them to practice self care; support patients under treatment; refer patients with complication; identify, provide and monitor the livelihood support of needy affected persons and facilitate to receive government entitlements and dissemination of message on leprosy and suspect referral.

Results: The NGO staff and volunteers updated the list of persons affected by leprosy with disability. Initial list of 505 persons affected by leprosy with disabilities recieved from district leprosy office was updated by the local NGOs and the numbers became 410 after additions and deletions from the list. An assessment after one year of implementation showed a remarkable improvement in the proportion of disability cases practicing self care from 16% to 89% and all of them were frequently followed up by local NGO members. Around 70% of plantar ulcers healed. There are 35 new leprosy cases confirmed from 323 suspects referred by the local NGOs. Fifty one persons were identified and supported with socio economic assistance. The most promising result was change in the mindset of the community towards persons affected by leprosy. The local NGOs members were able to provide counseling, assist them to receive government entitlements and ensure regular practice of self care.

Conclusion: Involvement of civil society organizations to improve the access and sustainability of the leprosy services is feasible. The short term results of the pilot project is encouraging and long term impact of the project need to be studied in future.

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Presentation Time: Thursday 19/09/2013 at 10:40 – 10:50
Abstract Topic Name: Leprosy Control
Presentation Screen Number: 5
Presenter: Weena Primkaew

COST-EFFECTIVENESS ANALYSIS OF COMBINED ACTIVE AND PASSIVE VERSUS PASSIVE LEPROSY CASE DETECTION ALONE IN THAILAND

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Introduction: Leprosy is one of infectious disease which leads to physical and social consequences for those who affected. Regarding leprosy situation in Thailand, it has been shown that the prevalence rate has been gradually declined from 51.5 cases per 10 000 in 1964 to 0.17 case per 10 000 inhabitants in 2007. According to WHO definition, the prevalence of less than 1 per 10 000 populations means that leprosy is not a public health problem. However, the proportion of new cases with grade 2 disability at the time of diagnosis has not declined which could be interpreted that the delayed diagnosis still exists, since 1984 to 2007 has been between 11.76% and 11.46%.
Case finding is one of the core activities of leprosy elimination and control. There are two methods of case finding which are; active case detection (ACD) and passive case detection (PCD)
As prevalence rate has gradually declined and the budget is limited, appropriate case detection is needed. The researcher, therefore; is interested to carry out a comparative study of passive case detection alone and combined active and passive methods of leprosy case detection, to find out which one is most effective.

Methods: This study is a retrospective analytic study, is focused on the analysis of the cost for combined ACD and PCD versus PCD alone method in which how to calculate the costs for each case detection methods, how to determined as the number of case detection and the data come from primary data, secondary data from the leprosy elimination program of Thailand (2006).

Results: The major objective of this study is to analyze the cost and effectiveness of different case finding activities: Combined active and passive leprosy case detection versus Passive leprosy case detection alone for the year 2006 in Thailand, from provider as well as patient perspectives. In this study, effectiveness in terms of new cases detected is used to find out which method of case finding activity is better.The cost-effectiveness ratios are calculated for non-endemic and endemic areas.
The total cost, from the provider perspective, of the combined ACD and PCD method was 1,427,800.23 Baht and the number of newly detected cases 35. The cost-effectiveness ratio was 40,794.29 Baht. The total cost, from provider perspective, of the PCD alone method was 1,340,230.20 Baht, with 16 newly detected cases. The cost-effectiveness ratio was 83,764.39 Baht. The total costs from a patient perspective were similar in both combinations, higher in non-endemic areas than in endemic areas. The study concludes thatthe combined ACD and PCD method successfully detected more new cases than the PCD alone method. At the time of detection, using ACD, 8.3% cases had a disability of grade 2 compared with 14.3 % and 12.5% using ACD and PCD; and PCD alone method as respectively. This may reflect the delay in case detection using PCD alone method. When we use weight calculation, the result is that the cost-effectiveness ratio of PCD alone method is 1.27, 1.19, and 1.24 times is higher than combined ACD & PCD method in non-endemicarea, endemic area, and region level respectively.

Conclusion: The combined ACD and PCD method successfully detected more number of newly detected case than PCD alone method. At the time of detecting by ACD, 8.7% cases had disability grade 2. This may be a reflection of a delay in case detection of PCD alone method.

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Presentation Time: Thursday 19/09/2013 at 10:50 – 11:00
Abstract Topic Name: Leprosy Control
Presentation Screen Number: 5
Presenter: Ashutosh Prabhavalkar

STRENGTHENING THE MONITORING SYSTEM OF LEPROSY CONTROL ACTIVITIES AT PERIPHERAL LEVEL (PHC) USING A SIMPLE TASK ORIENTED PERFORMANCE MONITORING TOOL: A PILOT INITIATIVE IN 2 HIGH ENDIMIC DISTRICTS OF MAHARASHTRA, INDIA

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Introduction: The process of integrating leprosy control services within General Health Care (GHC) System was accomplished even before India attained goal of leprosy elimination, at national level, in December 2005. Similar process took place in the state of Maharashtra too. However the increased trend of new case detection at sub·national level indicates lack of involvement by the GHC personnel in leprosy control activities. Absence of an efficient monitoring system poses challenge to the prospects of sustaining leprosy control activities in the integrated setting. Specific proxy indicators are used to monitor the epidemiological trend of leprosy under National Leprosy Eradication Program (NLEP) at different level that is limited to new case detection but it will not reveal the performance levels. There is an imperative need to develop a simple monitoring tool that can assess the performance and progress of NLEP at peripheral level, Primary Health Centre (PHC).

Methods: As a part of WHO·APW project, a simplified monitoring tool based on rapid appraisal method was designed to demonstrate its usefulness in monitoring the performance of leprosy control activities at peripheral level. The tool comprised of 25 process indicators grouped under 5 major activities of NLEP in the context of WHO's Enhanced Global strategy, such as i) New Case Detection; ii) Leprosy Management; iii) POD services & Referral System; iv) Review of Programme and v) Perception and Motivation of staff. Each indicator was scored using 4 to 0 scales and measured in descending order based on the performance. Thus the total score ranges between 100 as maximum and 0 as minimum. It is used as a 'baseline' for grasping the level of performance of leprosy control activities in each PHC and assessed periodically to measure the changes. 21 PHCs, 10 in Gondia & 11 in Chandrapur districts in Maharashtra state were assessed using this tool during July to December 2012. The scores for each PHC were compared with the baseline and at the end of project.

Results: The overall cumulative score for 21 PHCs had increased by 24% from baseline in both the 2 districts. However it ranged between 15% in Gondia district and 34% in Chandrapur districts. While the improvement in performance of new case detection was 36% and 41%, it was 19% and 120% in POID & referral system in Gondia and Chandrapur districts respectively. It was observed that 8 out of 21 PHCs showed increase in score as compared to baseline, however 11 PHCs had decreased score and in 2 PHCs the score remained unchanged. Based on total score obtained 21 PHCs were ranked 1 to 15 at the beginning and 1 to 13 at the end of project. Similarly, PHC wise score range, which was 37 to 65 at the baseline raised to 56 to 83 indicating overall improvement in NLEP performance of PHCs.

Conclusion: This monitoring tool is user friendly and proved to be effective in measuring and monitoring progress towards implementation of leprosy control activities at PHC level. In an evaluation context, this tool allows the supervisory staff to gather valuable input from PHCs that provides a simple and reliable means to assess the performance of NLEP. Periodical assessment helps to measure the achievements and also facilitates ranking of PHCs on the effectiveness of the interventions and help in taking remedial action for improvement. To fulfill the need for simple monitoring tool for leprosy control activities at the PHC level, this tool has established the potential to assess all the components of NLEP and to take advantage of it for program planning, monitoring and evaluation needs.

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Presentation Time: Thursday 19/09/2013 at 10:30 – 10:40
Abstract Topic Name: Detection and Treatment of Reactions
Presentation Screen Number: 6
Presenter: Uday Thakar

USE OF THALIDOMIDE IN TYPE II LEPRA REACTIONS IN PRIVATE DERMATOLOGICAL PRACTICE SETTING

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Introduction: Type II Lepra Reaction is an acute episode in the course of leprosy. Thalidomide, apart from oral corticosteroids is used for control of these reactions.

Methods: Total 24 serial patients of type II lepra reaction (16 male and 8 female, age range 12 to 60 years) were treated with Thalidomide as an adjunct to oral Prednisolone. Acute attacks were treated with oral Prednisolone in doses of 40 to 60 mg and Thalidomide was added after initial control of inflammation, obtaining patient's consent and doing certain investigations. Starting dose of Thalidomide for adults was 300 mg per day was tapered every month. Tapering was done till 100 mg alternate day dose was reached. Steroids were tapered to the lowest possible dose and stopped if possible.

Results: Complete stoppage of oral steroids and thalidomide was possible in only 4 patients. All other patients could be maintained in symptom Free State only with a low dose (5·10 mg) of Prednisolone and 100 mg alternate day thalidomide. Stoppage of either of the drugs leads to relapse of ENL lesions within 1·3 weeks.

Conclusion: Thalidomide is a very useful drug to control type II lepra reactions and wean off oral corticosteroids and achieve significant symptom control without steroid related untoward effects. But most patients continued to require repeated courses of small doses of Thalidomide and oral Prednisolone.
In our series, 2 patients developed nausea in first 2 weeks of Thalidomide and 9 patients suffered from drowsiness. Both these patients did not require stoppage of treatment.
A model was developed to provide thalidomide free of cost, or at economical rate to the patients in collaboration with NGOs working in the field of leprosy.

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Presentation Time: Thursday 19/09/2013 at 10:40 – 10:50
Abstract Topic Name: Detection and Treatment of Reactions
Presentation Screen Number: 6
Presenter: Sathish Kumar Paul

INTRA AND INTER TESTER RELIABILITY OF NERVE PALPATION IN THOSE AFFECTED BY LEPROSY

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Introduction: There are different assessments and tests done for the diagnosis of Leprosy in a hospital. Nerve palpation is still considered to be one of the important methods of identifying Leprosy in the field. It is also one of the cardinal signs of Leprosy. In pure neuritic leprosy, the assessment of nerve thickening is often the only means of diagnosis. Intra tester and inter tester reliability of the nerve palpation is very important to confirm the diagnosis of Leprosy in such field conditions because it may be the only method of diagnosing neuritic Leprosy.

Methods: This study was conducted at the 150-bedded TLM Leprosy Home and Hospital at Purulia, India. There were two different testers, who alternated in the sequence in which the tests were performed. The possibility of a systematic bias in terms of first and second tester in this dataset was excluded.
The Ulnar, Radial and Lateral popliteal nerves were assessed by the two testers in 50 Leprosy affected patients. 150 pairs of nerves were tested by each tester. There were 9 female patients and 41 males. 49 patients were MB and 1 was PB.

Results: The Kappa was calculated for the intra tester as well as the inter tester reliability. It showed that the intra tester reliability was higher for the Lateral Popliteal and the Ulnar nerve. The intra tester reliability was lower for the Radial nerve. The inter tester relaibility for the Lateral Popliteal nerve was excellent. The inter tester relaibility for the Ulnar nerve was very good.
The intra tester reliability for the Radial nerve was fair as the Kappa calculation showed, but the inter tester reliability for the radial nerve was very poor.

Conclusion: There is a high rate of intra tester reliability in the palpation and identification of nerve thickening in the Ulnar and the Lateral popliteal nerves. This shows that the testers who palpate the nerves are convinced that there is a thickening. On the other hand, the inter tester reliability is lesser, but not very significant.
On the other hand, the intra and inter tester reliability on palpation of the radial nerve was not high The results show that the type of nerve that is affected in Leprosy can cause some misdiagnosis. The radial nerve is not very commonly affected in Leprosy, but since the intra as well as intertester reliability is poor when he radial nerve was palpated, additional care needs to be taken when this nerve is palpated.

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Presentation Time: Thursday 19/09/2013 at 10:50 – 11:00
Abstract Topic Name: Detection and Treatment of Reactions
Presentation Screen Number: 6
Presenter: Vivek Pai

MANAGEMENT OF REACTIONS - THERAPEUTIC CHALLENGES

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Introduction: Reactions in Leprosy are a major clinical concern in view of its propensity for nerve damage and deformity. The timely management of reactions is therefore important to control reactions and nerve damage and disease burden. Clinical trials in leprosy using Clofazimine in anti reactional doses along with Prednisolone based regimen were reported earlier in 2004 (Pai et 2004 and 2012). We share below our further observations in the study using this regimen to control reactions with emphasis on type I reactions.

Methods: Patients with reactions attending the Main Referral Centre and satellite clinics of Bombay Leprosy Project were included in the study. 82 patients (55 were males and 27 females) were considered for analysis of which 10 defaulted and could not be included in the analysis. Hence records of 72 patients (type I – 40 and type II – 32) were analyzed. 38 patients were of BI < 3+ and 34 patients were of BI > 3+. Out of 82 patients, 15 patients had lesions on face while 9 patients had neuritis. All patients were subjected to detailed clinical, bacteriological and neurological examination. Clinical photographs taken in selected cases. Patients were then put on standardized anti-inflammatory regimen of Clofazimine and followed up for two years.

Results: Of 72 patients analysed maximum improvement was observed in 37 (92%) patients with type I reaction while 11 (34%) patients with type II reaction improved. Recurrence was seen mostly in type II reaction after 6 months of stopping Clofazimine. No major adverse effects observed seen. It was also observed that there was a significant improvement in 14 (98%) patients with lesions on face. Improvement was not observed in few patients with neuritis.

Conclusion: Observations from this study confirm that Clofazimine when used in higher doses in a standardized regimen administered for an optimum duration is an excellent drug to control reactions including type I reaction. The need for steroids is obviated greatly as recurrences are controlled well and also wean of patients dependent on steroids.

P-481

Presentation Time: Thursday 19/09/2013 at 10:30 – 10:40
Abstract Topic Name: CBR
Presentation Screen Number: 7
Presenter: Dr Mannam Ebenezer

INCLUSIVE LEPROSY COMMUNITY BASED REHABILITATION AND ITS IMPACT ON ACTIVITY DAILY LIVING AND SOCIAL PARTICIPATION OF PEOPLE WITH LEPROSY RELATED DISABILITIES IN KATPADI AND GUDIYATHAM BLOCK OF VELLORE DISTRICT, INDIA

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Introduction: The Schieffelin Institute of Health and Research Leprosy Center (SIHRLC), Karigiri has been working towards leprosy control and rehabilitation for several decades. In order to include leprosy affected persons in mainstream services and facilities, the institution has adopted an inclusive leprosy Community Based Rehabilitation (CBR) approach to create an equal opportunity in health, education, livelihood, social and empowerment of persons with disability due to leprosy and people with other disability due to various causes. An intensive community based rehabilitation program was initiated in selected panchayat villages in the control area to provide comprehensive rehabilitation care in order to improve activities of daily living, social participation and quality of life of people with disability. The present paper evaluates the impact of inclusive leprosy CBR and its impact on activity daily living and social participation of people with leprosy related disability.

Methods: The Screening Activity Limitation and Safety Awareness (SALSA) and Participation Scale were used to measure the impact on activity limitation and participation restriction through inclusive leprosy CBR program. A total sample size of 317 respondents, 187 male and 130 female with impairment and disability were selected from 30 panchayat villages of Katpadi and Gudiyatham block of Vellore District, India. Data was collected by professionals experienced in physiotherapy and occupation therapy through household survey.

Results: The result of SALSA data shows that the activity daily living among male 80 (43.0 %) and female scored 64 (49.2%) in Mild limitation (10-24), male 53 (28.2%) and female 31 (23.8%) in Mild limitation (25-39), Moderate limitation (40 -49) male 28 (15%) and female 16 (12.3 %), and male 17 (9 %) and female 8 (6.2 %), scored in Severe (50-59) and in Extreme severe (60-80) male 9 (4.8%) and female scored 11 (8.4%). The result is $n^2 = 4.1369$, p=0.3877, activity limitation scores were not significant between gender with impairment and disability. There is no association between gender and SALSA scores ($n^2 = 4.137$, p=0.387). The impact of the program in Participation restriction among male 126 (67.3%) and female 73 (56.1%) scored in No significant PR (0-12), Mild PR (13-22)· male 30 (16 %) and female 19 (14.6 %), Male 9 (4.9 %) and female 12 (9.3 %), scored in Moderate PR (23-32) and Extreme PR (33-52) Male 13 (7%) and female 19(14.7 %), and male 9 (4.8%), female 7 (5.3%) scored in Extreme severe PR. The $n^2 = 8.4112$ p= 0.0776 were not significant. There is no association between gender and participation restriction score were ($n^2 = 8.412$, p = 0.08)

Conclusion: The social impact on daily life and participation were not making any differences among persons with leprosy related disability through the study. It shows that how an inclusive CBR approach made an impact on improvement in activity daily living and participation in social life by including persons with disability in the mainstream services and facilities. It makes useful recommendations for leprosy and disability service providers to ensure and a plan suitable interventions strategy for people with leprosy related disability which protects their rights, provides equal opportunity and increase full participation in the society. Keyword: Activity daily living, social participation, protection of rights, equal opportunity, mainstream, inclusive leprosy CBR

P-475

Presentation Time: Thursday 19/09/2013 at 10:40 – 10:50
Abstract Topic Name: CBR
Presentation Screen Number: 7
Presenter: Mr Bob Bowers

THE IMPACT OF COMMUNITY BASED REHABILITATION: A SYSTEMATIC LITERATURE REVEIW, 2002-2012

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Introduction: Community Based Rehabilitation (CBR) is the primary means by which most people with disabilities in economically developing countries receive services. It is also a key strategy in services to people with leprosy-related disabilities. CBR has evolved into a multi-sectoral approach, and has been further strengthened and defined by publication of the CBR Guidelines and the CBR Matrix. In spite of the energy that has gone into CBR and its adoption by national governments and many NGOs, there have been repeated calls for evidence regarding the impact of CBR.

Methods: A search of Pubmed, CINAHL, Psychinfo, Web of Science and askSource databases was conducted across the years 2002-2012. Search terms included Community based rehabilitation, impact and effect*. Only studies conducted in low or medium Human Development Index (HDI) countries, and measured from the perspective of people with disabilities were included.

Results: From 253 initial documents, seven met inclusion and exclusion criteria. Studies were categorized against the CBR Matrix and rated for methodological rigor (qualitative and quantitative). The area with greatest number of documented sources was the health domain. Findings, in the form of statements describing available evidence are presented under each heading of the CBR Matrix.

Conclusion: The evidence for the impact of CBR continues to be weak. There is increased evidence that health related interventions carried out in the community have a significant impact. Most studies have design issues which limit the reader's ability to attribute change to the intervention. The application of innovative indicators of methodological quality and the use of the CBR matrix provides a useful template for similar future reviews.

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Presentation Time: Thursday 19/09/2013 at 10:50 – 11:00
Abstract Topic Name: CBR
Presentation Screen Number: 7
Presenter: Mr David Jaganathan

ROLE OF SELF HELP GROUPS (SHGS) IN PROMOTING SUSTAINABLE LIVELIHOOD OUTCOMES FOR INDIVIDUALS AFFECTED BY LEPROSY

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Introduction: Self Help Groups (SHGs) are recognized as community based groups that play a pivotal role in transforming the lives of the poor and marginalized. SHGs also prove to be powerful instruments in ensuring access to rights for those who are denied the same.
The Leprosy Mission Trust India has established about 102 SHGs under Empowering Communities to address their own issues project in Andhra Pradesh state, India. This project facilitates comprehensive and holistic approaches to rehabilitation & integration of persons affected by leprosy into the mainstream. Project promotes livelihood outcomes for people affected by leprosy through SHGs.
Livelihood outcomes are described as reduced vulnerability, increased economic resilience and social well-being and improved food security. This research thus aims to study whether the Self Help Groups have been instrumental in securing livelihood outcomes for its members affected by leprosy.
Empowering Communities Project oriented community people and facilitated the formation of SHGs which consisted of people affected by leprosy & disability, people marginalized due to gender. Trainings were provided to SHGs on leadership development, advocacy, human rights and skills development. Guidance was provided to SHG members for livelihood promotion, access to Government schemes and financial institutions, to start income generating activities.

Methods: This study is a field based action research. For the study a purposive sample of 40 Self Help Groups(SHGs) from 4 Blocks were selected (10 SHGs from each Block) which have members affected by leprosy. Study was carried out in Vizianagaram and Vishakapatnam districts in the State of Andhra Pradesh, India.
Data collection was done through Quantitative and Qualitative data collection methods. Mainly through; In depth interviews, Case studies and focus group discussions (FGDs). Questionnaire was pre-designed and tested. The interviewer was trained in carrying out the interviews and FGDs. 200 interviews, 80 case studies and 40 FGDs were conducted. Statistical methods were used for data compilation and analysis.

Results: 80% people affected by leprosy reported that training and guidance have been provided to their Self Help Groups to access financial resources from Government and financial institutions. Guidance and trainings have resulted in initiation of income generating activities such as Poultry farming, animal husbandry, vegetable business and petty shop business. 70% of the leprosy affected members have undertaken entrepreneurship developments activities by accessing bank loans through the Self Help Groups. 65% beneficiaries reported that the income gained through livelihood activities has reduced vulnerability as evident by children going to school, savings that can be used in times of emergency. 75% people affected by leprosy have attained food security due to increased income. 40% of SHG members have increased their assets such as farm animals, house, Agri products.

Conclusion: Training and guidance provided to the Self Help Groups helped them to access financial resources from Government and financial institutions. These were helpful to start income generation activities for members of SHGs. Livelihood activities undertaken by members of Self Help Groups has reduced vulnerability and increased food security.
The members of SHG's are enhancing the economic resilience through group savings, individual enterprises supported by SHGs and asset creation. Self Help Groups are playing a vital role in promoting sustainable livelihood outcomes for individuals affected by Leprosy.

P-390

Presentation Time: Thursday 19/09/2013 at 10:30 – 10:40
Abstract Topic Name: Social Aspects and Quality of Life
Presentation Screen Number: 8
Presenter: Rajni Singh

"SOCIAL AUDIT OF INTEGRATED DISABILITY CARE CENTER AT REFERRAL MUNGER DISTRICT IN BIHAR, INDIA - A NEW INITIATIVE IN LEPROSY PROGRAMME"

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Introduction: Social audit is a way of measuring, understanding, reporting and ultimately improving an organization's social and ethical performance. A social audit helps to narrow gaps between vision/goal and reality, between efficiency and effectiveness. It is a technique to understand, measure, verify, report on and to improve the social performance of the organization Social Audit is a process, in which the details of the resources, financial and non-financial, used by the public agencies for the development initiatives, is shared with the people, often through a public platform. It allows people to enforce transparency and accountability, thereby providing the ultimate users an opportunity to scrutinize the development initiatives.

Methods: To conduct a Social audit of Referral Centre, three tier systems has been designed and performed. First one is Auditor who is the beneficiaries. A facilitator Sri Khurshid Aalum Mukhia Gram panchyat, Srimatpur (Two time awarded by President of India for his good work) and Mr. Ramanuj kumar Secretary Magadh Gramin Seva Sangh (Local NGO) was deputed by Beneficiaries. Second one the observer, which has been invited from State, District Health Society, Local NGO/ CBOs, other ILEP member of Bihar, representative of LEPRA UK, Rotary club, Media, Social Health activists,, PRI, etc. The third one is the clients which are the LEPRA India entire team (Bihar and member from Head Office).
All the expenditure record, Bills, Voucher, Report (Programme and finance), etc were displayed at the spot of Social audit for review of beneficiaries & observer. There are also facilities available at free of cast to take a print of any document.
Social audit Process has been stated in guest (PRIs, Local NGO, Media, community leader, observers and beneficiaries) registration than information Gallery (Chart, Register & record) visited in audit venue. The program began with formal welcome by Gram Panchayat Mukhiya, pancahayt Shrimatpur as chairman for the Social audit. The auditors are shears the social audit agenda and facilitated the audit process.

Results: Total 246 beneficiaries have been participated in this social Audit. 26 Question were asked by the beneficiaries. 10 are similar question match with other Question. LEPRA India official has given answer to the Auditor for their question till Auditor satisfied.
Few suggestions also came from beneficiaries who have taken in notice and agree to implement at referral center. It has been decided to put Patients Charter at the entrance of Centre. Social development monitoring (SDM) should be developing for the center. A committee will be formed with beneficiaries and local Panchayati Raj Institution member, Meeting will held every quarter. Each Year Bihar will do Social audit of Referral Unit.

Conclusion: The Social audit provides a common platform for beneficiaries, Stockholders Govt. officials and Panchayati Raj Institution (PRIs) for discussion about services. Social auditing creates an impact upon governance. It values the voice of stakeholders, including marginalized/poor groups whose voices are rarely heard. Social auditing is taken up for the purpose of enhancing local governance, particularly for strengthening accountability and transparency in local bodies. Social audit is most effective when the actual beneficiaries of an activity are involved in it. However, people can only get involved in the process when they are given appropriate authority and rights.

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Presentation Time: Thursday 19/09/2013 at 10:40 – 10:50
Abstract Topic Name: Social Aspects and Quality of Life
Presentation Screen Number: 8
Presenter: Rajni Singh

"CREATION OF SELF-SUPPORT GROUP (SSG) AMONG DISABLED PERSON DUE TO LEPROSY AND LYMPHATIC FIALARIASIS AT VILLAGE PANCHAYAT LEVEL."

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Introduction: India has 62 per cent of the world's leprosy patients, and Bihar contributes 21 per cent of that. Bihar alone is home to a larger number of leprosy patients than any country. Since five year, more than 19000 new leprosy patients each year registering at Government Primary Health Centre (PHC) in Bihar. More than 30000 disabled cases due to leprosy have been registered since 1998 to 2011.
Similarly disabilities due to lymphatic fialariasis in Bihar are very high. More than 200,000 elephantiasis and 150,000 Hydrocele cases has been noticed in Bihar since 2009. LEPRA Society has been implementing a program on community health in 25 village panchayats (group of Village with population of 5-7000) of Munger district. It has formed 23 self-support groups in these Village panchayats.
To improve the quality of life of people in order to Improve functional ability by formation of Self Support Groups (SSG) at Village /Panchayat level.

Methods: The people suffering from Leprosy and Filariasis came under one umbrella with continuous efforts by community and LEPRA society.LEPRA Society has supported one year in organizing meeting, preparing minutes and empowering them for their welfare. Also this is due to willingness of people to fight jointly for a common cause. A group of 10 to 12 members (disabled) were formed in each Panchayat. The group members are either people with Leprosy or with Filariasis foot disability. The group members meet once in a month at one of member house to discuss on various issues relate to dissemination of knowledge to others. Basically they talked about more on self-care/ morbidity care / footwear / Govt. welfare scheme, etc. They also visit the Government health centers (as and when required) to access the available health benefits.
We have integrated both disabilities because both are required same type of intervention such as Skin Care, Wound Care, Exercise, Protective footwear and counseling.

Results: At the end of two and half years of the project implementation, 82 % of the groups are active and managing their own without support of LEPRA. Many are now member of Village Health and sanitation committee of their own panchayat. Due to the motivation by the SSG members, there has been a significant increase in the people who participate in the Health Camps (IPOD camp for people affected with leprosy and Elephantiasis) conducted by LEPRA Society at Block and Panchayat levels. The group motivates and supports other people suffering from Leprosy and fialariasis to visit Government health centers for diagnosis and treatment.
92% SSG member are getting are receiving regular welfare scheme support from Government Welfare scheme such as disability card with appropriate percentage, Antodaya yojana card, Below poverty line card, Indira Aawas, etc. They were supporting other disabled people such as polio, injury, etc. Now these groups are supporting the Govt. Campaign such as cases detection campaign for leprosy, Mass Drugs Administration programme, Disability survey, etc.

Conclusion: The concept of community based SSG was a unique concept in itself. It enhanced Behaviors Change Communications (BCC) skills of people suffering from Leprosy and Lymphedema, developed as an advocacy forum for policy level issues, and the process is self-sustainable in nature because these forums are monitored by them.

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Presentation Time: Thursday 19/09/2013 at 10:50 – 11:00
Abstract Topic Name: Social Aspects and Quality of Life
Presentation Screen Number: 8
Presenter: Mahamath Cisse

A LONG WALK TO THE CHALLENGE FOR INTEGRATION AND INCLUSION FOR PALS

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Introduction: The **LEPROSY VILLAGE** has 36 former leprosy patients and their families, has been founded in 1936, like the other leprosy village, to accommodate people affected by leprosy. Leprosy, particularly contagious, controlled at the time gave rise to the fear and mistrust between communities. The closure and separation wall erected around reflected salience of prejudice. Relying on progress in treatment and social support, actors, through multi-sectoral action officers (IEC, advocacy, empowerment, etc) have been reducing the barrier of prejudice and begin the phase of integration.This experience, almost unprecedented deserves that it stops there for out the highlights.

Methods:
- a PRA (participatory research method active) and aperception study of attitudes which showed the existence of social prejudices against cultural Pals
- Comparative study of poverty levels (infrastructure, economic, social) who found the extreme poverty of Pals and their families from the middle
- implementing information, education and communication action to the populations of two communities
- advocacy and involvement of local authorities and administrative
- Spatial planning and allocation of land title
- Implementation of projects inclusive and unifying

Results: *social and cultural development:* improving social relations between the two communities Redevelopment physical space with pathways dropping all environmental barriers, which has increased the attractiveness of the town
economic: income improvement through projects funded (creation of an bank, poultry projects, millet mill). These micro-projects have served to members of the two communities of Exchange based on mutual respect and enhancement of skills. More frequent contacts allowed, in effect, experimenting with greater social and emotional proximity.

Institutional: improving the perception of the authorities towards the inhabitants of the village and is now recognized as a part of the city.

Conclusion: The experience's shows the need for a preparation of the population and the construction of a consensus before the redevelopment of the physical space. The experience has also highlighted the need to anticipate the impact of social transformations as carriers of new needs and new aspirations. About the entities marked by decades of mistrust and mutual fear, they accompanied the wall fence and separation established to bear witness to the significance of prejudices. Thanks to the progress made in the treatment and social support of patients, and especially, thanks to support and training of populations, the reluctance have been overcome, allowing the opening of the integration with communities

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Presentation Time: Thursday 19/09/2013 at 10:30 – 10:40
Abstract Topic Name: Immunology
Presentation Screen Number: 9
Presenter: Dr Renuka Raju

PREDNISOLONE INDUCES A VARIABLE FALL IN TNF-A, ANTI- MYCOBACTERIAL AND ANTI-NEURAL ANTIBODIES ASSOCIATED WITH LEPROSY REACTION AND NEURITIS

R. Raju [1,*], S. Suneetha [1], R. Jadhav [2], S. Jain [1], L. H. Visser [3], L. Das [4], P. Barkataki [5], D. N. J. Lockwood [6], W. H. van Brakel [7], L. Suneetha [1]

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Introduction: Corticosteroids have been extensively used in the treatment of immunological reactions and neuritis in leprosy. Although many patients respond reasonably well there are a group of patients whose reactions/ neuritis fails to respond to steroid treatment. This study hypothesized that individuals who respond differentially to steroids with variable decrease in the levels of plasma molecules and this determines the response of the leprosy reactions and nerve damage. To understand the pathogenesis of molecules at reaction and after steroid treatment a novel analysis was carried out where an individual's quantitative level of each plasma molecule was compared to their existing level, prior to and after reaction and the initiation of steriods.

Methods: Seven molecules (TNF-α and antibodies to Phenolic glycolipid-1 (PGL-1) (IgM & IgG), Lipoarabinomannan (LAM) (IgG1 & IgG3), Ceramide and S100) were measured by enzyme linked immunosorbent assay (ELISA) in 72 leprosy patients a month before, during and after the reaction. At the onset of reaction these patients received a standard course of prednisolone.

Results: There was no significant difference in the plasma molecules before and after reaction when analysed by grouping the patients. Increase in the individual plasma levels of molecules were compared a month prior to reaction and the order was TNF-α (53%), followed by antibodies to Ceramide (53%), PGL-1 (51%), S100 (50%) and LAM (26%). This increase was significantly associated with nerve pain, tenderness and new nerve function impairment. One month after prednisolone therapy there was a decrease in the levels of each molecule, and the order of decrease was S100 (67%), TNF-α (60%), Ceramide (54%), LAM (52%) and PGL-1 (47%).

Conclusion: Reactions in leprosy are inflammatory processes wherein there is a rise in set of plasma molecules and steriod treatment induces variable fall in the levels and could be the basis for variable clinical response to steriod therapy.

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Presentation Time: Thursday 19/09/2013 at 10:40 – 10:50
Abstract Topic Name: Immunology
Presentation Screen Number: 9
Presenter: Prof Dr P.S. Rosa

EVALUATION OF MACROPHAGE ACTIVITIY IN NUDE AND BALB/C MICE INOCULATED WITH MYCOBACTERIUM LEPRAE

S. B. Pedrini [1], S. R. S. Usó [2], P. S. Rosa [3,*], S. M. Diório [2], A. F. F. Belone [4], A. S. A. Barbosa [3], B. G. C. Sartori [3], F. R. Vilani-Moreno [3]

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Introduction: The host resistance to *M. leprae* is dependent on cellular immunity (CI) which results in the macrophage activation essential for the elimination of bacilli. In the tuberculoid side of leprosy spectrum there is intense macrophage activation leading to elimination of *M. leprae*, while in the lepromatous side, due to the deficient CI macrophages are overloaded with acid fast bacilli (AFB). Experimental leprosy models have shown that the inoculation of *M. leprae* in BALB/c mice footpads (FP) results in local and limited multiplication of AFB (immunocompetent strain), while in athymic mice (*nude*), due to the absence of CI there is bacillary multiplication and dissemination of infection. The objective of this study was to evaluate the activity of peritoneal macrophages in *nude* and BALB/c mice inoculated with *M. leprae* at five and eight months post-inoculation.

Methods: BALB/c and *nude* (Swiss genetic background) mice were inoculated in the FP with $1x10^4$ and $3,6x10^6$ AFB, respectively. The *M. leprae* suspension was obtained from *nude* mice FP, previously inoculated for maintenance of the AFB. After 5 and 8 months, the animals were sacrificed to collect cells by peritoneal lavage (PL), FP, popliteal lymph nodes (PLN), liver and spleen. Healthy animals were used as control group. Peritoneal adherent macrophage cultures were carried out in the presence or not of LPS (10µg/ml) and whole *M. leprae* antigen (10µg/ml), and after 24 hours of incubation H_2O_2, O_2^- and NO were quantified. Supernatants of peritoneal cell cultures were stored at -80°C for further cytokines determination. PL cells were cytocentrifuged and stained by Giemsa for differential counting. Histological sections of the FP, PLN, liver and spleen were stained with Hematoxylin-Eosin and Faraco-Fite. The number of AFB/FP was determined according to Shepard's technique and bacilloscopic index (BI) of histological sections determined by Ridley's scale.

Results: The infection was progressive in *nude* mice with bacterial multiplication in the FP (mean $6,9x10^7$ AFB at 5 months and $1,9x10^8$ AFB at 8 months) and with presence of AFB in the PLN at 8 months (BI 3+). AFB were not found in liver or spleen. In BALB/c the number of AFB recovered was higher at 5 months (8,4x105 AFB vs. $2,5x10^5$ AFB at 8 months). Histopathological analysis of FP revealed a mononuclear inflammatory infiltrate with large number of neutrophils at 5 months in both mice strains, with higher number in *nude* mice. At 8 months, the number of neutrophils decreased and the infiltrate was predominantly mononuclear. The BI in BALB/c mice ranged from negative to 2+, with predominance of granular AFB, whereas in *nude* mice, it ranged from 4 to 6+ with clumps of AFB. In both strains the percentage of neutrophils in the PL was higher at 5 months than at 8 months when the number of mononuclear cells increased. There was no H_2O_2 and O_2^- production in the course of infection, in both mice strains, however they produced high levels of NO compared to their respective controls. In BALB/c the spontaneous NO production was higher at 8 months (5,18 µmol vs. 2,06 µmol at 5 months), while there was a decrease in the number of AFB. In *nude* mice the NO levels increased during the experiment (0,57 µmol in the control group, 2,75 µmol at 5 months, 17,50 µmol at 8 months).

Conclusion: In BALB/c mice the NO production resulted in decrease in the number of AFB, while in *nude* mice the presence of this metabolite did not lead to a decrease in bacterial load. These results suggest the need for additional studies to better understand this mechanism.

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Presentation Time: Thursday 19/09/2013 at 10:50 – 11:00
Abstract Topic Name: Immunology
Presentation Screen Number: 9
Presenter: Danuza Esquenazi

FUNCTIONAL ASSESSMENT OF T LYMPHOCYTES SUBSETS INVOLVED IN THE PATHOGENESIS OF REACTIONAL EPISODES IN LEPROSY MULTIBACILLARY PATIENTS.

L. N. Santos [1], P. H. Silva [1], I. Alvim [2], J. A. Nery [1], E. Sarno [1], D. Esquenazi [1,*]

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Introduction: Leprosy clinical forms are interchangeable, and, as they alternate during MDT, they give rise to reactions that require further clarification. New cutaneous lesions and/or re-infiltration of previous ones, as well as fever, malaise, joint pain and neuritis are reactional hallmarks. Several works show that inflammation is exacerbated due to an increase of serum TNF-α, IL-1β and IL-6 production, thus contributing to the severity of lesions. Others indicate an expansion of blood leukocytes subsets during reactions. The purpose is investigate the phenotype and functional profile of T lymphocytes subsets (cytokine production and proliferative response) at the onset of reactions.

Methods: We studied lepromatous RR and ENL patients. Newly diagnosed non-reactional patients were also assessed just before the beginning of MDT. All patients were diagnosed according to Ridley and Jopling criteria and accompanied at Leprosy Outpatient Unit – FIOCRUZ. Venous peripheral blood mononuclear cells (PBMC) were analyzed by multiparametric flow cytometry for *ex vivo* immunophenotyping. PBMCs were cultured for 6h and 5 days with 20µg/mL *M. leprae* irradiated (provided by Dr. Patrick Brennan, Colorado State University, USA). Dead PBMC were excluded by fixable violet dead cell stain. Short-term cultures were performed in the presence of costimulatory antibodies anti-CD28/anti-CD49d.5-day cultures were incubated with CFSE to determine antigen-specific proliferation; thereafter, PBMCs were stained with monoclonal antibodies to determine limphocytary subsets and cytokine production.

Results: In ENL, T CD3+ lymphocytes were not activated *ex vivo*. In this reaction, there was a predominance of T CD4/CD69+ naïve lymphocytes, with a major production of TNF-α and a minor production of IL-10 in response to *M. leprae*. There was neither significant IFN-γ production nor differentiation for memory cells at T CD4+ lymphocytes. Together with TNF-α production, effector T CD8/CD69+ lymphocytes predominated. Apart from the very low differentiation of CD8+ memory cells, these latter only produced IL-10, and no antigen-specific proliferation was observed. In RR, we observed both activated T CD4+ and CD8+ *ex vivo* (CD69+). In these patients, *ex vivo* IL-10 production by CD4+ was a significant finding. We noted differentiation of proliferation of IFN-γ and TNF-α- producing effector T CD3/CD4/CD69+ in response to *M. leprae*. In spite of the low expression of *M. leprae* specific effector memory cells in RR, IFN-γ production by these cells was relevant, contrarily to what happened in ENL patients.

Conclusion: Briefly, our findings demonstrated a preferential IFN-γ production and a proliferative response of T lymphocytes subsets in RR. This response may be a major cause for nerve function impairment in these individuals. Nonetheless, IL-10 production by TCD4+ lymphocytes may imply a role for regulatory T cells in this reactional state, leading to uncontrolled immune-inflammatory responses. In ENL, the concomitant production of TNF-γ and IL-10, together with high circulating levels of IL-1β and Il-6 already reported by other authors suggest that these pleiotropic inflammatory cytokines may be at least partially responsible for the clinical manifestations of a type II reaction. The accurate determination of "reactional phenotype" may appear as a useful tool for control of acute episodes, which are occasionally disabling.

P-018

Presentation Time: Thursday 19/09/2013 at 10:30 – 10:40
Abstract Topic Name: Stigma
Presentation Screen Number: 10
Presenter: Michel Sawadogo

LIFESTYLE AND USE THE USE OF TOBACCO AND ALCOHOL AMONG LEPROSY PATIENTS IN BURUNDI

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Introduction: A prospective study was conducted in Burundi in order to perform an analysis of screening and monitoring of leprosy in four provinces endemic countries (Bubanza, Cibitoke, Rutana, Makamba) from September 2009 to October 2010 to describe the clinical forms of leprosy and their evolution in the four endemic provinces, to determine the factors associated with late consultation of patients, to describe the socio-economic conditions of patients and their relationship to disease and impact of contacts examination on detection in endemic provinces.

Methods: This is a prospective study in four endemic provinces (Bubanza, Cibitoke, Rutana, Makamba) from September 2009 to October 2010. Our sample consisted of leprosy patients encountered in four provinces during the study period. A comprehensive survey of all patients included in the study is done based on the register of leprosy in hospitals and clinics of selected provinces. We collected demographic data, medical history and family data related to the history of the disease, clinical data, data related to side effects or complications using a questionnaire.

Results: We took interest to lifestyle, to the use of tobacco and alcohol. From a total of 78 patients followed, 58 patients (74.35%) did not smoke. 6 people (7.7%) smoke a cigarette, 16 (15.4%) two to five cigarettes and 2 (2.56%) more than 5 cigarettes per day.
Concerning the use of alcohol, 53.8% of the sample (43 individuals) does not drink. Among those who drink, 21.8% or 17 people take the modern beer and 23.1% (18 people) of the traditional beer (beer made from bananas).

Conclusion: The fight against leprosy is still a challenge for Burundi. The use of alcohol or tobacco is still common among patients screened, 18% of the sample use tobacco and 44.9% alcohol. Poverty and social exclusion could explain these patterns. Urgent action is needed to support the leprosy patients and facilitate their social integration.

P-019

Presentation Time: Thursday 19/09/2013 at 10:40 – 10:50
Abstract Topic Name: Stigma
Presentation Screen Number: 10
Presenter: Shirish Shegaonkar

COMMUNITY BASED REHABILITATION IS AN EFFECTIVE INTERVENTION TO INCREASED COMMUNITY PARTICIPATION & SOCIAL ACCEPTANCE OF LEPROSY AFFECTED TO IMPROVED QUALITY OF LIFE.

S. D. Shegaonkar [1, 1,*]

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Introduction: Leprosy is not only a medical problem; it is also a social, economic and psychological problem as well. Due to advancement in medical sciences, adequate and effective medical treatment is available for curing the disease, but deep-rooted stigma related to the disease is still prevailing in the cultural ethos of the society. As a result of such wrong notion and belief, the leprosy sufferers and even the cured but deformed ones face social problems, economic hardship and psychological tensions, that obstructs peace and harmony in life. With this stigmatized belief, the families as well as community do not hesitate to ostracize their near and dear ones, who are affected by leprosy.
In such cases, individual interest of the people affected by leprosy is ignored in the collective interest of the family and the community. To live as a social entity becomes a questionable issue to leprosy sufferers from social –economical and psychological points of view. Efforts to reduce such problems for people affected by leprosy require systematic intervention of facts relating to the factors underlying such problems.

Methods: Field: Two field Units,
Western part of Maharashtra. India
Case study methods have been used for collection of data in the proposed study, Two units have been selected from state of Maharashtra where CBR programmes & development activities are implemented.
Sampling: 50 people affected with leprosy from rural areas that have been part of TLM's CBR Projects
Vitals: Male 32, female 18

Results: 80% have increased independence in daily life through additional earning from CBR Programmes
75% have reported increased participation in community decision making through Self Help Group Programmes.
65% demonstrate increase in their ability to meet common needs (Health, Children Education etc)
80% have reported increased social acceptance enjoying community facilities.

Conclusion: The Study has revealed that the leprosy affected has shown increased in community participation, social acceptance and approached to the holistic, sustainable, community base inclusive development in the society.

P-029

Presentation Time: Thursday 19/09/2013 at 10.50 – 11.00
Abstract Topic Name: Stigma
Presentation Screen Number: 10
Presenter: Ms Yohanna Abdou

EXPERIENCE FROM LEPROSY APPLIED TO THE REDUCTION OF STIGMA ASSOCIATED WITH FISTULA IN NIGER. BETWEEN HOPES AND CHALLENGES - THE CASE OF WOMEN IDENTIFIED AT THE SIM DANJA FISTULA CENTRE

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Introduction: In Niger, as in many countries in the world, to suffer from certain diseases is synonymous with loss of human dignity which follows the social rejection that individuals face daily. But great efforts are led by the WHO, governments and many non-governmental organizations to fight the causes and consequences of these diseases. With the recent celebration of the 60th anniversary of World Leprosy Day, it is noted that in Niger, the fight must continue by the government and all organizations in charge of health, disability and all those working for human rights to ensure that victims of this disease are no longer are the object of discrimination, stigma and social rejection. Like leprosy, fistula is a source of degradation of the human person. People are stigmatized and rejected by their partners and families. They continually suffer social exclusion. Many times, their immediate family is their only refuge.

Methods: In Niger, the state has only one fistula centre, located in Niamey where patients are supported. Most people receive surgical interventions in regional hospitals but they are not followed up. Consequently, they must be operated on repeatedly. To provide support to Niger, the World Fistula Program and Serving in Mission (SIM) in Niger have teamed up to open a fistula center located inside the SIM Danja Health and Leprosy Centre in 2011. Several women with this disease have benefited from the services of the Centre. To better understand the challenges that face those with this disease and the hopes they feel, direct interviews were conducted with 15 women in the Danja Fistula Center. Questions asked were about the history of the disease, stigma, discrimination, welfare, and human rights. A focus group was conducted to validate the synthesis of key information about the questions.

Results: The15 women included 10 from the region of Maradi, 2 from Zinder region, one from the Tahoua region and one woman from Nigeria. All 15 women had heard on the radio of the existence of the new fistula center. The current age of the women interviewed is between 19 and 58 while they were between age 16 and37 when they contracted the disease. Only one woman did not remember her age and said she contracted the disease after her first pregnancy. Of the 15 women, 6 received surgeries more than 2 times, 3 have received surgery once and 6 never had surgery. Of the 15 women, 8 were repudiated by their husbands while 7 others have the support of their husbands. Three out of 15 women are stigmatized and discriminated against by their families and entourage while 12 have solidarity with their families and friends. All the 15 women have access to human rights throughout their stay in the fistula center (health, water, food, accommodation, protection, literacy, learning of trades and business, advocacy for contact with their husbands and family members).

Conclusion: Suffering from fistula isto face rejection by one's closest family and friends. To support the victims of this disease is to restore lives. All 15 women feel strong and safe when they get together. They suffer from the same disease. The Danja Fistula Center allows them to live in harmony, forming a community of women who support each other and develop dynamism to face the challenges and enjoy their human dignity. Therefore we shall all come together to fight all the causes and consequences of stigmatizing diseases forever. Behavioral changes must take place first of all in marriage, family and the community in general. This fight is undoubtedly necessary in a poor country like Niger.

P-307

Presentation Time: Thursday 19/09/2013 at 12:30 – 12:40
Abstract Topic Name: Surgical Rehabilitation
Presentation Screen Number: 1
Presenter: Pankaj Gupta

FACTORS INFLUENCING THE MOTIVATION OF NORTH INDIAN PATIENTS WITH INTRINSIC MINUS HAND OPTING FOR RECONSTRUCTIVE SURGERY

P. Gupta [1,*], S. Paul [2], L. Rewaria [1], S. Abraham [3]

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Introduction: India has been endemic for leprosy for centuries, and though the country declared elimination in 2005, there is huge burden of people affected by leprosy with deformity and disability. Various deformities of eye, hand and foot occur in leprosy patients due to involvement of the peripheral nerves. These deformities which occur in leprosy patients have an impact on the activities of daily living of an individual. There are a huge number of patients who would benefit from Reconstructive surgery for reversible problems. Yet in spite of the backlog of patients, who need surgical means to correct their disability many affected people do not come for avail of this service.
As far as hand deformities are concerned, deformity due to ulnar nerve involvement is most common, which cause the intrinsic minus deformity? Due to this, various components of the hand activity are affected, ranging from loss of grip strength, altered pattern of grasp, difficulty in adduction of thumb and many others. These result in difficulties in putting a key in a lock, in eating, holding a glass, writing and other such ordinary tasks. Further, culture plays an important role, effecting the perception of the difficulties in the patient's context.

Methods: This study was done on the basis of the data collected from TLM community hospital Nandnagri. In this study an open ended questionnaire was designed, which included questions regarding difficulty in doing the activities of daily living and also questions about whether patient thinks that he needs to undergo tendon transfer surgery to improve the hand function or he is satisfied with the current condition of his hand. This study also focuses on the motivational aspect of the patients to undergo tendon transfer for the correction of the deformity of the hand after motivation.

Results: Most of the patients had difficulty in activities of daily living. But interestingly, some north Indian patients with intrinsic minus hand did not experience any difficulty in activities of daily living even in presence of the visible deformity. Out of 89 patients who were interviewed, 62 were males and 29 were females. All the participants were interviewed by the physiotherapist who was involved in treatment and management of the patients.
Out of these 89 patients who were interviewed, 34 patients were of the opinion that they do not have any problem with deformity and they are comfortable with the deformity. Out of these 34 patients 25 were males and 9 were females. Further, all these 34 patients were not motivated to undergo reconstructive surgery. Further out of remaining 55 patients, 32 felt that they have some problem with activities of daily living, but they are fine with deformity and can manage their day to day activities but they want reconstructive surgery only for good appearance. Remaining 23 patients were felt that they have problem in activities of daily living and were motivated to undergo reconstructive surgery.

Conclusion: It can be concluded from the study that difficulty in activities of daily living experienced by the patients depends upon the involved side and their profession and culture. Further motivation in relation to undergo reconstructive surgery is strongly influenced by the difficulty in doing basic activities of daily living like feeding, bathing, toileting and dressing which is influenced by the culture being followed in the particular region in India. Further, this study also suggests that activity limitation experienced by the patient depend upon the culture and tradition as well.

P-440

Presentation Time: **Thursday 19/09/2013 at 12:40 – 12:50**
Abstract Topic Name: **Reconstructive Surgery**
Presentation Screen Number: **1**
Presenter: Dr Atul Shah

RECONSTRUCTION OF SOLE OF THE FOOT FOLLOWING PLANTAR ULCERS

A. Shah [1,*]

[1]Plastic Surgery, Grant Medical College, Mumbai, India

Introduction: The sole of the foot has gained more importance as it supports body weight and allows humans to stand and walk. With changes in the bony arch over the evolution in primates, the soft tissues also acquired properties like non-shearing and padding. Despite these specific properties for the large ulcers in leprosy instead of other procedures amputations were preferred. Now that we have an armamentarium of procedures for reconstruction amputation should be considered last resort. The author has designed and developed several reconstructive methods for the defects on the sole of the foot, be it leprosy, trauma or disease.

Methods: Flexor digitorum brevis myocutaneous flap for reconstruction of heel was first described for leprosy by author in 1985. The defects on the forefoot, particularly under the metatarsal heads were not considered amenable to reconstruction on account of high recurrence. In 1988, author described the neurovascular island pedicle flap for 1st metatarsal head defects with donor area being lateral aspect of the great toe. Good results were obtained but flap was too complicated to be done by general surgeons or even plastic surgeons unless they have seen or gained experience. Similarly, after follow up of few cases of muscle and myocutaneous flaps author came to conclusion that desired padding was not obtained and intervening muscle fibrosed with pressure. At the same time, the number of ulcer cases in need of reconstruction was daunting to be tackled by specialists. Therefore, author developed distally based transposition flap from the medial side of the great toe for covering the defects of 1st metatarsal region. For the rest of the forefoot areas a v y advancement flap is considered a good replacement. Going down to lateral defects on the sole again transposition flap from the instep area was found to offer the best solution. For the heel area too a local rotation cum transposition was found to replace the skin without problem of breakdown even if carried by junior persons with little experience. At the primary center or community center level "graft on arrival" technique of author in which skin graft or dermal graft from the instep taken without anesthesia and put on the small ulcers provided the courage to general surgeons to offer healing of plantar ulcers.

Results: The results indicate that amputation is no longer a preferred method unless there is real indication with osteomyelitis and infection. Results in all flaps stated above were excellent and have been in vogue after authors several presentations and demonstrations.

Conclusion: In conclusion, reconstruction of the sole of the foot with plantar ulcer is no longer a complicated problem as it used to be and more and more surgeons are able to perform the simple flaps designed by author.

P-441

Presentation Time: **Thursday 19/09/2013 at 12:50 – 13:00**
Abstract Topic Name: **Reconstructive Surgery**
Presentation Screen Number: **1**
Presenter: Dr Atul Shah

CORRECTION OF LAGOPHTHALMOS IN LEPROSY

A. Shah [1,*]

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Introduction: Lagophthalmos is defined as the inability to close the eyelids completely. Closing of the eyelid is crucial to maintain lubrication during blinking and keeping eye moist. In lagophthalmos this process is impaired causing exposure of the cornea, dryness, redness, irritation and watering. Corneal exposure leads to ulcerations opacity and blindness. In long standing lagophthalmos even lower eyelid gets affected causing ectropion and further complications. In leprosy the affection of facial nerve gives rise to lagophthalmos. It is necessary to correct it as soon as possible to prevent eventual blindness.

Methods: If treated within six months of its occurrence with steroid therapy there are good chances of recovery. In an established case surgical corrective procedures may be required. These include dynamic and static procedures. The dynamic procedures include temporalis musculofascial sling using either temporalis fascia or fascia late from thigh. Author has also designed Levator Palpebrae Superioris weakening procedure to release tension of opposing muscle and enable the eyelid to close. The static procedure includes tarsorrhaphy and gold implants. The gold implants were locally made and kindly provided by Novartis Comprehensive Leprosy Care Association for 9 patients. All procedures can be performed as camp approach and has potential to prevent blindness. Secondary operation of tightening lower eyelid has also been performed where necessary.

Results: By and large in the traditional surgery, temporalis musculofascial sling has given good results in closing the eyelid though reeducation exercises are required. As emergency tarsorraphy seems to be a better alternative to heal corneal abrasions. While LPS weakening operation has given 50 % closure of eyelid enough to cover cornea, gold implants have better results with less complications of recurrence like in the former.

Conclusion: In conclusion, national health program needs to take up the management of lagophthalmos as emergency to prevent blindness, particularly in leprosy colonies where many of these established cases reside. Among the techniques simplest seems to be gold implants wherever available followed by tarsorraphy and sling or LPS weakening in young patients. Concurrent procedures on lower eyelid should not be neglected.

P-442

Presentation Time: **Thursday 19/09/2013 at 13:00 – 13:10**
Abstract Topic Name: **Reconstructive Surgery**
Presentation Screen Number: **1**
Presenter: Dr Atul Shah

A SIMPLE TECHNIQUE FOR CORRECTION OF TRANSVERSE METACARPAL ARCH AND ULNAR CLAW

A. Shah [1,*]

[1]Tata Department of Plastic Surgery, Grant Medical College and J J Hospital, mumbai, Mumbai, India

Introduction: Transverse arch is essential for making five finger pinch. Majority of claw correction does not correct the transverse arch. Ranney suggested Extensor Indicis Proprius routed and sutured to abductor digiti minimi. However, it entails second operation and subsequent rehabilitation. Therefore, since 1985 the author has employed technique of using the FDS ulnar slip sutured to abductor digiti minimi and capsule of MCP joint of little finger. Excellent results are obtained. The limitation of the operation is that it may not be applicable in the total claw hand.

Methods: The incision is 2 mm above distal palmar crease, A1 pulley is identified and incised 1 cm from proximal margin. Flexor Digitorum Superficialis (FDS) of Ring Finger (RF) & Little Finger (LF) hooked out, (PIP joint flexes). FDS tendons cut distally with fingers in full PIP flexion. FDS of ring finger brought proximal to A1 pulley, slit into 2 slips, radial slip passed below A1 pulley & ulnar slip is directed towards its new insertion at insertion point of abductor digiti minimi and capsule of MP joint of little finger on the ulnar side. Radial slip of FDS of ring finger and full FDS of Little finger looped over A1pulley and sutured. Ulnar slip of ring finger FDS passed over the loop of little finger and is sutured to Abductor Digiti Minimi and capsule of the MP joint with MP joint pulled fully in protraction with a thick tooth forceps, the little finger after suture must remain 7 to 10 mm off the table, while hand is rested in supine position. Skin is sutured in single layer with normal cascade obtained. POP applied for 3 weeks.

Results: The protraction and retraction movement of the little finger is essential to make five finger pinch to hold rice3 while eating or in dynamic rope holding grasp which is obtained. The exercises in post-op period are redirected at pulp to pulp pinch making between thumb and little finger. Holding the cricket ball, lifting the steel plate in balance from down etc. are additional exercises that help in achieving good result. Movement of 5 to 10 mm of the transverse arch in retraction is considered good result which was obtained in majority of 25 cases studied.

Conclusion: Removes asynchronous finger flexion i.e. inability to move MP joint independent of IP joint 2 Retains individuality of motion through MP joint (like all MP joints flex together by ECRL or PL transfer) 2 Corrects ulnar claw hand and transverse metacarpal arch in one stage 2 Simple to perform and functionally very effective.

P-443

Presentation Time: **Thursday 19/09/2013 at 13:10 – 13:20**
Abstract Topic Name: **Reconstructive Surgery**
Presentation Screen Number: **1**
Presenter: Ms Latika Rewaria

FACTORS THAT DETER THE RETURN OF PATIENTS TO THE MAIN STREAM SOCIETY POST TENDON TRANSFER SURGERIES

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Introduction: In India approximately 130,000 new cases of leprosy are diagnosed every year and out of this 1.8 percent of patients have visible deformity of eye, hands and feet.
Tendon transfer is the only option available for patients having visible deformities like claw hand, median nerve paralysis, z-thumb, wrist drop, foot drop and lagophthalmus. Reconstructive surgery helps restore the function and appearance of affected parts which in turn helps bring a change to the patient's self confidence, social, economical and psychological status. However it is seen that not all patients who have good post operative results have been able be fully rehabilitated into the community.
This study helps us find reasons which affect the patient's return to their society and work place after tendon transfer surgery. This paper will also help identify the social and psychosocial factors that affect the patients post operative rehabilitation.

Methods: In this study 241 patients who underwent corrective surgery for Ulnar Nerve paralysis, Median nerve paralysis, Triple nerve paralysis, wrist drop and foot drop from The Leprosy Mission community hospital, Nandnagri in 2010-2012 were recruited. They were followed up and were interviewed by a trained therapist through a predesigned questionnaire. Details on the changes brought about by the surgery in their workplace, society, self esteem were recorded and analyzed.

Results: Self stigma of having leprosy, non supportive family, unemployment, type of occupation, illiteracy and the selection criteria of the patients for surgery were the factors that were identified through the study. The factors identified were determining and influencing the patient's post operative outcome. However the study also brought out the need for having an individual assessment protocol for each patient prior to the surgery.

Conclusion: This study clearly reflects that surgical rehabilitation after tendon transfer surgery alone doesn't help the patient return to the main stream.
An individual tailor made comprehensive rehabilitation plan should be in place for each patient post operatively taking into consideration all social, psychological and economical aspects for a good and effective rehabilitation program
This study clearly reflects that surgical rehabilitation after tendon transfer surgery alone doesn't help the patient return to the main stream. An individual tailor made comprehensive rehabilitation plan should be in place for each patient post operatively taking into consideration all social, psychological and economical aspects for a good and effective rehabilitation program

P-444

Presentation Time: **Thursday 19/09/2013 at 13:20 – 13:30**
Abstract Topic Name: **Reconstructive Surgery**
Presentation Screen Number: **1**
Presenter: Indra Napit

IMMEDIATE EARLY ACTIVE MOTION VERSES CONVENTIONAL IMMOBILIZATION AFTER TENDON TRANSFER FOR CLAW HAND CORRECTION IN LEPROSY

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Introduction: Immobilization after tendon transfers has been the conventional postoperative management in leprosy affected people. Several recent studies indicated beneficial effects of an immediate early active motion after tendon transfers for claw hand deformity in comparison to conventional immobilization. In this study, we performed retrospective chart study to test the hypothesis that immediate postoperative early active motion of the hand after tendon transfer for claw hand deformity will achieve outcomes better than those of the standard practice of cast immobilization.

Methods: Retrospective analysis was performed in 49 cases of tendon transfers for claw hand deformity followed by immobilization in a cast for 3 weeks performed in 2008 to 2010. Therapy began on the 22nd postoperative day for this group. Retrospective records of 57 cases of tendon transfers for identical claw hand deformity with immediate early active motion of hand on second post operative day performed in 2011-2012 were used for comparison. The most common procedure was Lasso with Flexor Digitorium Superficialis middle finger transfer in 83 (78.3%) cases out of 106 cases in both groups.

Results: There was no incidence of tendon insertion pullout during immediate early active motion after tendon transfers for claw hand deformity. Deformity correction, range of motion, swelling, pain, dexterity, hand strength and morbidity at the time of discharge from hospital was better with the immediate postoperative active motion. The Immediate early active motion also reduced rehabilitation time by an average of 8 days minimizing the duration of admission in comparison to the conventional immobilization group.

Conclusion: We found that the immediate early active motion of hand is safe in reconstructive surgery of claw hand in leprosy affected people. It has a better outcome compared with those of conventional immobilization, with the added advantage of earlier pain relief, quicker restoration of hand function, and early discharge from hospital reducing the morbidity. Patients' satisfaction for cosmetic and functional result was much better in the group with the immediate early motion of hand.

P-445

Presentation Time: **Thursday 19/09/2013 at 13:30 – 13:40**
Abstract Topic Name: **Reconstructive Surgery**
Presentation Screen Number: **1**
Presenter: Anatole Kibadi Kapay

PLASTIC SURGERY OF THE ULNAR PARALYSES OF THE LEPROSY: OUR LOCAL EXPERIENCE IN DEMOCRATIC REPUBLIC OF CONGO

A. Kibadi Kapay [1,*], B. DUNDA [2], B. DUNDA [2], D. IMPOSO [3]

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Introduction: The leprosy is an endemic infectious disease, due to the bacillus of Hansen, to the skin and nervous tropism. The ulnar nerve, which passes behind the elbow, is the nerve most frequently hypertrophied in the leprosy. The goal of plastic surgery is: to correct four intrinsic claws, to compensate for the total intrinsic paralysis of the thumb and possibly, for the strength of the crowbar thumb · index. The objective of the present work is to present our local experience.

Methods: We use in the correction of the ulnar paralyses of the leprosy the technique of Lasso of Zancolli (Zancolli E.A. Correction de la garra digital for paralysis intrinseca. La operacion del «laza». Acta Orthop. Latina Am, 1974, I, 65-72). The hand must be immobilized in flexion for 3 weeks after operation. And after, we begin mobilization (reeducation). We illustrate our local experience through certain patients as we operated in rural zones in Democratic Republic of the Congo.

Results: The long-term results are also very satisfactory. The patients recuperate the movements of fingers. We have also the return of sensation. Functional outcome, especially the function of fingers, is success. The technique of Lasso of Zancolli is easy to experiment in our areas with successful result. We don't use the materials of microsurgery; This is a good thing for African surgeons.

Conclusion: In our working conditions with limited resources, the techniques which we use are simple and easily reproductive. Indeed, it is about Congolese surgeons operating Congolese leprosy patients. We thing, it is in the first time, a local experience.

P-446

Presentation Time: **Thursday 19/09/2013 at 13:40 – 13:50**
Abstract Topic Name: **Reconstructive Surgery**
Presentation Screen Number: **1**
Presenter: Dr Mannam Ebenezer

THE VARIOUS CAUSES FOR THE REJECTION OF RECONSTRUCTIVE SURGERY IN PATIENTS IN RURAL INDIA

M. David Prakash Kumar [1,*], M. Ebenezer [2], J. Beryl [3]

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Introduction: Deformity in Leprosy is one of the major causes of stigma. In spite of the stigma related to the deformity and also the functional problems that are associated with the presence of these deformities, many patients do not want to undergo surgery to correct the deformities. This study aims to find out the various causes that could be preventing them from undergoing this kind of corrective surgery.

Methods: A questionnaire was designed to collect information about why the patients with visible deformities were not interested in undergoing surgery. The questionnaire had 6 major subdivisions under which various questions were listed. The reasons for rejection of surgery were compiled under financial causes, occupational causes, due to fear, due to stigma, due to lack of adaptability and also due to lack of family support.

This questionnaire was distributed to all those who were eligible, but were refusing to undergoing tendon transfer surgery. The results were tabulated to fnid the various reasons due to which the Leprosy affected with visible deformities refused to get the problem corrected.

Results: Of the 18 patients who have been assessed, there was no one with only a single cause. Every person had multiple causes for rejecting surgery. 4 of the patients had at least 3 reasons for not undergoing surgical correction of the deformity. 14 of the patients had at least 4 to 6 reasons for rejecting surgery.
14 of the 18 (77.78%) patients who completed the questionnaire were scared of surgery and this fear had prevented them from undergoing surgery. Most of the patients did not have any worry that people would stigmatize them if they were admitted in hospital. 12 of the patients (66.67%), were worried that they will not be able to earn during their hospitalization period. An equal number were working in jobs where it was not possible for them to tae time off to get the deformity corrected.
The fear of adaptability prevented 55.56% or 10 out of the 18 patients from undergoing surgery. 4 of the patients (22.22%), were worried that they did not have any family members to take care of them during the post operative period.

Conclusion: The common cause of rejection of tendon transfer surgery was the fear of the surgery itself. The other comomn cause was the job related problems including lack of time. These are causes that can be addressed with adequate amount of counseling to the patient.
Though surgery is usually done free of cost, patients feel that this is of little respite as they would still lose the income that they would otherwise earn during the period of hospitalization. Other patients were worried about the loss of jobs, which are all genuine concerns that need to be addressed. Since most of the patients have multiple reasons for rejecting corrective surgery for their deformities, it may not be easy to make them overcome their apprehensions. The need for intensive counseling and motivation is highlighted, to ensure that they understand the need to get their deformities corrected.

P-447

Presentation Time: Thursday 19/09/2013 at 13:50 – 14:00
Abstract Topic Name: Reconstructive Surgery
Presentation Screen Number: 1
Presenter: Dr Matthieu Kiwele

DÉVELOPPEMENT DE LA CHIRURGIE LÉPREUSE EN RÉPUBLIQUE DÉMOCRATIQUE DU CONGO

L. N. Pamphile [1], K. Matthieu [2,*], B. Georges [3], M. Jean Norbert [4]

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Introduction: La lèpre reste un problème de santé publique en RD Congo, avec un taux de prévalence au 31/12/2007 de 0,96 pour 10.000 habitants, un taux de détection de 13,09 pour 100.000 habitants en 2007, une proportion de 10% des malades nouveaux cas dépistés avec des infirmités de 2ème degré (échelle OMS), une proportion de 12% d'enfants parmi les nouveaux cas dépistés. Quelques interventions étaient effectuées par des équipes des Médecins Sans Vacances dans certaines régions du pays. La chirurgie lépreuse a été (ré-) introduite et restructurée avec les appuis d'Action Damien, avec l'envoi de deux chirurgiens et deux physiothérapeutes en formation en Inde et l'appui local de l'Ergothérapeute de TLM-Congo.
L'objectif de cette présentation est de montrer les progrès réalisés dans la réhabilitation physique des malades en RDC, ainsi que les perspectives de développement.

Methods: Les données actuellement présentées concernent des malades qui ont été opérés de 2007 à 2012 dans les différents sites en RDC, tirées des registres des salles d'opération.

Results: Une salle d'opération a été construite à l'hôpital de la Rive de Kinshasa, une autre réhabilitée à l'hôpital de Moba au Katanga (région avec prévalence lèpre la plus élevée du pays), et toutes équipées. Concernant les interventions, partis de 2007 avec 1 intervention de chirurgie septique et 4 interventions de chirurgie palliative, on est arrivé en fin 2012 à 58 interventions de chirurgie septique, 28 de chirurgie palliative et 1 de décompression.
Les interventions palliatives concernaient principalement la lagophtalmie, les griffes cubitales, et les pieds tombants.

Discussion: Ce travail est en progression, mais reste limité à quelques régions. Les malades ne consultent pas d'eux-mêmes, il faut aller les chercher; d'où l'acceptation difficile à cause de la longue hospitalisation. Enfin nous avons connu deux paralysies iatrogènes comme problèmes médicaux.

Conclusion: Les progrès énormes sont visibles pour des bénéficiaires de ces interventions grâce à la formation des cadres, à la mise à disposition des espaces de travail appropriés et des moyens financiers et logistiques fournis par Action Damien ainsi qu'à la collaboration avec l'Ergothérapeute de TLM-Congo. Mais la tâche reste immense au vu des besoins du pays. L'intégration progressive de cette chirurgie dans un plus grand nombre d'hôpitaux avec un programme de formation pratique des équipes locales est envisagée pour étendre davantage l'activité et en même temps réduire les coûts avec la proximité des structures des soins par rapport au lieu de résidence des malades.

P-197

Presentation Time: Thursday 19/09/2013 at 12:30 – 12:40
Abstract Topic Name: Epidemiological Surveillance
Presentation Screen Number: 2
Presenter: Mr Gao Yanwei and Mr Shen Yunliang

ASSESSMENT OF THE QUALITY OF LEPROSY CONTROL SERVICES FROM THE MEDICAL STAFF'S PERSPECTIVE IN ZHEJIANG PROVINCE,CHINA

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Introduction: To evaluate the recognitions of leprosy control services among medical staffs in leprosy control agencies, to provide baseline data for sequence studies and formulating policies.

Methods: Qualitative and quantitative methods were conducted in 77 health staffs in Zhejiang leprosy control agencies, to assess the quality of leprosy control work in recent 5 years in Zhejiang, from the aspects of the use of health human power, effect of each control method and the leprosy service priority card choice.

Results: Good general recognition (70.13%) of leprosy control services in Zhejiang was presented by the investigated persons. From priority of resource, the staff were focused on medical care for disabled elder patients (42.86%) and then diagnosis and treatment of leprosy patients (24.68%). POD (11.69%) and social and economical rehabilitation (12.99%) were seldom carried out in recent 5 years. Following up cured and disabled patients and surveillance (2.78±0.53) and active patients diagnosis and treatment work (2.73±0.60) were highly recognized by medical staffs, while leprosy health education (2.05±0.69) and the utilization of medical and rehabilitation facilities bt patients (1.99±0.77) were less recognized. When medical staffs were asked to list their priority of leprosy control work, they considered mass health education, case-finding in migrant population and leprosy laboratory equipment and capacity building, were s their top three choices. Semi-structured interviews among 15 persons showed that the leprosy control staffs' capability building and cooperation with medical agencies were improved due to the reform of integration of leprosy service with general health service system.

Conclusion: The leprosy control services in Zhejiang presented high recognition in medical staffs generally. But it is necessary that new models of leprosy control service in the new situation be explored and practiced.

P-198

Presentation Time: Thursday 19/09/2013 at 12:40 – 12:50
Abstract Topic Name: Epidemiological Surveillance
Presentation Screen Number: 2
Presenter: Mr Gao Yanwei and Mr Shen Yunliang

AVALUATING EFFECTS OF LEPROSY CASE FINDING AND HEALTH EDUCATION IN MIGRANT POPULATION IN ZHEJIANG PROVINCE, CHINA

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Introduction: To enhance awareness of leprosy in migant population and to find suspected leprosy patients in time, and to provide basis for leprosy health education for migant population.

Methods: Large or medium-sized factories with more migrant population were selected in zhe jiang province. Publicity materials of leprosy knowledge were distributed through three-level prevention and control network.Special courses of leprosy knowledge were held on radio and television. Leprosy-related knowledge and attitude before and after intervention in target population from migrant population in Large or medium-sized factories were evaluated by using anonymous questionnaire, and suspicious patients were checked by therapist, at the same time, evaluation the intervention effect in the target population.

Results: The population'awareness on leprosy was improved by health education and the attitudes towards leprosy also improved. The rate of discrimination against leprosy patients and cured patients declined from 19.9% before health education to 14.9% after health education ($\chi 2=13.54, P<0.01$);the rate of willing to contact with leprosy patients increased by 29.8%. But the rates between suspected patients who had not thought he would suffer from leprosy or were unwilling to let others know their disease showed no significant difference. ($P>0.05$) .

Conclusion: Leprosy case finding and health education among migrant population can effectively raise their awareness of leprosy, and can help to find out the leprosy patients timely. Long-term health education intervention should be carried out among these population.

P-199

Presentation Time: Thursday 19/09/2013 at 12:50 – 13:00
Abstract Topic Name: Epidemiological Surveillance
Presentation Screen Number: 2
Presenter: Dr Patricia Rosa

THE ROLE OF RELAPSES ON MAINTENANCE OF LEPROSY DETECTION RATES IN A HIGHLY ENDEMIC MUNICIPALITY IN THE STATE OF MATO GROSSO, BRAZIL

N. M. B. Coelho [1], P. S. Rosa [2,*], C. C. Ghidella [1], J. A. Barreto [3], S. Ura [4], F. M. Rodrigues [5], A. F. F. Belone [6]

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Introduction: Rondonópolis, a municipality of the state of Mato Grosso, Brazil, shows high endemicity for leprosy and low relapse rates. No previous studies addressed the causes of maintenance of high detection rates, or effectiveness of multidrug therapy (MDT) in this site. Thus, the revision of data on diagnosed leprosy cases and all relapses could help to understand the causes for maintenance of the endemic and improve actions towards the control of the disease. The objective of this work is to characterize the leprosy relapse cases diagnosed between 1994 and 2010.

Methods: Clinical records of all leprosy patients diagnosed and treated between 2000 and 2008, registered in the Health Reference Unit for leprosy of Rondonópolis and in the National Register Disease System (SINAN, Ministry of Health), were selected and evaluated. For the periods between 1994 to 1999 and 2009 to 2010, only the cases which had more than one entry into the system were selected. The records were reviewed for clinical, laboratory and treatment regimen data collection. Information on reational episodes or other entries reported on medical records, at any time after diagnosis, were also collected. A database of patient´s information: as personal and demographic data, data of diagnosis, date of discharge from medication, clinical evolution, therapeutic regimen, number of doses administered, specific reaction to drugs of the MDT, as well as results of laboratory tests (histology, skin smear and Mitsuda test) was built. Data was analyzed using descriptive statistics.

Results: A total of 1,863 records were evaluated (92.6% adults; 7.4% under 15 years old); mean age was 38 years; 818 individuals had been treated withpaucibacillary (PB) MDT, 886 with multibacillary (MB) MDT, and 158 with other therapeutic regimens; 585 (31.4%) patients had episodes of type 1 or type 2 reaction. The average biopsy bacilloscopic index of histological sections was 1.62 (n= 1,736). Among individuals treated with other therapeutic regimens, there was a predominance of patients treated with single dose of rifampicin, ofloxacin and minocycline (ROM), followed by rifampicin plus clofazimine, and monotherapy with dapsone. From a total of 151 individuals who showed reactivation of leprosy, 27.1% had been treated with MDT/PB, 20.5% with MDT/MB and 52.3% with other regimens. Among 24 out of 41 individuals who were treated with MDT/PB, only 8 were true relapses; 16 reactivated as MB, and 17 took drugs irregularly. Among 31 individuals treated with MDT/MB, 16 relapsed, and 8 took drugs irregularly. The real percentage of relapses for the period is 1.28%.

Conclusion: Patients showed a low rate of relapses, probably due to the high efficacy of MDT. However, this was not enough for the control of the endemic situation at the municipality of Rondonópolis. The bacterial persistence may have significant role in the relapse, since one would expect greater number of relapses associated with reinfection in a highly endemic area. The centralization of the diagnosis, even in a structured referral service, was not enough to cover the current demand on diagnostic tests for leprosy, as well as the evaluation of contacts, in order to reach the disease control.

P-200

Presentation Time: Thursday 19/09/2013 at 13:00 – 13:10
Abstract Topic Name: Epidemiological Surveillance
Presentation Screen Number: 2
Presenter: Mr Gao Yanwei and Mr Shen Yunliang

VALUATION OF LEPROSY HEALTH EDUCATION AMONG RURAL RESIDENTS

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Introduction: To investigate the knowledge,attitude,and behavior on leprosy,and demand of health education on leprosy among rural residents in the city of Jiaxing, Shaoxing, Ningbo, Shangyu, in Zhejiang province.

Methods: About 610 rural residents in the city of Jiaxing, Shaoxing, Ningbo, Shangyu, in Zhejiang province were investigated before and after the health education using the same questionnaire.

Results: In the city of Jiaxing, Shaoxing, Ningbo, Shangyu, in Zhejiang province, about 87.38% of rural residents had heard leprosy or seen leprosy patient before the health education. The rate of knowledge related to leprosy in them from the city of Jiaxing, Shaoxing, Ningbo, Shangyu had distinctly improved after the health education, the rate of fear and discrimination against leprosy had distinctly reduced,and the percentage of not afraid of leprosy patients rose from 23.77% to 68.85% ($\chi 2$=249.31, P<0.001) and the percentage of would be able to contact with the cured patients among the migrant population rose 18.20% to 49.34% ($\chi 2$=132.30, P<0.001) from before and after the health education, respectively.

Conclusion: Distributing leprosy leaflets, holding small meetings in villages and special course on leprosy were the effective measures to carry out leprosy health education among rural residents in the city of Jiaxing, Shaoxing, Ningbo, Shangyu, in Zhejiang province. We should intensify propaganda to improve the awareness rate in the rural residents.

P-201

Presentation Time: Thursday 19/09/2013 at 13:10 – 13:20
Abstract Topic Name: Epidemiological Surveillance
Presentation Screen Number: 2
Presenter: Mr Gao Yanwei and Mr Shen Yunliang

MENTAL HEALTH STUDY ON PATIENTS LIVED IN GRASSROOTS LEPROSARIA OF ZHEJIANG PROVINCE, CHINA

Y. W. gao [1,*], B. S. zhu [2], J. Q. wang [3], A. L. zhou [4], D. W. shi [5], G. T. wang [1], L. B. yan [6]

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Introduction: To explore the psychological disorder status of patients lived in grassroots leprosaria of Zhejiang Province, China.

Methods: All long-term institutionalized older leprosy patients in leprosaria of Hangzhou, Jiaxing and Shaoxing Cities of Zhejiang Province, and the aged lived in gerocomiums, matched by same sex, community and age difference less than 5 years old, were investigated by leprosy control staff with The Symptom Checklist-90. And the data were also compared with national norms.

Results: The total SCL-90 scores of 56 institutionalized older leprosy patients ranged from 94 to 197, with an average score of 139.16±30.17. The psychological disorder of older leprsoy patients represented 37.5% (21/56).The scores of somatization, depression, hostility and phobic anxiety were higher than those of normal adults, with a marked difference. And the older leprosy patients have higher scores of anxiety and hostility, as well as lower score of phobic anxiety, compared with the aged lived in gerocomiums. But the total scores of institutionalized older leprosy patients and the aged in gerocomiums, as well as the normal adults, have no statistical difference .

Conclusion: The general mental health status of institutionalized older leprosy patients in Zhejiang are of the same level with that of normal adults and the aged in gerocomiums. But the severities of some psychological disorders such as somatization, depression, hostility, et al. are varied. We consider that it is still necessary to strengthen the psychological intervention in leprosaria in Zhejiang to prompt the mental health of older leprosy patients.

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Presentation Time: Thursday 19/09/2013 at 13:20 – 13:30
Abstract Topic Name: Epidemiological Surveillance
Presentation Screen Number: 2
Presenter: Mr Gao Yanwei and Mr Shen Yunliang

STUDY ON THE FAMILY FUNCTION OF LEPROSY PATIENTS LIVED IN RURAL COMMUNITY

L. M. wu [1,*], J. Q. wang [1], Q. F. yang [2], G. Y. huang [3], A. L. zhou [4], L. B. yan [5]

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Introduction: To understand the family situation of the leprosy patients in the rural communities of Zhejiang Province, China.

Methods: Using the Family APGAR index questionnaire to investigate the 216 leprosy patients' families in the rural communities, and obtained their subjective satisfaction felling to their family functions. Date collected were entered into the computer after verified, and analyzed with the Statistics Software Excel 2003 and SPSS11.5 for Windows.

Results: 162 of them were men, and 54 of them were female. Age ranged from 17 to 95, the average age was 64 .18.134 of them were married, and 143 of them were with visibilitydisabilit.

The average score of Overall family functions was 5.20±3.25 (The score ranged from 0 to 10. Score 0 to 3 was the highest dysfunction, 4 to 6 was the moderate dysfunction, and 7 to 10 was the well-functioning), 90 cases with high-functioning families (41.67%), 61 cases moderate disorder (28.24%), 65 cases severe disorder (30.09%); The scores of the family functions adaptation, partnership, growth, affection and resolve were 1.30±0.76, 1.21±0.77,1.05±0.79,1.02±0.79 and 0.62±0.75 respectivelly; using Spesrman correlation method to analyze the Leprosy disability, activities of daily living, and labor abilities with the family function of leprosy patients,we found that the three indicators had a positive correlation with the degree of family dysfunction (all p<0.01).

Conclusion: Leprosy was closely related to the patients' family functions; Impairment existed in the leprosy patients's family with different extent; It is necessary to strengthen the leprosy family health guidance and counseling.

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Presentation Time: **Thursday 19/09/2013 at 13:30 – 13:40**
Abstract Topic Name: **Epidemiological Surveillance**
Presentation Screen Number: **2**
Presenter: Mr Gao Yanwei and Mr Shen Yunliang

STUDY ON DISCRIMINATION TO CURED LEPROSY PATIENTS LIVING IN RURAL COMMUNITY AND ITS INFLUENCING FACTORS

L. M. wu [1,*], J. Q. wang [1], Y. L. shen [1], X. G. yang [1], B. B. xie [1], L. B. yan [2]

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Introduction: To understand the perceived discrimination and its influencing factors among cured leprosy patients living in rural community of Zhejiang province,China

Methods: With a self-designed questionnaire and multi-stage sampling, 216 cured leprosy patients living in rural communities were selected and surveyed with face-to-face talk. The survey included the general situation and the level of suffering discrimination. Using 10 forms as external discrimination topic, such as having dinner with their families was limited, such as the family or relatives did not care about their health, the family rarely solicit their opinions, community residents do not respect them, the chance of working in the local was limited,and so on. The score ranged from 0 to 10, the score of 0 was without discriminated, 1 to 10 indicated the presence of discrimination. The higher the score, the more severe external discrimination the leprosy patients feeled. All the data collected were analyzed with SPSS11.5.

Results: The perceived external discrimination among the cured leprosy patients were at low level with an average score of 3.82±3.23 (ranged from 0 to 10), 43 of them were with score of 0, and 15 of them were with score of 10.The main influencing factors of external discrimination were the awareness of leprosy curable nature, self-care ability, social status, visible disability, economic status, marital status, and age with a multiple linear coefficient of 0.725 and a total variance of 33.002 (P<0.01)

Conclusion: Cured leprosy patients living in rural community of Zhejiang perceived a certain degree of external discrimination and intervening measures should be taken to promote the physical and mental health of the leprosy patients.

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Presentation Time: **Thursday 19/09/2013 at 13:40 – 13:50**
Abstract Topic Name: **Epidemiological Surveillance**
Presentation Screen Number: **2**
Presenter: Mr Gao Yanwei and Mr Shen Yunliang

COMPARISONS AND EVALUATIONS OF VARIOUS METHODS OF LEPROSY HEALTH EDUCATION AMONG MIDDLE SCHOOL STUDENTS

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Introduction: To understand the knowledge, attitude,and behavior on leprosy among middle school students of Zhejiang procince. Evaluate the effect of leprosy health education for middle school students.

Methods: With three different ways (the special course, special course and leaflets, leprosy knowledge match game with gifts), 893 middle school students of the 6 classes of Tongxiang middle school and Deqing No.1 middle school were divideded into three groups and were investigated before and after the health education using the same questionnaire. Adopting the anonymous way to answer the questionnaire independently. The questionnaire included basic personal situation, leprosy basic knowledge, attitudes, behavior and the demand of knowledge of leprosy prevention. All the data collected were analyzed with SPSS11.5.

Results: By using three different ways of leprosy health education, the rate of knowledge related to leprosy had distinctly improved after the health education. The rate of knowledge related to Leprosyetiology increased from 17.48%,11.41% and 21.68% to 84.62%,85.23% and 93.85% before and after health education.The rate of knowledge related to the infection of Leprosy increased from 9.09%,6.04% and 6.15% to above 80% before and after health education.The rate of knowledge related to whether Leprpsucan be cured also increased from less than 50% to more than 90% before and after health education. The rate of fear and discrimination against leprosy reduced (P<0.001), and the effects of the three health education ways showed a significant difference.

Conclusion: Comparing to the special course and special course and leaflet, the way of knowledge match game with gifts was more effective, and it was a better way for leprosy health education among middle school students.

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Presentation Time: **Thursday 19/09/2013 at 13:50 – 14:00**
Abstract Topic Name: **Epidemiological Surveillance**
Presentation Screen Number: **2**
Presenter: Margarida Rocha

A DESCRIPTIVE STUDY OF HANSENIASIS DEATHS IN BRAZIL: THE USE OF LINKAGE TO IMPROVE VITAL INFORMATION

M. Rocha [1,2,*], R. C. F. R. Soares [1], M. Levantezi [1], S. A. D. Sena Neto [1], R. B. D. Lima [1], A. Stevens [1], J. J. C. Escalante [1], U. M. M. Gutierrez [2], L. P. Garcia [1,2]

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Introduction: Brazil is the country with second largest number of cases of hanseniasis. Despite the low risk of mortality, deaths caused by hanseniasis occur. The aim of the study was to describe the characteristics of deaths caused by hanseniasis registered in the Mortality Information System (SIM) and to identify deaths whose hanseniasis cases were not registered in the Notifiable Diseases Information System (Sinan)

Methods: Descriptive studythat included all deaths having hanseniasis as cause (CID A30-B92) that occurred in Brazil during the period 2004-2009 and all hanseniasis cases registered in the period 1975-2010. Record linkage between deaths registered in SIM and cases registered in Sinan was performed using a methodology based on Bloom filters, using the variables name, mother's name, and date of birth. Manual revision of all matched pairs was performed.

Results: In the period 2004-2009 there were 1,463 hanseniasis deaths registered in SIM.The linkage of those records with 923,113 cases in Sinan suggested 1,709 pairs, of which 643 (44.2%) deaths were not registered in Sinan. Most of the deaths occurred among men (n=1,060; 72.5%), people >60 years-of-age (n=828; 56.6%), in hospitals (n=956; 65.3%) and with healthcare assistance (n=670; 45.8%). Of the 820 deaths identified in Sinan, 754 (92%) were multibacillary cases, 371 (45.2%) had healing as output and 319 (38.9%) had death as output. In SIM most frequent main cause of death was unspecified hanseniasis (n= 1,082; 74%).

Conclusion: The linkage of databases permitted the identification of under-registered cases and inconsistencies between data in the morbidity and mortality information systems.It is important to investigate the deaths for which links were not obtained in order to verify the information on the underlying cause of death, aiming at improving vital registration information as well as hanseniasis surveillance and treatment.

P-328

Presentation Time: **Thursday 19/09/2013 at 12:30 – 12:40**
Abstract Topic Name: **ENL Reaction 2 and Dermatology**
Presentation Screen Number: **3**
Presenter: Basudev Bhattacharya

REPORT OF RPOB (RIFAMPICIN) MUTATION IN A NEW CODON IN CLINICALLY SUSPECTED DRUG RESISTANCE LEPROSY CASES: A STUDY FROM EASTERN INDIA

B. Bhattacharya [1,*], M. Lavania [2], N. Biswas [1], S. Banerjee [1], A. H. Hasnoor Reja [1], A. Sen [1], S. Biswas [1], U. D. Gupta [3], P. K. Patra [4], S. Gupta [5], U. Sengupta [2]

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Introduction: Drug resistance will be a serious impediment during the present scenario of dramatic decline in the prevalence rate to <1/10,000 which has been attained throughout the world.The emergence of multidrug resistant *M. leprae* strains which has been reported from south east Asia poses a serious threat for control of leprosy. Therefore, surveillance for drug resistant *M. leprae* has been initiated in several countries. The present study was initiated in screening post-MDT relapse cases for mutations in *rpoB*and *folP* regions of *M. leprae* for finding of drug resistance in leprosy.

Methods: A total of 50 relapse leprosy cases from PG Hospital, Kolkata, West Bengal were enrolled in the study. All patients were clinically classified as multibacillary cases of leprosy and

were confirmed as relapse cases by findings of appearance of new skin lesions and increase in bacteriological index (BI). Skin smears were obtained for estimation of BI and biopsies were obtained in 70% alcohol for extraction of DNA. The extracted DNA was amplified by *M. leprae*-PCR targeting *rpoB* and *folP* gene region. After detection of amplification on a 2% agarose gel by electrophoresis, the amplicons were outsourcedfor sequencing and the quality trimmed sequence data is aligned using (Basic Local Alignment Search (BLAST) Tool) from NCBI. Every single nucleotide base in the sequence is aligned to reference sequence and identity gaps were determined. Later *in-silico*analysis was done to identify the changes in the translated protein sequences.

Results: Our results revealed a mutation at the base pair position 2275232 where G is replaced by C in the whole genome of *M.leprae* which corresponds to the coding region of *rpoB*gene (279bp - 2275228 to 2275506). This is a non-synonymous missense mutation in CA**C** codon which brings about a glutamic acid to histidine change in the amino acid sequence of RNA Polymerase Beta subunit of M.lepraeat the position 442 (Glu442His), a region specific for rifampicin interaction. This was observed in 2 out of the 50 patients. None of the patients showed any mutation in the *folP* region indicating absence of dapsone resistance in these relapsed patients.

Conclusion: The present study has noted for the first time a mutation in codon coding for amino acid at the region 442 in *rpoB*protein sequence of *M. lepra*ein 2 patients out of 50 post-MDT relapsed MB patients from regions of West Bengal. Further functional analysis of the amino-acid sequence variants along with the variations in rifampicin interaction with *Rpo*B will shed much light on identifying novel drug targets to combat drug resistance in leprosy.

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Presentation Time: Thursday 19/09/2013 at 12:40 – 12:50
Abstract Topic Name: ENL Reaction 2 and Dermatology
Presentation Screen Number: 3
Presenter: Basudev Bhattacharya

ASSOCIATION OF SINGLE NUCLEOTIDE POLYMORPHISM (SNP) IN CYTOKINE GENOME WITH DIFFERENT ENTITIES OF LEPROSY AND AD THEIR ROLE IN DISEASE SUSCEPTIBILITY IN EASTERN INDIA.

A. H. Hasnoor Reja [1,*], N. Biswas [1], A. Sen [1], S. Biswas [1], S. Dasgupta [1], P. S. Mahapatra [2], T. Chakraborty [3], G. Banerjee [4], B. Bhattacharya [1], U. Sengupta [5]

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Introduction: Leprosy is a chronic granulomatous disease caused by obligate intracellular parasite *Mycobacterium leprae*. Leprosy provides a unique opportunity to investigate the functions of interplay between T cell subsets i.e. Th1 and Th2 subsets in relation to their cytokine secretion profile since it is postulated that it is the distinct pattern of cytokines which determines the resistance or susceptibility to infection. Single nucleotide polymorphisms (SNPs) are considered the most abundant source of genomic variation in humans, and differences in coded protein structure can be caused when these are present in genes. The aim of the present study is to detect the association of genetic polymorphisms of TNF α, IL-6, IL-10, IFN γ with various types of leprosy among Eastern Indian population based at Kolkata, West Bengal, India. This study will help us to know the genetic correlation with the disease susceptibility and severity.

Methods: Genomic DNA was extracted from PBMC layer by standard Phenol chloroform technique of a study group of 246 leprosy cases and 112 healthy controls and All polymorphisms were typed using amplification refractory mutation system polymerase chain reaction (ARMS- PCR) method

Results: In the present study, TNF α – 308 A (p = 0.0006, OR = 1.985) allele and TNF α -238 G (p= 0.0001, OR = 2.502) IL6 -174 C (p= 0.0004, OR = 1.908) IL10 -592 C (p< 0.0001, OR = 2.469) IL10 – 1082 A (p= 0.0001, OR = 2.013) is found significantly associated with leprosy group than the comparing Healthy group. Moreover, No significant association was observed in IFN γ +874 T (p= 0.436, OR = 0.870) with the leprosy group.

Conclusion: TNF α – 308 A, TNF α -238G, IL10 -592C, IL10 -1082 A and IL6 – 174 C allele are significantly associated with susceptibility and occurrence of leprosy whereas, IFN γ +874 T is found to have no role in occurrence and susceptibility of leprosy in eastern part of Indian Population based at Kolkata, West Bengal, India.

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Presentation Time: Thursday 19/09/2013 at 12:50 – 13:00
Abstract Topic Name: ENL Reaction 2 and Dermatology
Presentation Screen Number: 3
Presenter: Joel Lastoria

LEPROMATOUS LEPROSY AND PERIANAL TUBERCULOSIS IN THE SAME PATIENT

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Introduction: Infections with intracelullar pathogens such as *Mycobacterium leprae* and *Mycobacterium Tuberculosis* in most cases are controlled by the cell-mediated immune response, is based on a CD4 + TH1 cells. Leprosy is a more prevalent cause of cutaneous infections as compared tuberculosis, and their co infection is extremely rare.

Methods: We report an association of lepromatous leprosy and perianal tuberculosis, without the presence of any previous or active pulmonary infection, in man immunocompetent.

Results: A 59 year old male patient was admitted with 6 months history of erythematous plaque, and non healing suppurative lesion perianal ulcer. He was under therapy with prednisone 40mg daily without healing. Dermatological examination reveled dissemination erythematous papules in the upper limbs, and perianal ulcer fagedenic accompained by inguinal lymphadenopathy. Skin biopsy showed a dense histiocyte dermal infiltrate, consisting of foamy macrophages with globi of bacilli and fite staining revealed the presence acid-fast bacilli, suggestive of lepromatous leprosy. Results of polymerase chain reaction (PCR) DNA analysis from skin samples were negative for *M.tuberculosis* but positive for *M.leprae*, and a ulcer biopsy specimen using the Lowenstein –Jensen medium were positive for *M.tuberculosis*. The patient was diagnosed as having simultaneously lepromatous leprosy and perianal tuberculosis. The treatment recommend of lepromatous leprosy with thalidomide, dapsone, rifampin, clofazimine and of tuberculosis with isoniazid, rifampin, ethambutol and pyrazinamide.

Conclusion: Susceptibility to co- infection with lepromatous leprosy and perianal tuberculosis likely depends on multiple factors such, low socioeconomic status, poor nutrition, chemo-immunosuppression and host immune response. Although both mycobacterial infections are endemic in developing countries like Brazil, the co-infection has been reported in the last decade.

Many studies have pointed out the genectic predisposition of the host to the development of diseases such as leprosy and tuberculosis. It is suggested that human genetic factors may influence the acquisition of both infections and clinical course of these diseases.

P-120

Presentation Time: Thursday 19/09/2013 at 13:00 – 13:10
Abstract Topic Name: ENL Reactions 1
Presentation Screen Number: 3
Presenter: Dr Cita Rosita Prakoeswa

PILOT TRIAL: METHYL SULPHONYL METHANE TREATMENT IN ERYTHEMA NODOSUM LEPROSUM

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Introduction: Erythema nodosum leprosum (ENL) is a systemic immune complex reaction, in which antibody-antigen complexes may be deposited in various tissues, leading to vasculitis, may occur in multibacillary leprosy patients. The immunopathology is not fully understood, but the reaction is known as a TNF-α-mediated process. The severity of the conditions, the potential complications, the limited treatment options and the recurrent nature make this condition very difficult to manage. The limited current treatment options with high level of morbidity and chronic nature of the condition make the search for treatment alternatives imperative. Previous investigation showed that Methyl Sulphonyl Methane (MSM) has strong anti-TNF-α properties *in vitro*. Potentially, this would make MSM suitable for treating TNF-α-mediated conditions, such as ENL reaction. Objective of this study is to establish whether MSM is effective for treating the clinical signs and symptoms of recurrent ENL reaction in multibacillary leprosy patients.

Methods: In this study all multibacillary patients admitted for at least a second episode of severe ENL reaction are potentially eligible for the study. The intake of subject proper to inclusion and exclusion criteria until 10 subjects have been enrolled. A standardised history using a checklist will be taken from all patients admitted to the study. A careful physical examination will be carried out looking for skin signs, signs of sensory or motor neuropathy, and other known complications of ENL. An ENL reaction severity scale will be completed at each examination. This will include a basic neurological examination. Nerve function assessment include motor nerve function using voluntary muscle tests (VMT) and Sensory nerve function using the Semmes-Weinstein monofilament test (MFT). All impairments will be recorded. Ten millilitres of blood will be taken

for laboratory investigations at certain intervals (Day 1, 7, 63) for TNF α and routine blood examination on day 1, 7, 14, 56, 112. All patients in the study will be given MSM in a dose of 0.1 g/kg bodyweight daily in two divided doses in addition to World Health Organization (WHO) Multi Drug Treatment (MDT) and or additional clofazimine, if a patient was already taking this when the new reaction occurred. After a significant improvement in the clinical condition of the patient has been observed, the dose will be tapered by 1 gram every two weeks, starting 1 week from the start of MSM treatment. Treatment will be stopped completely 2 weeks after reaching the 1 g/day level.

Results: There were two from ten patients showing improvement of ENL reaction after treated with MSM. Eight patients had been dropped out on day 3 and 5. In these two improving patients revealed high level of TNF α, and this value decreased along with lessening of ENL severity scale. In the first patients there were increasing of ENL severity scale within MSM tapering off, so that this patient had been applied with full dose of MSM repeatedly and tapered off. One other patient was still in good condition during the follow up. Eight patients who showed normal value of TNF α had been dropped out due to increase of ENL severity scale. There was no alteration of MFT and VMT examination during the study.

Conclusion: This finding showed that MSM treatment can be applied in ENL with high level of TNF α, and also concordance to its mechanism of action as an anti TNF-α. Further research with minimum sample size is required to clarify this findings.

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Presentation Time: **Thursday 19/09/2013 at 13:10 – 13:20**
Abstract Topic Name: **ENL Reactions 1**
Presentation Screen Number: **3**
Presenter: Linda Astari

THE PROFILE OF SERUM TNF-A AND CORTISOL IN ERYTHEMA NODOSUM LEPROSUM TREATED WITH METHYL SULPHONYL METHANE

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Introduction: Erythema Nodosum Leprosum (ENL) in one of leprosy reaction type which is very often causing a burden to leprosy patients. The immune-pathology of ENL is not fully understood, but the reaction is known as a TNF-α mediated process. The challenges of treating ENL patients are the recurrent nature and the side effect of treatment. Meanwhile we commonly use corticosteroid to treat ENL patients. This drug is effective but due to the chronic and recurrent nature of ENL, frequently leads to steroid-dependence and steroid-refractory. This condition has led to a consideration of other treatment options of ENL reaction. Investigations at Leiden University in the Netherlands showed that Methyl Sulphonyl Methane (MSM) has strong anti TNF-α properties *in vitro*. Potentially, this would make MSM suitable for treating TNF-α mediated conditions, such as ENL reaction. The condition of steroid refractory in ENL patients has brought up a consideration about the serum cortisol level of those ENL patients. The current trial aims to establish whether MSM is effective in treating patients with recurrent ENL reaction and also to measure the serum TNF-α and serum cortisol level in ENL patients treated with MSM.

Methods: Multibacillary leprosy patients who currently on / or released from MDT and suffering from at least second episode of ENL (type 2) reaction, were taken blood samples for serum TNF-α on day 1, 7, 63, and serum cortisol measurement on day 1 before they were given 0,1 g/kg/ bodyweight MSM daily in two divided dose. The dose of MSM will be tapered off by one gram every two week starting one week from the start of MSM treatment. Motor nerve function / voluntary muscle testing (VMT), sensory nerve function using Semmes-Weinstein monofilament test (MFT) and ENL reaction severity scale were assessed daily on the first week, and continued once every two weeks. Patients with no improvement in ENL signs and symptoms within 7 days were dropped out. Patients who suffered from worsening of ENL reaction from mild to severe, worsening sensory impairment (SI), worsening motor impairment (MI), having new evidence of neuritis and occurrence of new ENL complications within 3 days in a row after starting treatment with MSM were also dropped out.

Results: Ten patients were included in this study, followed up and treated with MSM. Two patients showed improvement of ENL reaction after treated with MSM. Eight patients had been dropped out on day 3 and 5 due to deterioration of ENL severity scale, but there was no alteration of MFT and VMT examination during the study. These eight patients surprisingly showed low serum cortisol. On the contrary, previously two improving patients revealed high level of TNF-α and normal range of serum cortisol. The high level of TNF-α before the MSM treatment was also gradually lessening along with the decreasing of ENL severity scale during the treatment of MSM.

Conclusion: These finding suggested that MSM could help in treating ENL patients which recur within steroid tapering off period, in condition of normal range of serum cortisol level and high level of serum TNF-α. Further research with minimum sample size is required to clarify these findings.

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Presentation Time: **Thursday 19/09/2013 at 13:20 – 13:30**
Abstract Topic Name: **ENL Reactions 1**
Presentation Screen Number: **3**
Presenter: Joel Lastoria

ERYTHEMA NODOSUM LEPROSUM IN THE PATIENTS WITH MULTIBACILLARY LEPROSY

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Introduction: Leprosy is a chronic infectious disease caused by *Mycobacterium leprae*, a microorganism that has a predilection for the skin and nerves. Leprosy reactions are the acute episodes of clinical inflammation occurring during the chronic course of disease. Erytema nodosum leprosum (ENH) is a common complication of lepromatous leprosy, it can occur before, during or after the treatment with multidrug therapy, and is a significant cause of morbidity in these patients. The erytema nodosum leprosum is charectherized, clinically, as tender erythematous subcutaneous nodules and it is frequently accompained by systemic symptons, such as fever, malaise, anorexia, weight loss, edema, lymphadenitis, neuritis, iriodocyclitis and arthralgia.

Methods: The aim of this study was to evaluate the frequency of erythema nodosum leprosum in patients during treatment with leprosy multidrug therapy.

Results: 206 patients with multibacillary leprosy were evaluate, and 59,2% developed erythema nodosum leprosum. Patients ages at the time of sample collection varied between 12 and 86 years; majority of patients were aged between 40-59 years old and two patients were under 15 years old. Most cases, 68% developed three episodes of the erytema nodosum leprosum, and 8% of these patients developed before reaction the treatment and 65% during, and 30% after treatment .The episodes occurred between one and 17 times by patients. From these patients, 16,39% developed once, and 17,2% seven episodes and 49,77% did not develop erythema nodosum leprosum, and the IB (bacilli index) was considered high, above of three +.

Conclusion: Leprosy reactions are acute episodes of clinical inflammation occurring during the chronic course of disease. They pose a challenging problem because they increase morbidity due to nerve damage even after the completion of treatment.
The results suggest that the high numbers of patients with ENH and several episodes in the same patients, were most frequent in the male with multibacilary leprosy and with higher bacilli index (>3); the high occurrence after treatment was completed revealed the necessity patients' periodic examination.

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Presentation Time: **Thursday 19/09/2013 at 13:30 – 13:40**
Abstract Topic Name: **ENL Reactions 1**
Presentation Screen Number: **3**
Presenter: Elaine Morelo

EVALUATING THE IMPACT OF THE THALIDOMIDE IN THE ERYTHEMA NODOSUM LEPROSUM (ENL) TREATMENT IN BRAZIL AFTER THE PUBLICATION OF THE RDC 11/2011

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Introduction: In Brazil, Thalidomide is the first choice drug used in the treatment of the erythema nodosum leprosum (ENL) sharp and recurrent due to its anti-inflammatory and modulated action regarded to immunological response. Due to its *teratogenic* known effect, its utilization in the public health network must strictly obey Brazilian legislation. In 2011, a new legislation about the subject was published – RDC 11 that normatizes the control of the Thalidomide and the drugs that contains this substance in their formula. This legislation aims to join the various existing legislations and turn them into only one, increasing the control of the prescription and the dispensation of this drug.

Objective: Evaluate the variation of the consumption of this drug after the publication of the new legislation

Methods: Qualitative study about the analytical descriptive nature that analysed the distribution of the Thalidomide to Brazilian States during 2008 – 2011 period. Information from SISMAT/MS were collected to form the data about the subject and information furnished by the Pharmaceutical Assistance Department of MS

Results: During 2008 -2011 period, MS distributed to the States 9.056.160 100 mg Thalidomide pills. Annual average: 2.264.040 pills. Annual distribution: 3.016.800 (33,3%) in 2008. 3.499.200 (38,7%) in 2009. 1.657.920 (18,3%) in 2010 and 882.240 (9,7%) in 2011. Comparing the 2009

to 2011 numbers we can conclude that 2009 was the biggest consumption year and in 2011, year of the RDC publication, we could observe a 74,8% reduction in the drug consumption.

Conclusion: The results showed that the severity of the new legislation (RDC 11) regarding to the control in the prescription and in the distribution of the drug conducted to an expressive reduction in the consumption of Thalidomide drug in Brazil. Consumption decreasing could be observed already in 2010, year in which occurred a wide debate among the actors involved in the construction of the new legislation.

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Presentation Time: **Thursday 19/09/2013 at 13:40 – 13:50**
Abstract Topic Name: **Eye in Leprosy**
Presentation Screen Number: **3**
Presenter: Saibaba Alampur

OCULAR SURFACE DISORDER DIAGNOSIS AND MANAGEMENT IN LEPROSY – CURRENT CONCEPTS

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Introduction: The cornea and conjunctiva constitute the Ocular Surface. The tear film present on this surface will protect the Ocular Surface from infections and Foreignbodies apart from helping in the clarity of vision and comfort to the eye.
The dry eye is a common condition in Ocular leprosy. The main contributing factor is the lowered blink rate and incomplete blinking. If this condition is underdiagnosed and undertreated can lead to blindness. The defect in the tear film is responsible for development of blindness is ocular leprosy.
We have studied Ocular Surface Disorder in ocular leprosy, incidence, diagnosis, prevention and management to prevent blindness. This study is done at Sivananda Rehabilitation Home for Leprosy where there are about 500 inmates and regular out patients visiting the institute as this is one of the referral centers for Leprosy.

Methods: The Ocular Surface Disorder the sight threatening lesion occurs in both types of leprosy, however it is more common in paucy bacillary.
In our study we have examined total 330 patients (Males· 120, Female – 110). They are either inmates of Sivananda Rehabilitation Home for the Leprosy or out patients attending Sivananda Rehabilitation Home for the Leprosy, state level referral hospital.
All these patients are subjected for detailed examination of eyes visual acuity, slit lamp examination, corneal sensations, tear film breakup time, Schirmer test, Rose Bengal test and also the blink reflex. We have also observed the eye lid closure. While taking history we have taken the environmental factors because majority of these patients are working in the fields, construction companies and industries.

Results: The Ocular leprosy there is reduced corneal sensations, reduced blinking and incomplete closure of the lids. These are all the factors contributing to the development of Ocular Surface Disorder. We have studied 330 patients of Sivananda Rehabilitation Home for the Leprosy and some out patients. All of them are subjected for complete ophthalmological examination. They had Ocular Surface Disorder and were given lubricating drops.
In Ocular leprosy the sink mechanism for vascular endothelial growth factor C, vascular endothelial growth factor D preventing them from binding to vascular endothelial growth factor 2 keeping corneal avascular is disturbed in Ocular Surface Disorder resulting in vascularisation.
The Carboxymethylcellulose is used in early cases. It has binding capacity of corneal epithelial cells, increased goblet cells, promotes corneal cell migration. The lacrimal plugs have no role in these cases, as it will not treat the underline cause. Cyclosporine A has got the capacity of treating the underline cause. Carboxymethylcellulose when exposed to light, dissipates into sodium chloride and water, natural components of tears. Ocular leprosy patients are given Carboxymethylcellulose during the day and gel is applied during the night depending on the severity of Ocular Surface Disorder.

Conclusion: Ocular Surface Disorder is very common in ocular leprosy is often underdiagnosed and undertreated. Today continuum of treatment is available to prevent blindness in Ocular leprosy.

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Presentation Time: **Thursday 19/09/2013 at 13:50 – 14:00**
Abstract Topic Name: **Eye in Leprosy**
Presentation Screen Number: **3**
Presenter: Saibaba Alampur

SURGICAL EXPERIENCE IN OCULAR LEPROSY

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Introduction: Intraocular surgery in Leprosy can't be performed like in normal individuals. Apart from regular eye examination like Lids, conjunctiva, cornea, antirior chamber, iris, pupulary reactions including fundus examination. It involves detailed pre-operative examination – Blink reflex, Tear film assessment, corneal sensation, AC depth, pupilary reactions history of cortisone intake in addition to Intraocualr surgery in Leprosy patients need special attention.
Some of the cases may have associated keratitis, thick posterior syniche, treated chronic iridicylitis, complicated cataract with IOP↑ IOP↓.

The problems the surgeon likely to face are, reduced blink reflex, reduced mucin content, reduced corneal sensations and in the post-operative period rubbing the eyes with infected hands and poor compliance. They need more follow-up, more so in complicated cataracts.
The surgeon also faces the problem of patient compliance for frequent check-up.

Methods: After careful examination and assessment of the cases we have selected 500 cataract cases for operations, 340 males, 160 females. All these patients had negative skin test and healed ulcers in the body. All of them were given anti biotic eye drops one week prior to the operation. The age group of these patients from 30 years to 65 years.
We have performed 500 cataract operations (340 male + 160 female). The 10 cases were cortisone induced and 25 were complicated cataracts due to uveitis. The small incision cataract surgery was done in 410 patients with PMMA lens implantation and 90 patients were performed Phacoemulcification with foldable IOL from November, 2008 to October, 2012. We have done small incision cataract surgery with PMMA lens implantation under local anesthesia in 410 patients and Phacoemulcification with foldable iol implantation in 90 patients under topical anesthesia.
In the post operative period antibiotic eye drops for used for 10 days, cortisone eye drops for 30 days(with cautions), methyl celluloss eye drops were used for one month. In 35 cases there was need to use tropicamide eye drops.
They have been followed up for one year. They were subjected to slit lamp examination – cornea, A.C., aqueous flare, Iris and visual acuity. The post operative use of cortisone was cautiously done.

Results: The total number of cataract operations with IOL was 500. The follow-up was done up to 1 year. The visual recovery was 6/6 to 6/18 in 430 cases. The vitreous hage was seen in 20 cases. Iritis was seen in 40 cases and pthysis seen in 10 cases.

Conclusion: One needs to be cautious in performing in intra ocular operations in Leprosy and need to do more follow-up to prevent damage. This paper deals with detailed guidelines for pre-operative check-up and post operative follow-up in ocular leprosy. This paper will be presented along with video.

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Presentation Time: **Thursday 19/09/2013 at 12:30 – 12:40**
Abstract Topic Name: **Relapse and Drug Resistance**
Presentation Screen Number: **4**
Presenter: Dr Cita Rosita Prakoeswa

DRUG RESISTENCE DUE TO DAPSONE AND RIFAMPICIN ON MYCOBACTERIUM LEPRAE IN INDONESIA ENDEMIC POCKETS

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Introduction: Leprosy is still a problem in Indonesia, proven up to now there are endemic pockets disseminate in some areas in Indonesia, with high and relatively stabil prevalence and new case finding from year to year. World Health Organization (WHO) recommendation of Multi Drug Therapy (MDT) to treat leprosy is expected to prevent drug resistance. Nevertheless, there are reports of drug resistence due to *M. leprae*. This research aims to identify resistence of Rifampicin and Dapsone to detect the expression of *rpoB* and *folP* gene from mutated *M. leprae* in leprosy patient with positive acid fast bacili examination in Indonesia endemic pockets.

Methods: Explorative research to identify mutation on *rpoB* and *folP* gene in *M. leprae* by using PCR technique, continued with DNA sequencing analysis obtained from skin smear of new leprosy patient / leprosy patient during treatment maximum 3 months / relapse patients / DO with positive of acid fast bacilli examination.

Results: Field surveillence has been done in 2010-2012 in East Java, NTB, South of Sulawesi, NTT, Maluku, Papua, Jakarta, Middle of Kalimantan and North Sumatera. From 228 *M. leprae* isolates, there were only two samples showing a mutation. One sample from South Sulawesi revealed 2 spots of mutation in *folP* gene, in codon 53 from ACC (threonine) sequence altered into AGG (Aginine). This mutation showed alteration of amino acid and causing resistence to Dapsone. One sample from East Java revealed a mutation in *folP* and *rpoB* gene, showed by a mutation in *folP* gene on codon 55 from CCC (proline) sequence altered into CGC (Arginine), also in *rpoB* gene from GAT (Aspartic acid) sequence altered into TAT (Tyrosine). These findings suggested resistence to Dapsone and Rifampicin as well.

Conclusion: Research regarding resistence in Indonesia might support government's judgment in the management of leprosy by giving alternative treatment which is appropriate to those resistance cases.

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Presentation Time: Thursday 19/09/2013 at 12:40 – 12:50
Abstract Topic Name: Relapse and Drug Resistance
Presentation Screen Number: 4
Presenter: Svetlana Luzhnova

THE GENDER ASPECTS OF THE INFLUENCE OF PHENOTROPIL ON THE PSYCHOEMOCIONAL STATUS OF RATS UNDER THE EFFECT OF DAPSONE

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Introduction: Over sixty years of history dapsone (4,4 '-sulfonilbis [benzenamine]) is a basic antimicrobial specimen for the treatment of leprosy. However, despite the high pharmacological activity the drug has a number of negative effects due to the formation of hydroxylamine derivatives during the metabolism. In particular, dapsone often exhibits neurotoxicity, causing mental disorders, headaches, insomnia, and the phenomenon of peripheral neuritis (Ghu G.I., Stiller M.G., 2001). Now for the correction of various forms of psychopathy are put into practice, in particular, iatrogenic, psychomodulatores are put into practice. Among them fenotropil, characterized by a wide spectrum of pharmacological activity and high safety is of interest (Tyurenkov I. et al., 2010). The aim of this work was to investigate gender differences of dapsone-induced changes in behavior and the severity of the psychomodulating effects of phenotropil (P) in combination with dapsone (D).

Methods: The study was performed on 60 outbreed rats (5-6 month): males and females. Control group – introduction to in equivalent volume of isotonic solution of sodium chloride; the second group – intragastricintroduction of D (25 mg/kg) (21 days), and the third – intragastricintroduction of D (25 mg/kg) in combination with P (100 mg/kg) (21 days). Psychoemotional state was evaluated in the test "Elevated cruciform labyrinth" (ECL). Statistical analysis was performed with the definition of Student' criterion with Bonferroni' correction.

Results: Analysis of the behavior in the test "ECL" of animals which were exposed to dapsone, indicates the formation of changes of anxious and depressive character under the influence of the drug. The presence of males and females significant differences in the direction and intensity of psychoemotional changes were revealed.The activation of behavioral responses to the background of increasing of the overall level of situational anxiety was observed in females of rats. Oppression of motor and research components of behavior was observed in males of the rats on the background of D. Analyising of the behavioral activity of animals, receiving phenotropil on the background dapsone-induced changes, it was shown the ability of the drug to reduce iatrogenic manifestations of anxiety-depressive syndrome. It should be noted, that phenotropil showed expressed activity in male rats.

Conclusion: Identified gender differences in the use of dapsone and phenotropil emphasize the need to take intoaccount the fact that the prescription of these drugs in complex is the most important in the treatment of males.

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Presentation Time: Thursday 19/09/2013 at 12:50 – 13:00
Abstract Topic Name: Relapse and Drug Resistance
Presentation Screen Number: 4
Presenter: Mr Zhonghe Wei

TO ANALYZE THE RELAPSE AMONG PATIENTS TREATED WITH MULTIDRUG THERAPY IN HUNAN PROVINCE, CHINA

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Introduction: To analyze the relapse among patients treated with multidrug therapy in Hunan province, China. The multidrug therapy recommended by the World Health Organization was very effective, and the relapse rate is very low. The early detection and early treatment of relapse may be an effective measure to reduce the risk of recurrence.

Methods: To collect the data of leprosy relapse patients after treated with multidrug therapy from1984 to 2009 in Hunan province China, and analyze relapse rate, the risk factors of relapse, clinical characteristics and so on

Results: From 1984 to 2009, there were 2766 MDT cured leprosy cases were registered in Hunan Province. There were 33 cases who were relapsed with a relapse rate of 1.19% or 0.48/1000 years. Among 14 relapse cases with full data, the range of interval from completion of therapy to relapse was 2.0 to 25.0 years, with 3 cases after 5 years, 6 cases from 6 to 10 years, 5 cases from 11 to 25 years. The average interval of relapse was 9.43 ±6.53 years. Among 14 relapsed patients, female accounted for 28.6%, patients treated with PB regimen for 21.4%. patients with disability for 50.0%, and patients having a history contacting with untreated leprosy patients before relapse for 50.0% patients. The delay time from relapse to be diagnosed was 5.2 ±7.3 years, and the mean bacteriological index at diagnosis was 3.1±1.8 .Annual income of all 14 patients were below RMB 5000 yuan

Conclusion: The multidrug therapy recommended by the World Health Organization was very effective, and the relapse rate is very low. The early detection and early treatment of relapse may be an effective measure to reduce the risk of recurrence

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Presentation Time: Thursday 19/09/2013 at 13:00 – 13:10
Abstract Topic Name: Relapse and Drug Resistance
Presentation Screen Number: 4
Presenter: Aparna Srikantam

FOLLOW-UP OF 708 LEPROSY CASES RELEASED FROM TREATMENT DURING 2005-10 IN INDIA

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Introduction: In India every year more than 1 lakh new cases are detected and treated by MDT. Once they were released from treatment (RFT) it is of interest to know what happened to them in long term like any relapse/recurrence; lesions disappeared/persisting; any other comorbid conditions; drug resistance. The present study aims to find answers to few of the above questions.

Methods: Leprosy cases who were released from treatment during 2005-10, at LEPRA clinics and referral centers in 4 districts from 2 States, Odisha and Andhra Pradesh in India were the target population. From the 4 districts 9 PHCs and 3 Referral centers were selected. Among the RFT cases listed in these 12 centers 708 cases were followed-up so far. All subjects were interviewed by using a structured format including the retrospective data of previous episode of leprosy, MDT and prospective data for presence of any leprosy related post RFT complications, such as recurrence, poor response or reactions (as defined by the National leprosy eradication programme of India). Data of interviews of 708 RFT cases as on Jan 2013 was analyzed and presented.

Results: Out of 708 cases followed, 9 (1.27%) showed recurrence; 9 (1.27%) poor response; 4 (0.56%) with reaction while the rest 686 (96.89%) has none. Frequency of recurrence/poor response across various parameters is as follows:
Geographical location: RFTs in Sonepur district had (5.26%) followed by Adilabad (5.1%), Koraput (2.76%) and Hyderabad (0.38%).
Gender: In 438 Males 8 (1.82%) and in 270 females 10 (3.7%).
Age: No recurrence was found in children less than 14 yrs. 2.54% for age group 15-50 and 3.17% in subjects above 50 years.
MB/ PB: In 401 MB cases 13 (4.23%) and in 307 PB cases 5 (1.24%) showed recurrence.
Deformities: In 1.65% of 121 cases with deformities and 2.72% of 587 with no deformities had recurrence.
Skin lesions: Single skin lesion 2.77% of 72 cases; 1.63% of 183 with 2-5 lesions and 2.86% of 453 RFTs with more than 5 lesions had recurrence.

Conclusion: Majority of the RFTs do not have any post MDT complications. Though there is a higher frequency of complications observed among females, subjects older than 50 years, subjects with more than 5 skin lesions, MB cases and with h/o of reactions during the previous episode. However the differences are not statistically significant.

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Presentation Time: Thursday 19/09/2013 at 13:10 – 13:20
Abstract Topic Name: Genetics and Leprosy
Presentation Screen Number: 4
Presenter: Dr Masanori Kai

CHARACTERISTIC SNPS IN MYCOBACTERIUM LEPRAE ISOLATED IN JAPAN

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Introduction: Due to advances in molecular biology, the unique characteristics of *Mycobacterium leprae* are becoming clearer through the use of gene or genome analysis. At present, two complete genome sequences of *M. leprae* strains, TN and Br4923, are available and people can browse the detailed genomic information on the database. The genome size of *M. leprae* strains is approximately 3.3Mb which is smaller than the genome size of *M. tuberculosis* (4.4Mb). There is no significant difference between the two *M. leprae* strains, TN and Br4923, although they were isolated from two countries of highest leprosy burden that are geographically remote (India

and Brazil). We therefore looked at other *M. leprae* strains to identify any small differences as compared with TN and Br4923.

Methods: *M. leprae* Kyoto-2 strain derived from Japan was selected for the genome analysis. Genomic DNA was extracted from the isolates by using QIAamp DNA mini kit (Qiagen). Shotgun DNA libraries were generated according to the manufacturer's sample preparation protocol for genome sequencing. Sequencing analysis was done by Illumina GAIIx and reads were mapped to the published complete genome sequence for *M. leprae* TN strain. In addition, a more limited analysis was done of other strains obtained from collaborators in the region.

Results: Genome analysis of the *M. leprae* Kyoto-2 isolate revealed characteristic SNPs on a region including one ORF. The sequences of 7 SNPs sites in the region were investigated in 23 *M. leprae* isolates stocked in Leprosy Research Center in Japan, including 10 isolates from different parts of Japan, 7 isolates from Korea, and 6 isolates from the Philippines. The SNP pattern in 14 isolates showed an identical pattern to that of Kyoto-2. On the other hand, almost all Japanese isolates belonged to SNP type I and III using nucleotides at positions 14676, 164275, and 2935685 of *M. leprae* genomic DNA. We compared the standard SNP typing (type I to IV) and the characteristic 7 SNPs in Kyoto-2, and the geographical distribution was investigated. The results showed that isolates having Kyoto-2 SNP pattern in the ORF were SNP type III and the other Japanese isolates tested were SNP type I or III. Furthermore, the isolates having Kyoto-2 SNPs pattern turned out to be similar to that of the tandem repeats of 6 bases, GACATC in the *rpoT* gene, which is well established as a tool of *M. leprae* genotyping. All the 7 Korean *M. leprae* isolates tested in this study, as well as those derived from Honshu Island in Japan, showed 4 tandem repeats. On the other hand, isolates derived from Okinawa Island in Japan and from the Philippines showed 3 repeats.

Conclusion: The unique SNPs found in *M. leprae* Kyoto-2 were not only specific for Kyoto-2 but also occurred in several isolates stocked in Leprosy Research Center in Japan. Interestingly, 6 out of 7 SNPs in several isolates from the region showed an identical pattern to that of Kyoto-2. The geographical distributions of the 6 SNPs pattern were divided into two groups, namely the Kyoto-2 and TN patterns. More interestingly the geographical distribution pattern of the 6 SNPs was similar to that of the number of tandem repeats of 6 bases, GACATC in the *rpoT* gene, which was reported previously and is well established as a tool of *M. leprae* genotyping.

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Presentation Time: Thursday 19/09/2013 at 13:20 – 13:30
Abstract Topic Name: Genetics and Leprosy
Presentation Screen Number: 4
Presenter: Dr Renuka Raju

THE TISSUE RESPONSES OF VARIOUS MOLECULES IN SKIN, NERVE AND PLASMA TO M LEPRAE FOLLOW MENDELIAN & NON-MENDELIAN EPISTASIS RATIOS

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Introduction: Leprosy is an induced immunological state where different tissues like the skin, nerve and plasma respond to M leprae and express unique tissue inflammatory responses. The outcome is an orchestrated expression of high and low levels of various molecules which attempt to maintain the homeostasis in the tissues to keep the integrity and function. Previous studies have shown that the increase in quantitative levels of each molecule is variable and individualistic. To understand this phenomenon we propose a hypothesis; that individuals express high and low levels of molecules in leprosy as a result of a regulatory influence on each other within and between the tissues based on definite Mendelian and nonmendelian epistatic ratios. The levels of the following molecules studied in the INFIR study were analysed in the three compartments – plasma TNFa, antibodies to PGL (IgG & IgM), LAM (Ig G1 & G3) and Ceramide; and skin and nerve TNFa, iNOS, TGFb, CD68 and S100.

Methods: An algorithm was designed wherein pairs of molecules segregate into defined Mendelian and non-Mendelian epistatic proportions. It was based on the phenotypic characterization of the molecular responses of each patient. The outcome of this segregation analysis is that there are four categories of individuals showing; both high, both low and either of the molecule high and low. These proportions can be categorically fit into either classical dihybrid ratio of 9:3:3:1 or the modified Mendelian dihybrid ratios (9:7, 15:1, 13:3, 9:3:4) as described to occur in epistasis. To confirm this assumption statistical significance of interactions between a pair of molecule were tested by simple Chi-square to observe the different segregation patterns. Each patients high and low values all the seventeen molecules (7 in plasma, 5 in skin and 5 in nerve) were coded as 0,1 and entered in a excel data sheet. Statistical analysis of number of individuals falling into the four groups were placed in two by two table for Chi-Square test using the statistical software MATLAB (version 6.5) for 7 possible combination of epistasis.

Results: 136 combinations were observed when two molecules were compared. Each pair of molecule combination were tested 7 times (942 tests) for different epistatic proportions; 9:3:3:1, 15:1, 13:3, 9:7:3:4, 12:3:1. High levels of PGL IgG, IgM, LAM Ig G1, G3 in plasma, TNF, iNOS,CD68, skin and TNF, TGF, iNOS, S100 in nerve were a dominant feature. Low level of antibody to Ceramide, S100 and TNF in plasma, TGF, S100 in skin was a dominant feature. The high and low segregations tested for a pair of molecules against the ratios were 9:3:3:1; 9:3:4; and 12:3:1. The results were as follows: Classical Mendelian ratio 9:3:3:1 was observed for LAM IgG3 in plasma & CD68 in nerve. Recessive epistasis 9:3:4 was observed for S100-ab in plasma & S100 in nerve, Dominant epistasis 12:3:1 was observed for LAM IgG1 in plasma & S100 in skin. 18 molecular combinations conferred 9:7 proportion; 51 showed 15:1; and 60 were 13:3 within and between tissues.

Conclusion: This study presented a novel method of analysis of biochemical evaluations. The algorithm used for epistatic interactions of seven plasma molecules and comparing them to skin and nerve tissue molecules was quite challenging experience, however this study establishes an evidence of Mendelian and epistatic ratios, underlying protein level bimolecular interactions in the pathogenesis of leprosy.

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Presentation Time: Thursday 19/09/2013 at 13:30 – 13:40
Abstract Topic Name: Genetics and Leprosy
Presentation Screen Number: 4
Presenter: Prof Liudmila Saroyants

IMMUNOGENETIC OF LEPROSY. INTERETHNIC ASPECT

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Introduction: While studying association of HLA and leprosy in interethnic aspect we identified HLA-specificities and haplotypes, associated with predisposition and pattern of disease clinical progression. The studies in "HLA and diseases" are not restricted by search for their genetic markers alone. To elucidate mechanisms underlying in HLA associated disease susceptibility is among its major and probably very promising aspects. We have studied associations between HLA-haplotypes and various immunity parameters.

Methods: Genotyping of HLA genes alleles of the II class (DRB1, DQA1, DQB1) and haplotypes by PCR-mSSP method was executed in 3 populations of leprosy patients: Russian, Kazakh and Karakalpak, living in endemic on leprosy regions (Astrakhan region and Karakalpakstan). 255 unrelated leprosy patients (163 MB and 92 PB) and 254 healthy controls have been examined. Immunologic examination of leprosy patients included 15 tests for evaluating both inborn and adaptive immunity. Statistical differences in allelic and haplotypic frequencies of patients and controls were tested using Arleguin 2.1 (URL. http//anthro unige ch/arleguin).

Results: The frequencies of HLA DRB1*17 and DRB1*01 are significantly high in Kazakh leprosy patients. Russian and Karakalpak leprosy patients have shown increased frequencies of HLA-DRB1*16, DQB1*0102 and DQB1*0502/4 alleles. The associations of haplotype DRB1*16-DQA1*0102-DQB1*0502/4 with leprosy *per se* were defined both in Russian and Karakalpak population groups. DRB1*11-DQA1*0501-DQB1*0301 has significantly decreased in Russian patients and DRB1*09-DQA1*0301-DQB1*0303 and DRB1*08-DQA1*401\2-DQB1*0401\2 haplotypes have significantly decreased in Karakalpak leprosy patients. DRB1*17-DQA1*0501-DQB1*0201, DRB1*01-DQA1*0101-DQB1*0501 are significantly high in Kazakh leprosy patients, whereas decreased frequencies of DRB1*13-DQA1*0103-DQB1*0602/8 have been found compared with the control group. Risk of PB leprosy form progress has been associated with haplotype DRB1*01-DQA1*0101-DQB1*0501 in Russian and Kazakh population groups. Haplotype DRB1*15-DQA1*0102-DQB1*0602/8 was associated with progress of more severe MB form of disease notwithstanding ethnic background of all the patient groups.
To identify the mechanisms of HLA genes realization, we have studied the associations between HLA-II genes and different immunologic features. The research has beenshown that HLA haplotypes of leprosy: DRB1*16-DQA1*0102-DQB1*0502/4 and DRB1*15-DQA1*0102-DQB1*0602\8 are associated with low reactivity level of cells, namely low level of phagocytosis, proliferative lymphocyte activity on PHA and cytotoxicity activity of NK cells.

Conclusion: We identified therefore common and individual HLA- specificities and haplotypes associated with predisposition to leprosy of different ethnic groups. Considering, that DRB1*15 and 16 are constituents of serologically identified HLA-DR2 specificity, earlier defined as a marker of leprosy susceptibility in different ethnic populations, it can be concluded, that this specificity is related to the universal markers of leprosy susceptibility and the highest risk of the disease is connected with the increase of haplotype frequency with these alleles. One of the mechanisms of realization of HLA-associated genetic predisposition to leprosy is association between markers' haplotypes and factors of innate immunity, which provide innate immune resistance.

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Presentation Time: Thursday 19/09/2013 at 13:40 – 13:50
Abstract Topic Name: Genetics and Leprosy
Presentation Screen Number: 4
Presenter: Ana Carla Pereira Latini

POLYMORPHISMS AT MMD GENE IN THE 17Q22 CHROMOSOME REGION ARE ASSOCIATED WITH LEPROSY SUSCEPTIBILITY IN BRAZILIAN POPULATION.

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Introduction: Leprosy, as other infectious diseases, is a complex disorder. Host genetic factors have been extensively implicated in leprosy susceptibility. A genome-wide ligation study in Brazilian population pointed 17q22 as a chromosome region containing a locus for leprosy susceptibility. The *MMD* (monocyte to macrophage differentiation-associated) gene is located next to a ligation peak and it is a candidate gene for leprosy susceptibility since it codes a proteinexpressed by differentiated macrophages. The aim of this work was to perform a population-base association study of the *MMD* gene in leprosy.

Methods: We investigated five tag single nucleotide polymorphisms (SNPs) markers encompassing all the gene variation in *MMD*: rs9910480/rs11079171/rs11547827/rs11650101/rs17819013. Seven-hundred-six individuals from Rondonópolis, Mato Grosso, central Brazil, 411 leprosy cases and 357 controls, were genotyped. Genomic DNA were obtained from leucocytes. These five loci were genotyped by using fluorescence-based TaqMan® technology (Applied Biosystems). Statistical analyses were made by logistic regression model adjusting for sex and ethnicity covariates using the software R for Windows, version 2.14.0.

Results: Two markers presented significant association with leprosy *per se*: rs9910480 AA genotype (OR=0,61; CI95:0,38-0,98; p-value=0,04) and rs11079171 AA genotype (OR=0,30; CI95:0,09-0,96; p-value=0,04), both indicating a resistance association in the genotype analysis. In haplotype analysis, combining the five markers, G/G/G/G/G (OR=1,66; CI95:1,18-2,32; p-value=0,003) and G/G/G/G/A (OR=1,62; IC95:1,06-2,47; p-value=0,02) haplotypes are associated with leprosy *per se*. All the markers were in Hardy Weinberg equilibrium.

Conclusion: These data point *MMD* gene as a possible responsible by the chromosome 17 involvement in leprosy risk, as previously related, in Brazilian population. Replication studies and functional evaluations are necessary to confirm these results and to better explain the association of the *MMD* gene with leprosy.

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Presentation Time: Thursday 19/09/2013 at 13:50 – 14:00
Abstract Topic Name: Genetics and Leprosy
Presentation Screen Number: 4
Presenter: Heloisa Salomão

A REPLICATION STUDY SUPPORTS NOD2 AND CCDC122 AS LEPROSY SUSCEPTIBILITY GENES

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Introduction: Leprosy is a chronic infectious disease caused by *Mycobacterium leprae* that affects 230.000 new individuals worldwide every year. A previous genomewide study conducted in a Chinese population sample revealed association between leprosy and five non-HLA genes: *CCDC122, C13orf31, NOD2,TNFSF15* and *RIPK2*. Here, we present the results of an independent, two step replication study including all five candidate genes.

Methods: First, we genotyped 36 tag SNPs capturing the entire information of all candidate genes in 179 individuals distributed in 51 trios composed by an affected child and both parents. All trios were recruited at the Prata Colony, an isolated, highly endemic former leprosy located at the outskirts of Brazilian Amazon. Positive signals of association were replicated in an independent case-control sample of 402 patients and 413 controls recruited at the city of Rondonópolis, Mato Grosso state, central Brazil. Fluorescence-based TaqMan technology was applied to produce genotypes of all individuals. Family-based association analysis was performed as implemented in the software FBAT, version 2.0.4. Linkage disequilibrium estimations were carried out using the Haploview software, version 4.2. The statistical software R for Windows, version 2.14.0, was used for case-control analysis.

Results: All markers were in Hardy Weinberg equilibrium. The family-based study revealed association between leprosy and susceptibility alleles G of rs8057341 (p=0.01) and T of rs4942254 (p=0.04), located at *NOD2* and *CCDC122*, respectively. Both signals were replicated in the case-control sample (AA genotype of rs8057341: p=0.02; OR=0.56, 95% CI: 0.34-0.94; CC genotype of rs4942254: p=0.03; OR=0.65,95% CI: 0.44-0.97).

Conclusion: The association between leprosy and *NOD2* marker rs8057341 is a perfect replication of the results observed in the original Chinese study. Our results support the hypothesis of a role for variants of *NOD2* and *CCDC122* in the complex molecular mechanism controlling leprosy susceptibility.

‡ HS and WLS authors contributed equally for the study. Funding: DECITMS/CNPq (Grant 576051/2008-0); FAPESP (2009/16873-8). This study was presented as poster in the Annual Meeting American Society of Human Genetics – 2012.

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Presentation Time: Thursday 19/09/2013 at 12:30 – 12:40
Abstract Topic Name: Leprosy Control
Presentation Screen Number: 5
Presenter: Boosbun Chua-Intra

DEVELOPMENT OF NETWORK OF LEPROSY HEALTH SERVICES FOR LOW LEPROSY ENDEMIC SITUATION IN THAILAND

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Introduction: Leprosy control in Thailand has achieved the goal of eliminating leprosy as a public health problem, defined by WHO, since 1994. Since then the number of newly detected cases has gradually declined to 405 cases (0.63 cases per 100,000 population) in 2010. However, the proportions of grade 2 disability among new cases have not changed obviously, ranging between 10% and 16% since 1994 until 2010. These high proportions of disability reflect delayed detection of new leprosy cases which one part due to reduced experience in clinical and laboratory diagnosis of health personnels. Since the manpower and budget allocated to leprosy control work have been reduced, it is difficult to maintain leprosy expertise of health personnels in every primary care unit (PCU), community, general and regional hospital. Thus, several models of network of leprosy health services were proposed for low leprosy endemic situation in Thailand. In these new models, only the community and regional hospitals which were located in or nearby the areas where new leprosy cases were detected continuously in the last five years were developed to be leprosy specialized hospitals. The suspected leprosy cases would be referred directly from PCUs to leprosy specialized hospitals in order to get definite diagnosis and proper treatment. The referral might be within or outside the district or province of that PCU. These models of network varied in role and function of the leprosy specialized hospitals and referral system.

Objectives: 1. To develop leprosy specialized hospitals. 2. To evaluate the effectiveness of the proposed models of network of leprosy health services.

Methods: 1.Readiness and suitability of the proposed leprosy specialized hospitals were evaluated in the following aspects: leprosy situation of the surrounding area, location, policy of the director, administration system, leprosy expertise, medial specialists and facilities. 2. Health officers at different levels and patients were interviewed regarding the proposed models of network of leprosy health services for low leprosy endemic situation. 3. The suitable community and regional hospitals were selected and developed to be leprosy specialized hospitals 4. The referral system from PCUs to leprosy specialized hospitals inside or outside their own areas was implemented. 5. Effectiveness of new models of network of leprosy services was evaluated regarding the quality of diagnosis, treatment, prevention of disability and rehabilitation of leprosy specialized hospitals as well as satisfaction of health officers at different levels and patients.

Results: Since 2010 to 2012, ten leprosy specialized hospitals were developed. New models of referral system were implemented for three network areas. There were various opinions from health officers and patients regarding the new models of network of leprosy health services. The reasons supporting and against the models were discussed. After two years of starting the project, quality of diagnosis, treatment, prevention of disability and rehabilitation as well as satisfaction of health officers and patients were evaluated. Overall, quality of leprosy health services was improved; however, there were some problems need to be resolved.

Conclusion: Development of leprosy specialized hospitals and new models of referral system resulted in early diagnosis and proper treatment of leprosy patients. The new models of network of leprosy health services are expected to sustain the quality of leprosy services under low endemic situation and limited resources.

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Presentation Time: Thursday 19/09/2013 at 12:40 – 12:50
Abstract Topic Name: Leprosy Control
Presentation Screen Number: 5
Presenter: Wanghua Li

EVALUATION ON THE ACHIEVEMENT OF LEPROSY CONTROL PROGRAM FOR 60 YEARS IN HUBEI PROVINCE,CHINA

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Introduction: To evaluate the effectiveness of Leprosy Control Program during 1949-2010 in Hubei Province, and to provide the basis for developing the 12th five-year (2011-2015) Leprosy Control Program.

Methods: The data of registered leprosy cases from 1949-2010 were analyzed using the assessment indicators, including incidence, detection rate and prevalence, and also using other index such as the age, disease period, type and disability.

Results: By the end of 2010, a total of 14376 leprosy cases were registered, among which 6471 were multibacillary cases, 7905 were paucibacillary cases and 1305 had grade-2 disability. 12394 cases were cured, 1982 cases were died, 138 were still active cases. The prevalence of leprosy in Hubei province was 0.023/10000. There were two counties which did not meet the leprosy elimination goal according to China elimination criteria.

Conclusion: Through the prevention and treatment for leprosy in 60 years, there are a total of 77 out of 79 counties which meet the leprosy elimination goal issued by Health Ministry (prevalence< 0.1/10000). Although the remarkable success achieved in leprosy control, there is still emergence of new leprosy out breaks. In the 12th five-year Leprosy Control Program, we follow the principle of "early detection, early treatment, early disability prevention" and take several control measures, including investigation for foci, clues and close contacts, cures reexamination, dermatology screening and so on. Moreover, it is important to increase the sentinel points for case detection, improve the training for medical staffs in related departments of comprehensive hospitals, and strengthen the health education for medical staffs in counties, countries and villages. And to extend multiple ways to detect patients and timely treatment is also important for cutting off the transmission of leprosy.

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Presentation Time: Thursday 19/09/2013 at 12:50 – 13:00
Abstract Topic Name: Leprosy Control
Presentation Screen Number: 5
Presenter: Natarajan Manimozhi

ANALYSIS OF MAIN NLEP INDICATORS IN THE STATE OF ASSAM, INDIA DURING LAST TWO DECADES AND THE ROLE OF INTERNATIONAL NGO

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Introduction: MDT was introduced in Assam two decades back in the year 1993-94. The aim of the paper is to analyze the leprosy trend in Assam by the common NLEP indicators during the last two decades and the remedial measures to be taken with the help of international NGO.

Methods: Retrospective epidemiological analysis of data from 1993-04 to 2011-12 based on the epidemiological data's available at the state.

Results: The state of Assam achieved the elimination goal by 2000 AD and PD ratio suddenly came down and maintained at below one till today due to timely release of cases after MDT. ANCDR is almost static since 1993-94 except sharp rise during MLEC due to backlog and recycling of cases. No impact of MDT on ANCDR. New cases with visible deformity stabilize at a very high level indicate late detection of cases. Child case among new cases shows an increasing trend indicating active transmission. MB proportion is gradually increasing which are potential source of infection and deformity.The most interesting feature of monthly new case detection trend during last decade in Assam is that more leprosy cases are detected during summer months than in winter months. This is also indicator of lack of community awareness about leprosy.
High endemic pockets of Assam -Dibrugah, Sibsagor, Tinsukia and Karbianglong contributed 42% of prevalent case in pre MDT period still contributing a very high percentage of new cases. A very high ANCDR of Guwahati capital of the State is due to migratory cases and not due to indigenous cases.

Conclusion: The reservoir of *M.Leprae* as measured by new cases is not controlled and complacency of leprosy elimination will advisedly affect the ongoing programme activities. International NGO may be involved to carry out a pilot study in the Block PHCs of Dibrugah, Sibsagor, Tinsukia and Karbianglong districts. Other indicators show a lack of community awareness in Assam and as such districts showing low ANCDR may be due to under reporting. Since the percentage of visible deformity among the new cases in Assam is very high during last two decades, there is a large number of Grade II deformed cases in the community level. AIFO has already taken up the project of Medical rehabilitation in the form of RCS at a identified hospital at Borgang. At their initiative 20 numbers of RCS has been performed during 2012. AIFO has already conducted many training programme in Assam and Reorientation training to be conducted at regular intervals.

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Presentation Time: Thursday 19/09/2013 at 13:00 – 13:10
Abstract Topic Name: Leprosy Control
Presentation Screen Number: 5
Presenter: Erik Post

WHAT HAPPENS AT FIELD LEVEL WITH LOOSE CLOFAZIMINE IN THE TREATMENT OF ENL?

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Introduction: Clofazimine is an important drug in the treatment of Erythema Nodosum Leprosum (ENL). It is freely supplied by WHO and the Novartis Foundation for Sustainable Development. However, shortages have been reported in the field, causing persons with severe ENL to remain untreated. Therefore, a study was undertaken to look at the global and national need for clofazimine, including guidelines, practice, and availability.

Methods: National guidelines and clinical practices were explored through literature, an online survey (43), expert interviews (25) and a field visit to Indonesia to obtain an overview of the difficulties to estimate needs, and practical issues in its distribution.

Results: WHO and ILEP guidelines for treating ENL with clofazimine are similar, with a small difference in treatment duration. In 20 national guidelines clofazimine is recommended for treating ENL, but they vary in prescribed doses and duration, ranging from 12 weeks in India and Brazil to 24 weeks in Indonesia and Nepal, or even longer in other countries.
Dose and duration of treatment vary amongst medical specialists between and within countries. Whereas national protocols are followed at field level, medical specialists often adjust it.
Anecdotal evidence suggests that various countries face clofazimine shortages. 26% of respondents reported never to have shortages, but another quarter said to cut clofazimine from the MDT blister packs. In India no shortages were reported; clofazimine is available in the market. In Brazil severe shortages were reported but use is made of thalidomide. In Indonesia shortages lead to longer steroid courses. Clofazimine came through the national programs in at least all leprosy endemic countries.
Shortages are due to insufficient national distribution systems and lack of adequate monitoring and reporting systems. Some countries, however, didn't obtain sufficient amounts of clofazimine through the official WHO-NLCP-route.
Accurate clofazimine supply is difficult in relation to the small number of patients at grassroots level who need it, and complicated by shortages and/or lack of money to distribute. At field level, however, doctors are faced with shortages while considering it the drug of choice.

Conclusion: After harmonisation between WHO and ILEP, wider dissemination of a protocol for treating severe ENL to end-users is recommended. Information to both medical staff and patients on the possible late occurrence of ENL would be a prerequisite for its surveillance.Doctors at field levels face shortages of loose clofazimine and patients lack an optimal treatment of severe and recurrent ENL. Ensuring the availability of loose clofazimine at the patient level is the most important argument in the equation of demand and supply.The involvement of main stakeholders is needed in organising the management system for the distribution of clofazimine, and finding small scale solutions based on field conditions.

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Presentation Time: Thursday 19/09/2013 at 13:10 – 13:20
Abstract Topic Name: Leprosy Control
Presentation Screen Number: 5
Presenter: Guo Cheng Zhang

LEPROSY CONTROL PROGRAM IN CHINA: A 60 YEARS EXPERIENCE

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Introduction: After 60 years innovative leprosy control activities in China, the Chinese Leprosy Control Program reached a successful achievement. The characteristics of leprosy epidemiology in the last 60 years showed the outcome of the program activities.

Methods: Epidemiological data were collected from National Leprosy Management Information System in China. All other activities related data were reviewed from various documentations.

Results: A acumulative nubmer of 487,000 leprosy newly detected cases were reported from 1949 to 2008 in China. The case detection rate decreased from the highest of 5.561/100,000 in 1958 to the lowest of 0.112/100,000 in 2008. Lerposy were used to be a endemic communicable diseases in Guangdong, Jiangsu, Shandong Provinices. Recently, Leprosy cases mainly distributed in mountain areas in Yunnan, Guizhou, Sichuan and Hunan provinces with warm and damp climate and underdeveloped economy. After 60 years of leprosy control, the case detection rate declined quickly in provinces in the east and the south part of China. Compareable, the epidemiogogical situation in the west and the southwest part of China declince slower. The proportion of child cases among newly detected patients fluctuated within 3·4% since 1968. In the recent 20 years, the proportion of new patient with skin smear positive gradually increased and the rate of disability grade two fluctuated above 20%. During the period of active cases finding activities were implemented, the newly detected cases were increased dramastically.

Conclusion: With continuous socio-economy development and active leprosy control, the prevalence of leprosy can gradually decline. The active cases finding activities increased the newly detected cases in the implemented years but decrease the trend the prevalence.

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Presentation Time: **Thursday 19/09/2013 at 13:20 – 13:30**
Abstract Topic Name: **Leprosy Control**
Presentation Screen Number: **5**
Presenter: Tadie Abeje

ASSESSMENT OF THE PERFORMANCE OF GENERAL HEALTH WORKERS IN LEPROSY CONTROL ACTIVITIES AT PUBLIC HEALTH FACILITIES, IN AMHARA AND OROMIYA REGIONS, ETHIOPIA

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Introduction: Leprosy is a chronic infectious disease of public health importance and one of the leading causes of permanent physical disability. Theprevalenceand annual incidence of new cases of leprosy is persistently high for the past 10 years in Ethiopia. More than 80% of the reported new cases were from Oromia andAmhara regional states.
The objective of the study is to assess the knowledge, skill and attitude towards leprosy of general health workers at public health facilities in Oromia and Amhara Regional States

Methods: This cross-sectional study was conducted from 29th September, 2010 to 30th February 2011 at different public health facilities in selected eight zones in Oromia and Amhara Regional States. Data was collected from 601 general health workers (GHW) witha self-administered structured questionnaire and also through observation of the health workers' performance. Baseline socio-demographic data, health workers' attitude towards leprosy and their knowledge & skill in the management of leprosy was assessed. Descriptive analysis was done and factors contributing to poor performance of health workers were analysed using SPSS.

Results: The majority of health workers knew the causative agent of leprosy, but 57% of them thought it could be transmitted through touch and/or mother-to-child and 80% couldn't correctly list the body part/s mainly affected by leprosy. Seventy per cent of the health workers were not able to list down the cardinal signs of leprosy, 62% couldn't mention the correct duration of treatment and 71% didn't know the patho-physiology of disability in leprosy. Only 17% of them were able to correctly list the signs and symptoms of leprosy reaction but the overwhelming majority, 97% didn't know how to manage reaction. The level of leprosy knowledge is shown to be associated with the qualification, previous in-service training and exposure to leprosy work. About 54% of the health workers are afraid of contracting the disease while treating a leprosy patient who has deformity and /ulcer, even if they know that the patient is on treatment. The majority of them prefer to use gloves when examining a leprosy suspect or a case and a significant but minority of them were totally unwilling at all to examine a case or a leprosy suspect. On examining a skin patch, 83% of the health workers were unable to correctly perform sensation testing on the patch and sensory testing on the palm and soles. Health workers that can correctly perform Voluntary muscle testing on the eyes, hands and feet were only 11%, 9% and 14%, respectively. Ninety percent of them were unable to correctly grade the disability status of the person affected by leprosy.

Conclusion: This study showed that the majority of health workers had poor knowledge in recognition of the early signs and symptoms of leprosy, reaction and its management. The attitude of health workers was also found to be unfavourable towards leprosy suspects and people affected by leprosy. The skill of general health workers was also found to unsatisfactory; the majority of them were unable to perform sensation testing and voluntary muscle testing. The study also showed that the performance of health workers is strongly associated with the level of qualification, in-service trainings and previous exposure to leprosy work. In order to improve the skill, knowledge and attitude of health workers, continuous training and health education on leprosy should be emphasized at pre-service and in-service levels.

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Presentation Time: **Thursday 19/09/2013 at 13:30 -13:40**
Abstract Topic Name: **Leprosy Control**
Presentation Screen Number: **5**
Presenter: Dr G Pitchaimani

PARTICIPATION OF AYUSH PRACTITIONERS IN THE NATIONAL LEPROSY ERADICATION PROGRAMME IN INDIA - A PILOT STUDY

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Introduction: In India large populations live in socioeconomically backward areas such as urban/peri-urban slums and fall victims to infectious diseases such as Leprosy and TB. The alternative and indigenous systems of medicine in India known as AYUSH (**A**yurvedic, **Y**oga, **U**nani, **S**iddha, **H**omeopathy), Registered Medical Practitioner (RMP) and others are often the first resort for health problems, among this population due to greater accessibility, affordability and familiarity. Such practioners' knowledge of leprosy and NLEP is an important factor in providing correct diagnosis, effective treatment and preventing deformity in leprosy affected people.
Though there are some published articles on application of non allopathic systems for skin disease, we have not found any published data on the extent of involvement of these health providers in leprosy.
The aim of the study was to find out the present knowledge of leprosy of AYUSH and RMP practitioners and their interest in being trained in the treatment of leprosy and how they may be involved to make NLEP more effective in urban/peri-urban areas.

Methods: The study was conducted in Kolkata during the months of July, August and September, 2012, to identify all such AYUSH,RMP and other similar practitioners in a peri-urban slum. After a preliminary round of interviews with such practitioners in different areas, a questionnaire was designed and all 29 practitioners chosen in the study area were interviewed. The topics covered were signs and symptoms, diagnosis and treatment, disability and ulcers and whether Leprosy cases were treated in their own clinics.

Results: Of the 29 Practitioners, 19 were Homeopathy, 6 Registered Medical, 2 Alternative Medicine and 2 Ayurvedic Practitioners.
20 of these knew how to diagnose leprosy, and 16 had seen leprosy patients at their clinic. 9 practitioners were treating leprosy according to their own system while 6 were referring them to government hospitals and only 1 was treating with MDT.
Only 3 (10%) of the Practitioners knew about leprosy reactions but they did not know the management. 7 (24%) Practitioners were seeing ulcer and disabled patients and treating at their clinics but were not sure if what they did was correct management and expressed that they did not know where these patients could be referred.
6 practitioners had leprosy training during their studies, which was more than 15 years earlier for most of them. Though the majority is enthusiastic about having orientation in leprosy, 58% still want to use their own system to manage leprosy.

Conclusion: If quality health care is to be made available to socio economically backward populations, all possible avenues need to be explored. The AYUSH and other Non-allopathic health providers may be more accessible in terms of distance, expense and rapport with the people and training them and encouraging their participation in the National Leprosy Eradication Programme could be an effective strategy for early detection and appropriate treatment.

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Presentation Time: **Thursday 19/09/2013 at 13:40 – 13:50**
Abstract Topic Name: **Leprosy Control**
Presentation Screen Number: **5**
Presenter: Natarajan Manimozhi

POSSIBILITIES OF INVOLVING PARTNERS TO RETAIN EXPERTISE AND SUSTAIN LEPROSY SERVICES IN KURNOOL DISTRICT ANDHRA PRADESH – INDIA

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Introduction: A feasibility study was carried out with regard to possibility of involving of Partners (District Leprosy Programme,Medical College hospital and NGOs) in providing sustainable leprosy services to persons affected by leprosy and to strengthen leprosy control programme at district level.

Methods: The study explored the possibilities of improving quality of leprosy services through · building Partnership; enhancing academic and research activities; improving accessibility (integrated) of health services to persons affected by leprosy and strengthening referral system. The study analysed the 'Technical Feasibility' like · Does the Medical College Hospital or District Leprosy Programme or NGOs possess the necessary technical expertise. If the technology is

available, does it have the capacity to handle the solution? If the technology is not available can it be acquired? The study also analysed possibilities areas of support and feasibility of involvement of partners to address the unmet needs. This study is based on both quantitative and qualitative data primarily, based on empirical data collected from discussions, interviews, observations and field visit to Health facilities, Medical College Hospital and NGOs. Secondary data collected from district leprosy reports.Data Analysis & Interpretation is based on the descriptive analysing technique.

Results: Strengthen Leprosy Referral Centre at Dermatology department of Medical College Hospital by establishing referral mechanism with district health system and NGOs. Build the capacity of undergraduate, Post graduate students and nursing staff of various departments in leprosy.Organize clinical reviews for various departments of Medical College like Neurosurgery, Neurology, Dermatology and Community Health and involve them in the research related to leprosy.
Strengthen the 'six government area hospitals' located in different localities in the district in providing leprosy services (especially ulcer management). NGO located in the district should be strengthened to carry out rehabilitation activities networking with District leprosy programme and Medical College Hospital. Train Women's forum of urban slums to suspecting leprosy to strength case detection activities.
International NGO working in the district can build the capacity of Medical College Hospital, NGO and government health facilities in providing leprosy services. It can facilitate in developing stable partnerships with Medical College Hospital, NGO and government health facilities for establishing referral system and also involvement of persons affected by leprosy in leprosy programme

Conclusion: The expertise and programme innovatives are dwelding down as the magnitude of leprosy is low. With the present available tools to control leprosy the problem is continuing to remain in different magnitudes. Partners involvement is visualised to be critical in enhancing and retaining leprosy expertise at programme, academic and at community levels
This study has not only assessed the feasibility of involvement of partners in providing leprosy services but also brought out the necessity and ownership of partnership to address needs of persons affected. This study generated interest in the partners to establish a referral mechanism.

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Presentation Time: **Thursday 19/09/2013 at 13:50 – 14:00**
Abstract Topic Name: **Leprosy Control**
Presentation Screen Number: **5**
Presenter: Charles Nwafor

LEPROSY CONTROL IN A LOW ENDEMIC SETTING –LEVERAGING MOBILE TELEPHONY FOR PROGRAMMING

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Introduction: For Nigeria the challenge for leprosy control, in low endemic settings, is becoming increasingly evident. Cases are small in number and dispersed unevenly over large areas. In 2011, the 14 GLRA-assisted states located in southern Nigeria detected one thousand (1,000) cases. With a combined population of over 53 million, this amounts to a case detection rate of 1.9 per 100,000 population.
One implication of this rate is that many field workers do not get to see a leprosy case for a long time. There is anecdotal evidence that some of the field workers misdiagnose leprosy as well as leprosy reactions due to declining frequency of interaction with leprosy suspects/cases. Cases are detected and managed by a limited and decreasing number of health workers. As the old crop of committed leprosy workers exit by retirement or death, there is little evidence that the new generation of health workers is able or willing to fill the gap.
The mobile phone, increasingly a ubiquitous feature of daily life in towns and cities in developing countries, can be deployed to contribute to more effective, efficient and patient-centred programming. Although our experience with this approach is quite limited, it seems to be promising.

Methods: The State TB and Leprosy Control Officer identifies three or four senior supervisors, deemed competent, to serve as members of a *leprosy validation team*. The mobile phone numbers of these senior supervisors and other appropriate details are made known to all the TB and Leprosy Control Programme staff.
A standardized operating procedure is adopted which requires the field staff to consult with at least 2 members of the validation team by phone before registering a person as a new case of leprosy. Those with camera-enabled phones may send appropriate pictures of the lesion/affected body part to the assisting validator, to aid decision making. The whole process is explained to the patient and his/her informed consent is obtained. The same process is used for the diagnosis/management of reactions as well as diagnosis of relapse. The state programme regularly provides funds for recharge cards for the phones of the field workers and the validation team.

Results: The rate of misdiagnosis of leprosy, reactions and relapse will be considerably reduced. Unnecessary exposure of patients to steroids would also be considerably reduced. Only very few cases would need consultation at a referral centre. Overall health seeking experience for the patient improves and the approach would prove cost-effective.

Conclusion: The constellation of low endemicity, depleting numbers of competent field staff and wide availability of mobile phones, makes systematic and smart deployment of mobile phones a programming imperative.

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Presentation Time: **Thursday 19/09/2013 at 12:30 – 12:40**
Abstract Topic Name: **Detection and Treatment of Reactions**
Presentation Screen Number: **6**
Presenter: Vivek Pai

STUDY OF RECURRENCES AFTER THALIDOMIDE IN TYPE II REACTIONS AS MAINTAINANCE THERAPY

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Introduction: Thalidomide belonging to the thiomide group of drugs is well known to be useful in management of type 2 lepra reactions. Clinical Observations on the efficacy of Thalidomide as a primary drug and its role in maintainance therapy has been reported earlier in 2005 (Pai et al 2005). We report our experience on another series of patients administered thalidomide to study recurrence of reaction.

Methods: During the period from 2007 to 2011 we recruited 56 patients from those referred to the Main Referral Centre of Bombay Leprosy Project with type II reactions and ENL for treatment with thalidomide. All patients were subjected to a detailed clinical examination, haemogram, chest radiograph. Informed consent and undertaking as per the protocol was taken. Thalidomide was administered as a daily dose of 300mg per day in divided doses and then tapered and maintained over a period of 18 months.

Results: Of the 56 patients recruited, 6 patients could not be included as they defaulted and hence 50 patients analyzed (44 males and 6 females). In 12 patients BI was < 3+ while in 38 patients BI was > 3+. On intake and during follow up clinical scoring using Reaction score was done to study severity of reactions. All patients were of moderate severity. In 25 patients ENL reaction was observed during treatment while in 25 patients reaction was observed after stopping multidrug therapy. In 22 patients thalidomide was administered as a primary line (first) of treatment while in 28 patients thalidomide was given as a secondary line (after Steroids/Clofazimine) of drug. In 25 patients ENL reaction improved well while in 25 (50%) patients recurrence was noted. No major adverse effects were observed.

Conclusion: It was thus observed that thalidomide as an immunosuppressive and anti inflammatory drug has an important role in controlling type II / ENL reactions in leprosy and also prevents nerve damage and its consequences and ENL pain and thereby improves greatly the quality of life of leprosy patients. However still recurrence of reactions continue to pose clinical challenge which is an area of concern from a management point of view.

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Presentation Time: **Thursday 19/09/2013 at 12:40 – 12:50**
Abstract Topic Name: **Detection and Treatment of Reactions**
Presentation Screen Number: **6**
Presenter: Sérgio Luiz Antunes

ISOLATED MEDIAN NEUROPATHY AS THE FIRST SYMPTOM OF LEPROSY

R. T. Vital [1], X. Illarramendi [1], S. Antunes [1], M. Nascimento [1], J. A. D. C. Nery [1], O. Nascimento [2], E. N. Sarno [1], M. R. Jardim [1,*]

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Introduction: Damage to the median nerve may occur at different segment locations. Isolated median neuropathy is frequently produced at the wrist due to entrapment. In addition to carpal tunnel syndrome, which is easily ruled out, other diseases may present as isolated motor and/or sensory impairment of the median nerve. Focal impairment can present as digital neuropathy, which is most commonly caused by local trauma or pressure, but may be produced by systemic illnesses, e.g. rheumatoid disease, Raynaud syndrome, dysproteinemia, and diabetes mellitus[1,2]. As a possible cause of isolated median neuropathy leprosy is rarely considered.
Median neuropathy in leprosy is more frequently associated with the impairment of other nerves in the form of multiplex mononeuropathy[3]. Leprosy neuropathy generally presents with sensory impairment with/without nerve tenderness and thickness[4]. It is produced due to the unique capacity of *Mycobacterium leprae* (*M. leprae*), to invade Schwann cells[5]. Increased intraneural pressure caused by edema and inflammation of the nerve, changes in intraneural vessels, and granulomatous reaction may also occur in variable degrees[4,6].
The present study describes six cases with isolated neuropathy of the median nerve on the premise that this was the first sign of leprosy. The study analyzes the presentation of a rare form leprosy and calls attention to a type of manifestation, which, if not diagnosed and treated in time, will lead to permanent deformity and disability.

Methods: Six cases of isolated median neuropathy as the first sign of leprosy were selected among the patients with an exclusively neurological complaint as the initial symptom. The patients, evaluated at a National Leprosy Reference Center in Rio de Janeiro, Brazil, followed routine and specialized procedures.

Results: Three of the patients had pure neural leprosy and three had skin lesions. Clinical median nerve function impairment was confirmed by neurophysiological testing and histopathology. Both mononeuritis and mononeuritis multiplex were observed.

Conclusion: This case series demonstrates an additional form of the presentation of leprosy, which, if not diagnosed and treated in time, may lead to permanent disabilities.

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Presentation Time: **Thursday 19/09/2013 at 12:50 – 13:00**
Abstract Topic Name: **Detection and Treatment of Reactions**
Presentation Screen Number: **6**
Presenter: Marco Frade

SEVERE NERVE DAMAGE IN MULTIBACILLAR LEPROSY TREATED WITH METHYLPREDNISOLONE PULSO THERAPY: A CASE REPORT

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Introduction: Brazil has one of the highest annual case detection rates of leprosy in the world (17.65/100,000 inhabitants), and it is characterized by high-burden pockets in the North, Central-West and Northeast of the country, suggesting heterogeneous distribution of leprosy cases in Brazil. The authors report about one patient who lived in North region of Brazil and developed an atypical manifestation of multibacillar leprosy with also severe neural compromising and incapacity by the general infection and leprosy reaction. This work searches to show the use of news sonographic nerve measures and eletroneuromiographic data to help in leprosy nerve impairment diagnosis and propose the use of the methylpredinisolone pulse therapy to leprosy neuritis.

Methods: Pacient 49 years-old, male, farm worker for 15 years in Rondonia (North region of Brazil), presenting paresthesia, burning sensation, associated with decreased muscle strength in hands and feet for 1,5 year. Denied contact with leprosy patients. On physical examination he was undernourished, with cutaneous infiltration and diffuse xeroderma; erythematous brownish papules in palmar and plantar regions; edema in fingers and feet like sausage; thickened auricular, ulnar and fibular nerves, bilaterally, symmetrically and painless on palpation; tactile, thermal and pain hypoesthesias in hands and feet.

Results: Skin smears were positive (> 4 +) in ears, elbows and knees. Skin biopsy revealed borderline-lepromatous leprosy and erythematous papular lesion was compatible with hansenoma. Ultrasound of peripheral nerves showed multiple hypertrophic neuropathy, with signs of neuritis in the ulnar and median nerves bilaterally. Difference between the greatest and lowest values (delta) of cross sectional areas were zero, zero, one and seven for ulnar pre-tunnel, ulnar tunnel, median and fibular common nerves, respectively. Electroneuromyography showed sensory-motor neuropathy, primary, demyelinating, and secondary severe axonal loss, with signs of activity. Started multibacillary multidrug therapy, and due to neuritis in activity and severe pain (burning) in hands and feet, was prescribed pulse therapy (methylprednisolone 1g/day for 3 days). Patient referred pain remission in hands and feet, progression in motor activities, including the activities that he previously could not perform as bathing standing up and improving the range of flexion of the fingers; although the paresthesia remained. Electroneuromyography immediately after the pulse therapy showed an improvement of amplitude of the action potential of the left median nerve.

Conclusion: This report showed an atypical manifestation of multibacillar leprosy with severe neural diffuse damage with no characteristic skin lesions except by the cutaneous infiltration and xeroderma.Additionally, the follow up suggests effectiveness of pulse therapy in patients with active neuritis, with significant clinical and electromyographic improvement.
The methylprednisolone pulse therapy can represent an useful alternative to prevent the neurologic sequelae and deformities in leprosy. Nevertheless, this kind of therapy by pulse seems to have less adverse effects than the daily corticosteroids oral use, but further studies are needed to elucidate the real long-term benefits.

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Presentation Time: **Thursday 19/09/2013 at 13:10 – 13:20**
Abstract Topic Name: **Detection and Treatment of Reactions**
Presentation Screen Number: **6**
Presenter: Dr Kiran Koduri

DEFLAZACORT FOR MANAGEMENT OF TYPE 1 REACTION WITH NERVE DAMAGE IN LEPROSY

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Introduction: Systemic corticosteroids remain the mainstay of therapy for Type 1 reaction with or without nerve damage. Mostly prednisolone has been used in the doses of 30 to 50 mg as a single morning dose and reducing in steps of 5 to 10 mg monthly or fortnightly over a period of six months. Its use has brought down the deformity rate in leprosy. Deflazacort - a calcium sparing and metabolically safe derivative of prednisone (oxazoline analog of prednisone). It has less risk of bone loss, osteoporosis due to bone sparing action, less diabetogenc effect, less HPA (Hypothalamic-pitutary-adrenal) axis suppression and minimal mineralocorticoid action. Deflazacort in dermatology is considered a safe option in treating Auto immune Bullous Dermatoses, Pemphigus, Bullous ErythemaMultiforme, Exfoliative Dermatitis, Systemic lupus Erythematosus. Deflazacort 5mg is equipotent to 6mg prednisolone. We have now used deflazacort to treat nerve damage in Type 1 reaction. One of the limiting factors of deflazacort usage is that it is relatively expensive compared to prednisolone. the total cost of treatment for a period of six months with prednisolone would be around six dollars whereas with deflazacort the cost would be as high as 50 dollars. However due to the benificial effects such as less growth retardation, less diabetogenic effect and less HPA axis suppression and minimal mineralocorticoid action. It can become a safer option in cases with co-morbid hypertension, diabetes and also in children.

Methods: Five clinically diagnosed leprosy patients with Type 1 reaction with VMT deficit where included in the study. Voluntary muscle testing V.M.T was performed in all cases. For each nerve, one representative muscle was considered.Abbductor minimi for ulnar,abbductor pollicis brevis for median,dorsiflexors for lateral popleatial and lid gap for facial.Clinical photographs taken and in one case video recording. All five cases were put on Deflazacort 36mg to 60mg starting dose depending on body weight, severity of reaction, and the number of nerves involved. The dose was reduced in a step wise over a period of six months. Physiotherapy and Health education with regard to care of hands, feet and eye was given.

Results: The results were based on end result of V.M.T. findings and lid gap measurement.Out of total 11 nerves seven had full recovery with V.M.T of 5/5, two had V.M.T of 3/5 and in one nerve there was no improvement. No serious side effects were encountered.

Conclusion: Deflazacort has been found to be a safer option for treatment of nerve damage in Leprosy Type 1 reaction cases. However due to relatively higher cost involved with Deflazacort, it may be considered in a select group of patients with co-morbid hypertension /diabetes. Also it can be a better option in child cases.

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Presentation Time: **Thursday 19/09/2013 at 13:20 – 13:30**
Abstract Topic Name: **Detection and Treatment of Reactions**
Presentation Screen Number: **6**
Presenter: Carolina Talhari

ULCERATED LEPROSY TYPE 1 REACTION PRESENTING WITH LEUKOCYTOCLASTIC VASCULITIS

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Introduction: Ulcers are an uncommon presentation of borderline tuberculoid leprosy (BTL) occurring most probably as a result of type 1 reaction. We report a patient who developed multiple ulcerated and necrotic lesions due to borderline tuberculoid leprosy with type 1 reaction and leukocytoclastic vasculitis.

Methods: A 23 year-old Brazilian male presented with disseminated ulcerated lesions on the trunk and limbs three months after he had initiated multidrug therapy for multibacillary leprosy. The patient came from Óbidos, state of Pará where he had initiated the anti-leprosy treatment. Physical examination showed erythematous papules and well-demarcated reddish and round plaques with central ulceration and superficial crusts on the face and trunk; large ulcerated lesions with necrotic areas were also seen on the back and right arm. Direct smear for the diagnosis of cutaneous leishmania, bacilloscopy, PPD test, VDRL and HIV serology were negative. Chest X-ray showed no abnormalities. Histological examination revealed inflammatory granulomatous infiltrate around neurovascular bundles. There was also a prominent dermal edema between the inflammatory cells and fibrinoid necrosis of the vessel walls with perivascular neutrophilic infiltrate and leukocytoclasia. Wade staining showed no acid-fast bacilli. Based on these clinical

and histological findings a diagnosis of BTL with type 1 reaction and leukocytoclastic vasculitis was made.

Results: Once multidrug therapy for multibacillary leprosy was already initiated, the patient was kept in this regimen and oral prednisone initiated with good clinical response within two months.

Conclusion: Clinically, type 1 leprosy reaction may be suspected when there is an increased inflammation of pre-existing cutaneous lesions. On histological examination,lesions show features of a delayed-type hypersensitivity reaction. There are different theories as to explain the development of ulceration in type 1 leprosy reaction cases. It is known that Th1 response leads to the release of pro-inflammatory cytokines including tumor necrosis factor (TNFα), which is thought to enhance killing of intra-macrophage mycobacteria through nitric oxide and oxygen reactive species production. This continuous macrophage stimulation would lead to local tissue damage and consequent ulceration. Moreover, ulceration may possibly occur in genetically predisposed individuals with homozygosity for the $TNFB_2$ alellus. Such individuals show very high plasmatic concentrations of TNFα when compared to heterozigotous and homozigotous subjects for the alellus $TNFB_1$.
A variable degree of vascular involvement including leukocytoclastic vasculitis (LV) is usually observed in the majority of patients with type 2 leprosy reaction. LV is also seen in Lucio's phenomenon in which diffuse lepromatous leprosy features such as the presence of foamy macrophages of Virchow cells are associated to a necrotizing panvasculitis. Muscular arteries, arterioles, capillaries, venules, and cutaneous veins are involved; the more superficial ones, usually venules, develop LV in Lucio's phenomenon. Rarely, type 1 reaction may also exhibit histological features of LV. According to Opromolla and cols, most of patients presenting type 1 leprosy reaction and ulcerated lesions usually show uncharacteristic vascular proliferative reactivity with fibrinoid necrosis of vessel walls and even granulomatous vasculitis in rare cases. Our patient showed histological features typical of BTL what excluded the possibility of type 2 leprosy reaction and Lucio's phenomenon.

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Presentation Time: Thursday 19/09/2013 at 13:30 – 13:40
Abstract Topic Name: Detection and Treatment of Reactions
Presentation Screen Number: 6
Presenter: Omer Haroun

NEUROPATHIC PAIN IN LEPROSY PATIENTS IN MUMBAI: A CASE CONTROL STUDY

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Introduction: Up to 60% of leprosy patients report significant pain at some stage of their disease (Haroun et al 2012). A round 20% of this pain can be categorised as neuropathic pain, which is defined as pain caused by a lesion or disease of the somatosensory system (Hietaharju et al 2000, Lasry-Levy et al 2011, and Jensen TS et al Pain 2011). For individuals, life with neuropathic pain can be disabling even after their infection has been successfully treated with WHO-multidrug therapy. We describe the somatosensory and symptom profiles of patients with leprosy using Quantitative Sensory Testing (QST) and Intra-Epidermal Nerve Fibre density (IENFD).

Methods: A case control study was conducted in a leprosy cohort recruited from the Bombay Leprosy Project, with and without neuropathic pain, and healthy volunteers.
All leprosy patients were firstly screened for neuropathy using the standard conventional clinical approach of bedside evaluation of motor function and mechanosensation. Those who fulfilled the criteria for neuropathy were screened for neuropathic pain using DN4 and Paindetect questionnaires. All participants were interviewed to assess the quality of life using General Health Qusetionaire·12 (GHQ·12) and Brief Pain Inventory (BPI). English versions of all questionnaires were translated into Hindi and Marathi using translation back translation methods. QST was conduct according to the full DFNS QST protocol by a qualified investigator trained and validated by the DFNS (Rolke et al 2006). A 3 mm punch biopsy was collected to assess the IENFD.

Results: From the QST data obtained to date the predominant findings are sensory loss to thermal and mechanical detection thresholds and paradoxical heat sensations. There was no evidence of sensory gain. More data will be added by the conference in September 2013.

Conclusion: This is the first study differentiating sensory profiles in leprosy patients for the investigation of neuropathic pain. Profiles collected indicate that leprosy chronic pain is neuropathic associated with small fibre neuropathy; impaired thermal (CDT and WDT) and reduced intra-epidermal nerve fibre density.

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Presentation Time: Thursday 19/09/2013 at 13:40 – 13:50
Abstract Topic Name: Detection and Treatment of Reactions
Presentation Screen Number: 6
Presenter: Marco Frade

HIGH DOSES OF INTRAVENOUS METHYLPREDNISOLONE REESTABLISHES THE NERVE FUNCTION IN LEPROSY NEURITIS: A PILOT STUDY

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Introduction: Neuritis is a common condition affecting the nerves of leprosy patients. Delay diagnosis could lead to irreversible disabilities. Report two cases of patients with neuritis due to leprosy treated with high doses of intravenous metilprednisolone.

Methods: Cases Report: Both patients were submitted to a dermatological and neurological assessment. First patient was a 61 years-old woman with a 3 years complaint of an asymmetric pain, tinkling and hypoesthesia in her left hand. After a few months the symptoms affected the right side and she also presents weakness in her left hand. On physical examination she presented weakness from ulnar, median e radial innervated muscles in both sides worst in left one. Second patient had a 2 years history of elbows pain, tinkling, hypoesthesia and weakness in left hand. On physical exam weeknes from on both ulnar and median nerves worst on right side. Ultrasound of peripheral nerves and electroneuromyografic were performed before, immediately after the first dose of metilprednisolone and the monthly.

Results: Both patients referred clinical improvement about their pain and parestesias. Ultrasound showed decrease of nerves vascularization suggesting reduction of inflammatory processes. The cross-sectional areas of peripheral nerves also presented a sifnificant decrease in both patients followed the concomitant recovering of the values in the conduction studies.

Conclusion: High doses of intravenous metilprednisolone seems to be a safe and effective treatment to prevent neuropathy and its consequently disabilities due to nerve damage.

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Presentation Time: Thursday 19/09/2013 at 13:50 – 14:00
Abstract Topic Name: Detection and Treatment of Reactions
Presentation Screen Number: 6
Presenter: Manso Vânia

THE RELEVANCE OF DENTAL CARE IN LEPROSY CONTROL: EXPERIENCE FROM A REFERENCE SERVICE IN LEPROSY, SÃO PAULO, BRAZIL.

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Introduction: Over the years we found that patients with leprosy reactional episodes had severe, recurrent and / or subintrantes in the presence of periodontal problems and they already could be prevented with diagnosis and concomitant treatment had better control with less reactive nerve damage.In 2011, ACF et al · Hansen Int 2011; 36 (1): 15, reported that the incidence of oral infections stimulates the expression of intracellular cytokines and possibly inflammatory reaction, acting as a stimulus to the reactional episode. Because of this and other reports in the literature associate the routine dental center in dental specialties (CEO), the same service to all patients with leprosy and later extended to the entire region covered by the Health Coordinator Southeast, Sao Paulo, capital, Brazil, under the approval of the Municipal Health Department, São Paulo.

Methods: Review of the literature and the records of the Outpatient Specialty Dr Alexandre Kalil Yasbeck, the technical supervision of the Municipal Health Health Vila Mariana / Jabaguara, São Paulo, Brazil.

Results: From August 2011 to December 2012 were attended our clinic 35 patients with leprosy with or without high cure. Of these, 26 were treated at the dental (CEO): 24, multibacillary and paucibacillary 1, 14 men and 12 women, four aged between 16 and 30 years old, 19 between 31 and 60 years and 3 greater than 60 years. 4 and unresponsive leprosy MDT (RL), 16 MDT and RL, 3 RL and high heals, 3 high and without RL. In the CEO contacted 10% were edentulous, 100% serious periodontal problems; 100% of superficial and deep cavities, 40% chronic infectious foci, 30% required endodontic treatment, tooth extractions 30%, 20% need partial or full dentures. MDT medications and reactions, prednisone and thalidomide, have not changed. All patients received appropriate treatment and undergo periodic control every 6 months. The CEO associated with amoxicillin before more invasive procedures. There was a marked decrease in the level of bacterial plaque and infectious foci mouth. Improved self-esteem, adherence to treatment MDT and the reactions of leprosy. Reactional episodes were mild to moderate, with this better quality of life and stabilization of disabilities already at diagnosis, in contrast to patients who missed dental treatment.

Conclusion: A comprehensive oral health care to patients with leprosy reduces disability and improves quality of life, and provide increased self-esteem and possible diagnostic suspicions held by the dentists contribute to better disease control.

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Presentation Time: Thursday 19/09/2013 at 12:30 – 12:40
Abstract Topic Name: CBR
Presentation Screen Number: 7
Presenter: Jaganathan Kandasamy

LIVELIHOOD INTERVENTIONS TOWARDS INCLUSIVE DEVELOPMENT FOR HEALING, INCLUSION AND DIGNITY OF INDIVIDUALS AFFECTED BY LEPROSY AND DIFFERENTLY ABLED PEOPLE

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Introduction: The Leprosy Mission Trust India (TLMTI) has an impressive 138 years of history as one of the largest and well reputed Christian organizations in India working for and with those affected by Leprosy. The global vision of TLMTI is a world without leprosy and its goal to eradicate the causes and consequences of leprosy. Centre for Rehabilitation towards Artisans Fair Trade project (CRAFT) recognizes that holistic care goes far beyond medical care and aims to "Enhance the skills of artisans with disabilities to achieve sustainable livelihood and greater social inclusion through fair trade". We present here a case study from a participant in this project.

Methods: This project provides training for differently abled artisans covering technical education, new techniques in product development, design ideas, adaptive approaches, understanding the market, maintaining equality and ensuring fair trade. It also supports them to tap resources from various institutions, governmental and non- governmental. Artisansare empowered to work together as common interest groups / producers in order to strengthen their hold in the market and achieve fair price for their goods.

Results: The story as narrated by Ms. Jyothi Lakshmi...
I, Jyothi Lakshmi (37) lived in Nathamedu, Cuddalore district. I studied only up to high school and could not continue my education due to my family situation. I was diagnosed to have leprosy at the age of 15 years and had not taken any proper medication to prevent further damage, due toignorance. I gradually developed foot drop and could not walk properly. It was an opportunity for my brothers to show their anger on my disability and stigma attached to the disease. They robbed me of my belongings along with rights of being a member of the family and chased my mother and me out of the village. I had to look for some refuge for me and my mother and took shelter in an abandoned bus shed. The disease and situation made us beggars.
We were still there in 2010, when some staff from CRAFT Project met and told me that there are opportunities for people like me to get trained on some skills that would help me to earn income. Subsequently, I was introduced to the District Differently abled Welfare office, District Leprosy Office, Rural Education and Development Opportunities (a local NGO) and Help age India for various benefits and entitlements. I received disability Identity card that helped me to receive a monthly disability pension of Rs.1000/-. I was taught self care to take care of my feet to prevent further disability.
I became one of the active members of Cuddalore district federation for person affected with disability to advocate for my rights, and participating in skill enhancement workshops. I have learnt to work with groups that are producing marketable handmade products, growing collectively and interdependently.
The products have high market value and good returns. I make floor lamps made up of natural fibres available locally and become a member of Natural Fibre producer group. We are also aiming to start a not for profit company as a commercial model that would take care of our business affairs and would provide services to victims like me in a long run. We named our company as "Society for Artisans Rehabilitation (SOAR)" to promote a brand, eventually to have a permanent space in the competitive market.

Conclusion: This story shows the possibilities of rehabilitation and development of disadvantaged and disabled people, by this type of initiative.

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Presentation Time: Thursday 19/09/2013 at 12:40 – 12:50
Abstract Topic Name: CBR
Presentation Screen Number: 7
Presenter: Ashenafi Demessie

RELEVANCE OF SAVING AND CREDIT CO-OPERATIVES TO THE EMPOWERMENT OF PERSONS WITH DISABILITIES:A DESCRIPTIVE STUDY IN ADDIS ABABA SLUMS

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Introduction: Persons with disabilities (PWDs) including the leprosy affected are among the poorest of the poor in Ethiopia. They are largely excluded from the mainstream social and economic development. Micro credit is an intervention increasingly recommended to alleviate poverty of PWDs and enhance their socio-economic empowerment. Although microcredit has been considered as a key instrument in the fight against poverty, PWDs are largely barred from the mainstream micro finance schemes in poor countries including Ethiopia. While it is estimated PWDs constitute 10 percent of the population, microfinance organizations reported only 0· 0.5 percent of their clients had disabilities.
Following this gap and recognizing the importance of micro credit in poverty alleviation and empowerment of PWDs, several Civic Society Organizations and Disabled People Organizations have been promoting alternative micro credit services for/of PWDs. Promotion of saving and credit cooperatives (SACCOs) is one such alternative. This study was conducted to assess whether the SACCO model has reduced the poverty of PWDs and led to their socio-economic empowerment. Said in another, the objective of this study was to assess the psychological, social, economic and political empowerment gains obtained by the PWDs through forming and participation in their own SACCOs.

Methods: The study was conducted in four SACCOs of PWDs with a population of 463 members in Addis Ababa slums from March to May 2012. Interview schedule was used as a tool for data collection and administered to 58 sample respondents drawn proportionally from each SACCO. Respondents were asked open and close ended questions to find out their psychological, social, economic and political empowerment benefits. The collected data was tabulated, analyzed and presented in the form of tables. Simple statistical techniques such as percentages and averages were used for data analysis at SACCOs and members levels. To address the research question and the relationships between variables, frequency tables, comparative tables and graphs were prepared to draw meaningful inferences.

Results: Analysis of the perception of SACCO members has revealed participating PWDs have obtained benefits in psychological, social, economic and political spheres of their lives. SACCO interventions have brought about 92% improvements in members psychological empowerment. In the two areas namely socio-cultural and political empowerment, they have scored 87% overall improvement. Lastly, members economic gain has reached 67%. The evidences have also suggested the extent of empowerment in the four aspects have not been uniform. While the psychological empowerment benefits were very high economic gains were the lowest.

Conclusion: This study has unveiled micro credit interventions particularly the SACCOs are relevant in poverty alleviation and empowerment of PWDs by enabling them to register marked improvements in psychological, social, economic and political spheres of their life in the community. Henceforth, the cooperative approach and services are helpful in addressing the disadvantaged and marginalized positions of PWDs in the society.The cooperative approach may also be replicated to other problem areas such as lack of shelter and vulnerabilities to prices increases of basic consumption goods (grain for instance) by promoting PWDs housing and consumer cooperatives.

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Presentation Time: Thursday 19/09/2013 at 12:50 – 13:00
Abstract Topic Name: CBR
Presentation Screen Number: 7
Presenter: Shumei Feng

INVESTIGATION AND ANALYSIS ON THE LIVING CONDITIONS OF LEPROSY REHABILITATION OUTSIDE THE HOSPITAL IN GANSU PROVINCE

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Introduction: Gansu Province is situated in the northwest of China. Gansu covers an area of 425800 square kilometers and has a population of 26171600.Gansu has 14 cities (prefectures) and 86 countries (districts).There are altogether 54 nationalities in Gansu. In China, Gansu Province is the regions of low leprosy endemic. The incidence, prevalence and popular range of Leprosy decreased significantly by aggressive prevention in 60 years, but the number of leprosy survivors is unknown. In order to grasp the number, living conditions and demand of survivors, promote the process of leprosy control in Gansu Province, we conducted a special survey in 2009-2011 in Gansu Province.

Methods: This survey used a self-designed questionnaire. Acquisition questionnaires by registering and recording the information of survival leprosy rehabilitation from 14 cities (prefectures) and 86 counties (districts) since 1949.The main content of the questionnaire includes basic information, basic living conditions, etc. 2 or 3 leprosy professional technicians from different counties were selected to participate training in the province in order to achieve a unified survey methods, techniques standards and inspection methods. Do a household investigation for all of registered cases. Establish an EXCEL database including the standard deviation, mean and the constituent ratio.

Results: A total of 4873 cases of leprosy patients were registered since 1949, 1020 cases of leprosy patients survived by verifying. 1020 questionnaires were distributed and 991 returned, the recovery rate was 97.15%, excluding which invalid questionnaires, 968 were Retention. The respondents had 671 males and 297 females, the average age was 62-year-old including illiterates (717 cases, 74.07%), farmers (940 cases, 97.10%), people can not take care of themselves or poor self-care accounted for about 30%. More than 89% of those surveyed lived below the poverty line. 342 cases reported their economic income, Annual per capita income of 153 cases was less than 1,000 Yuan, accounting for 44.74%; 54 cases reached 1000-2000yuan, accounted for

15.79%; 77 cases reached 2000-5000 Yuan accounted for 22.51%; 58 cases achieved more than 5,000 Yuan, accounted for 16.96%. 11.78% of those surveyed enjoy the subsistence allowances between 150 ± 78 Yuan, 88.22% of those surveyed did not enjoy the subsistence allowances. 66.96% of those surveyed lived on their own labor, and 25.72% rely on child support, 7.33% rely on the dole. In 440 cases, 119 cases had 1 people in their family, accounting for 27.05%, which was the Widows and Orphans; 81 cases had 2 people, accounting for 18.41%; 240 cases of family size is three or more persons, accounting for 54.55%. In 840 families, 50 cases had no family labor, accounting for 5.95%; 227 cases had only one labor, accounting for 27.02%; 288 cases had 2 labor, accounting for 34.29%; 3-5 labor in 223cases, accounting for 26.55%; 52 cases families had five or more labor, accounting for 6.19%; 87.81% of respondents participated in a new type of rural cooperative medical care, and 12.19% did not participate.

Conclusion: The living condition of leprosy rehabilitation is poor in Gansu Province. These rehabilitations can improve the quality of life through participating basic insurance and new rural cooperation medical Information system, living in sanatorium, improving the rehabilitation of medical and self-care, prevention and rehabilitation disability, increasing social concern and relief and reducing discrimination.

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Presentation Time: Thursday 19/09/2013 at 13:00 – 13:10
Abstract Topic Name: CBR
Presentation Screen Number: 7
Presenter: Shovakhar Kandel

UNDERSTANDING THE IMPACT OF MIXED SELF-HELP GROUPS AND ECONOMIC EMPOWERMENT ON THE SELF-RESPECT OF LEPROSY AFFECTED PEOPLE IN NEPAL

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Introduction: Leprosy is chronic and infectious disease due to lepromatous mycobacterium. The community people have the negative thought about the leprosy. They think leprosy is the result of committed sin in their earlier life. In religious books, school curriculums, leprosy is regarded as a highly contagious disease and which is contributing to make the situation more complicated. More over their poverty situation compel them to live in more miserable condition. Ignorance and lack of the knowledge of prevention people affected by Leprosy used to be deformed themselves which used to interrupt on their better situation. In Nepal, leprosy affected people have been discriminated, restricted and limited in social activities. The stigma associated with leprosy is deeply rooted in the society and this same perception has been passed unto generations after generations. This study aims to assess the effect of Community Based Rehabilitation Program funded by Leprosy Mission Nepal on the dignity and socio-economic situation of the leprosy affected people in Ramechhap and Rautahat districts of Nepal.

Methods: Two hundred respondents were interviewed to assess how the mixed Self-Help Groups (group of disabled, marginalized and leprosy affected people) help to reduce the social stigma and to integrate leprosy in the community. It also explores how they have been empowered economically. Focus group discussion of community members and other stake holders will also be conducted in both these districts, which will help us to understand the changed perceptions of other community members and to identify their acceptance level in most of the socio economic cultural activities of the society; the integration of the leprosy affected people with general disability and marginalized groups and integrating these three groups into the mainstream of the society.

Results: The findings show that communities are gradually accepting that leprosy is not the curse of their previous birth but results of bacterial infection and negative connotation of the society. Advent of micro-finance facilities for the small scale entrepreneurship and skill development help improve their economic situation.

Conclusion: The study concludes that awareness and different economic interventions can improve the self-respect and economic situation of the leprosy affected people. Further, they are gaining gradual improvement on their situation and are being rehabilitated in their community with self-respect.

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Presentation Time: Thursday 19/09/2013 at 13:10 – 13:20
Abstract Topic Name: CBR
Presentation Screen Number: 7
Presenter: Jose Manikkathan

LEPROSY REHABILITATION - CBR APPROCH

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Introduction: In India the estimation indicates that 1,500,000 of population is with disabilities because of leprosy who live in leprosarium or colonies or in some far reaching villages. It does not matter where they live; all of them face similar kind of issues like inequality, discrimination, exclusion, exploitation, injustice and denial of rights. Their struggle is for only one issue of inclusion and equality. It is rightly noted that persons with disabilities due to leprosy are unheard and unaccounted. For example, even today there are about 700 leprosy colonies in India and more than 1,000,000 persons affected by leprosy live in isolation and they are ignored in the national developmental process. It is now more than three decades that CBR approach for the rehabilitation of people with disabilities has been promoted by WHO and other UN agencies. Recently in 2010 (October) WHO and UN agencies has released a comprehensive, inclusive, universal standard guideline for implementing CBR in developing Countries. This approach is also seen as part of community development for the inclusion of all persons with disabilities, for their empowerment and to promote human rights. There are many CBR programmes spread across the country and expected to cover all groups of persons with disabilities. However, in practice most programmes have excluded certain categories of disabled persons and persons with disabilities due to leprosy are often excluded. After the integration of NLEP in to the general health system many NGOs also stopped leprosy rehabilitation activities. On the other hand, the NLEP programmes especially those managed by the government have concentrated only on disease control activities. Further, socio economic lives of the leprosy affected people have not addressed in the mainstreamed developmental process.

Methods: Literature review, observational visits to leprosy colonies/leprosarium, discussions with the project managers, ILEP meetings, interactions with experts, review of NLEP reports and finally review of AIFO supported projects reports are the core methodologies applied to prepare this paper.

Results: The multi sectoral approach adopted by AIFO in tackling the problem of leprosy has been quite successful in many districts of India in combating the endemic of leprosy. At the same time, the disabled persons caused by leprosy are included in the mainstream developmental process. The outcomes of some of these projects have been analysed during evaluation exercises using participatory methods. The impact of the CBR programmes is also analysed through some of the scientific studies conducted by AIFO

Conclusion: The experiences clearly reveal that, the exclusion of leprosy affected people is a burning issue which draws serious attention of the civil society and state. The root cause of this situation is having lack of right perspective, approach, model, response, broader understanding of disability and inclusive development. This process requires a comprehensive, empowering, social inclusion, strategy, right perspective and holistic approach to the issue of inclusive development in the society. Eventually persons affected by leprosy weather with or without disability enjoy equality, rights, dignity, respect and inclusion in the society as mentioned in Article 3 "general principles" of UNCRPD 2006.

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Presentation Time: Thursday 19/09/2013 at 13:20 – 13:30
Abstract Topic Name: CBR
Presentation Screen Number: 7
Presenter: Niyom Kraipui

MODEL OF COMMUNITY BASED REHABILITATION FOR PEOPLE AFFECTED BY LEPROSY AFTER INTEGRATION OF LEPROSY COLONY TO GENERAL COMMUNITY : CASE STUDY OF PRASAT LEPROSY COLONY, THAILAND

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Introduction: Disability related to leprosy may result in socio-economic problems that finally leads to indignity living in general community of those who affected. This study was conducted to develope the model of rehabilitation for people with leprosy related disability in order to increase their human dignity after integrating leprosy colony into general community.

Methods: This participatory action research was conducted by:
1. Reviewing the geography and history of Prasat leprosy colony, Prasat district, Surin province, Thailand.
2. Developing the model of rehabilitation of persons affected by leprosy that was respectively conducted by community analyzing, volunteers recruitment, formulating plan of action, funding raising and budget request, and monitoring and evaluation.

Results: Prasat leprosy colony was established in 1953 on 260 *acre* of *land* which was reduced to 140 *acre* as a result of land intruding. Integrating leprosy colony was started in the year 2004 and completed in the year 2011 by signing the Memorandum of Understanding (MOU) between different stakeholders. After the MOU signing, rehabilitation process was done as follows:
1. Disseminating correct leprosy knowledge under the participation of surrounding community based on local culture
2. Management of micro credit fund, establishing occupational group, seeking development fund form local administration organization to improve water source for non-chemical vegetable farm.
3. Establishing local volunteer group to help improve the quality of life of people with leprosy related disability by establishing data base, formulating plan of action, need assessment

through home visit, provide assistance according to needs based on networking cooperation facilitating by sub-district health promotion hospital.
4. Opening bank account for persons affected by leprosy who used to get cash allowance from the officer of leprosy colony.
5. Transferring the colony properties to sub-district administrative organization who will later manage the land to persons affected by leprosy.

Conclusion: The officer of Regional Office of Disease Prevention and Control 5 Nakhon Rachasima who was acted as the chief of leprosy colony had moved from the colony to work at the head office in order to allow local organizations to manage and develop ex-leprosy colony in the same manner as general community. As a result there were micro credit fund, local volunteers group, water resource management, agriculture promotion under the participation of persons affected by leprosy. It was expected that these activities will finally lead to the reduction of stigma related to leprosy in the long run.

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Presentation Time: Thursday 19/09/2013 at 13:30 – 13:40
Abstract Topic Name: CBR
Presentation Screen Number: 7
Presenter: Niorn Ariyothai

INCLUSIVE SELF HELP GROUP: INCREASING HUMAN DIGNITY OF PEOPLE WITH LEPROSY AND OTHER CONDITION RELATED DISABILITIES

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Introduction: As a result of disability and negative attitude of community, people affected by leprosy had to suffer physical and socio-economic problems leading to community's stigmatization and rejection on capability of people affected by leprosy. Moreover, most of people affected by leprosy dared not to open themselves as having leprosy, did not participate in community activity, and self-isolated. Other people with other condition related disability also suffered similar problems. This study was conducted to rehabilitate people affected by leprosy and people with other condition related disability in order to enable them to live in community with dignity.

Methods: This Participatory Action Research (PAR) was conducted by involving community in all steps which are problem analysis, plan formulating, active implementation, problem solving, monitoring and evaluation. The study was conducted between January 2012 and January 2013 at Bann Than district, Chaiyaphum province, Thailand. Qualitative data collection was done through in-depth interview, participatory observation, focus group discussion and document reviews.

Results: Self Help Group (SHG) was formally established at Baan Than. It was the first SHG that included people affected by leprosy and people with other health condition related disability with the objective to provide care and support each other. Consultants of SHG consisted of family members of SHG members, health volunteers, health officer, community leaders and local administrative organization. The consultants served as consultant and support the SHG activities focusing on capacity building of SHG to enable them to run the group, reduce their dependent on government sector and finally stand by their own feet. At the time of formally establishment, there was a fund raising among the group members and consultants obtained fund was uses for group meeting, plan formulating and run activity which were occupation group, group empowerment, Information Education and Communication (IEC) activity, self care training, home visit and referring the problems obtained to organization involved. Visittedpeople and families were satisfied with home visit activity and expressed their preference for regularly further visit. SHG implementation resulted in cooperating working between SHG and community, families and community understood, reducing stigmatization and recognition of SHG. This was shown by community's participating SHG activity and purchasing SHG products.

Conclusion: SHG help establish cooperation among people affected by leprosy, people with othercondition related disability and other community members leading to more confidence, more leadership, more idea expression and more self esteem in SHG members. This will finally reduce stigma related to leprosy and disability in the long run.

P-485

Presentation Time: Thursday 19/09/2013 at 13:40 – 13:50
Abstract Topic Name: CBR
Presentation Screen Number: 7
Presenter: Gomes Unarat

THE MODEL OF PARTICIPATORY INTEGRATION OF LEPROSY COLONY INTO GENERAL COMMUNITY IN SURIN PROVINCE, THAILAND

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Introduction: Leprosy colonies, the organizations under the administration of the Department of Disease Control (DDC), had been gradually established since the year 1937 with a total number of 14 colonies scattered across the country. The purpose of the colony establishment was to provide shelters for people with leprosy related disabilities, and those who were homeless due to stigmatization in their own family and communities. As the results of budget constraint and less priority, leprosy colonies were not fully administrated. The community members, who were mostly old, faced difficulties in accessing general health care services and public utilities. This study, therefore; was conducted to develop a model of "participatory integration of leprosy colony into general community" in order to enable people with leprosy related disabilities to live inclusively with surrounding communities.

Methods: This study is a Participatory Action Research(PAR). The study area was Prasart leprosy colony. Integrated process was carried out between October 2009 and September 2012. Focus Group Discussions (FGDs) was used among the members of Prasart leprosy colony to identify problems that may occur during the course of intervention. Future Search Conference(FSC) was used to gain comments, and seek primarily agreement and problem solution. Lessons learned from each phases were recorded.

Results: The integration was successfully done step by step in three phases as follows
1. Preparation Phase: consists of selecting area to be integrated and approaching stakeholders by introducing integration ideas.
2. Implementation Phase: consists of Focus Group Discussions to seek for the problems that may occur during the course of integration, using FSC technique to brainstorm the members of a leprosy colony in order to participatory identify their desire future, meeting among leprosy colony members and involved organizations to seek for problem solution, conducting public hearing to seek for the colony members' agreement, formulating a draft of Memorandum of Understanding (MOU), and signing MOU among organizations involved
3. Evaluation and Monitoring Phase: was done by interviewing people involved and monitoring MOU implementation. It was found that related organizations had carried out activities in accordance with the MOU. Local healh promotion hospital provided health care to leprosy colony members instead of the colony health unit. Local administrative organization provided public utilities and disability allowance to ex-leprosy colony members. The Ministry of Social Development and Human Security legally abolished leprosy colony. Apart from that this ex-leprosy colony had served as the study visit destination of interested organizations.

Conclusion: This Integration of the leprosy colony into the general community involved all stakeholders which were people affected by leprosy, surrounding community members and organizations involved. It lead to inclusion of the people affected by leprosy with general community members that will establish equity and gain human dignity of people affected by leprosy in the long run. Further investigation is needed to identify the impact of integration to the quality of life of people affected by leprosy who were ex-members of leprosy colony.

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Presentation Time: Thursday 19/09/2013 at 13:50 – 14:00
Abstract Topic Name: CBR
Presentation Screen Number: 7
Presenter: Mohammad Rahman

COMMUNITY BASED REHABILITATION FOR LEPROSY AFFECTED PEOPLE WITH DISABILITIES IN BANGLADESH THROUGH MICRO FINANCE : A REAL PICTURE OF SOCIAL INCLUSION OF DISABLED PEOPLE AND ITS SUBSEQUENT IMPACT IN THE SOCIETY.

M. M. Rahman [1,*]

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Introduction: Leprosy achieved official elimination status in Bangladesh since 1998. However, Damien Foundation continues to detect new cases in the areas in which it operates and has noted a high number of patients suffering from disability. Statistics indicates that 16% of patients have

grade 2 disabilities at diagnosis. Although medically cured, the majority of them are permanently disabled as a result of leprosy and most of them are unable to continue normal activities due to their disabilities. It causes long term or life long unfavorable socio-economic consequences to the person's and to their family members. Realizing the global and regional burden of disability due to leprosy rehabilitation under leprosy control activities is considered a basic concept and guiding principle of the Global Strategy for further reducing the Leprosy burden and sustaining Leprosy control activities and regional strategy for sustaining Leprosy services and further reducing the burden of Leprosy. To meet the basic need of sustaining leprosy control activities by rehabilitating leprosy sufferers back into the community, DF Bangladesh has undertaken a pilot Community-Based Rehabilitation (CBR) project since 2009 to cover the northern region of Bangladesh to provide them with a platform for economic independence in the future.

Methods: Applied research methodology is used here. e.g:
1. Beneficiary selection: In each phase, a specific number of Income Generating Activities (IGA) clients, Vocational Training (VT) clients, Housing clients and support for educational clients have been selected fulfilling the desired criteria.
2. Orientation for the beneficiaries: Before financing, trade wise different orientations have been conducted by Basic Project. e.g., orientation for beneficiaries on IGA management and ensuring Vocational training for skill development, Orientation for SUS supervisors, and orientation for Community Volunteers(CV) on IGA management.
3. Financing to the beneficiaries: Financing is implemented following three models, e.g: **a) GRANT– LOAN Model:** In this model, Grants from DF and a loan is also given to the same client at the same time from Swabolomby Unnyan Samity (SUS)-a local Microfinance Institution who are proficient in microfinance with supervision. **b) GRANT Model:** In this model, a grant is given to the beneficiaries with the supervision by DF staff. **c) GRANT- CV Model:** In this model, grant is given to beneficiaries engaging CV for supervision and monitoring in addition with DF staff.
4. Supervision and Monitoring: In GRANT- LOAN Model, supervision and monitoring is done by SUS supervisors and monthly report to CBR Coordinator (CBRC); in GRANT Model, supervision & monitoring is done by DF own staff & also monthly report to CBRC and in GRANT-CV Model, supervision & monitoring is done by CV in addition with DF staff and also weekly report to CBRC.
5. Data analysis through Excel sheet: A daily account is opened for each client to record incomes Vs expenses to monitor their sustainability in the trade.

Results: Results are categorized in 4 groups; e.g: i) Sustainable ii) Medium iii) Low and iv) Failure. In GRANT-LOAN Model, the result shows that 20% are sustainable, 47% are medium, 20% are low and 13% are failure. Besides, in GRANT Model, the result shows that 40% are sustainable, 40% are medium, 10% are low and 10% are failure.

Conclusion: It is early to conclude the result because another two experiments are going on and we have to wait at least one year to have the real picture of the study. Although, it seems to us that GRANT-CV Model may gives us a better and sustainable results.

P-394

Presentation Time: **Thursday 19/09/2013 at 12:30 – 12:40**
Abstract Topic Name: **Social Aspects and Quality of Life**
Presentation Screen Number: **8**
Presenter: Artur Gosling

PROFESSIONAL AND EDUCATIONAL INCENTIVE FOR PATIENTS AFFECTED BY LEPROSY IN PORTO VELHO, RONDÔNIA, BRAZIL

M. H. Conus [1], M. J. Costa [1], K. Narahashi [1], S. Caxeta [1], V. Seccato [1], E. Cabral [1,*]

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Introduction: Leprosy has a social dimension caused by disabilities and deformities causing physical, psychological, familiar, social and employment difficulties. Functional limitations are responsible for labor and economic problems, and most patients have low or none scholar level. Professionalization and literacy services for people affected by leprosy can facilitate social inclusion of these individuals. In the city of Porto Velho, professionals of the reference center care are worried about social inclusion of these patients. The purpose of this study was to identify how many individuals are literate and how many are working after literacy courses and vocational training implementation.

Methods: We use the registries of professionalization from National Commercial Learning Service from 2004 to 2012 and literacy from Educational Secretariat in the city of Porto Velho, Rondônia. These registries show the number of individuals affected by leprosy that finalize literate and vocational courses.

Results: 640 people were sent to courses in National Commercial Learning Service and 20% was working until 2012. According to registries of Educational Secretariat 14 people start literacy courses and 5 (35,7%) were literate

Conclusion: The number of individuals who start working and literate are still low. However, this is an important initiative for social inclusion and a challenge to ensure independency and quality of life for people affected by leprosy. This could contribute to self-esteem e social interaction, indicating that this initiative should continue.

P-395

Presentation Time: **Thursday 19/09/2013 at 12:40 – 12:50**
Abstract Topic Name: **Social Aspects and Quality of Life**
Presentation Screen Number: **8**
Presenter: Siramas Rodchan

NORMATIVE VALUE OF 18 ITEM PARTICIPATION SCALE IN LEPROSY LOW PREVALENT AREA IN KANCHANABURI PROVINCE, THAILAND

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Introduction: The 18 item Participation scale (P-scale) had been developed to measure social participation restriction of people affected by leprosy. It was used in different countries. Since the normative values of participation restriction had been different from one setting to another, this study was conducted to identify normative values of participation of general community in Kanchanaburi province. The obtained values could be used as a cut-offs point or reference values for study in participation restriction of people affected by leprosy or any of any group of people in Kanchanaburi province or in other similar areas.

Methods: Purposive sampling was used to select general people who lived in the same community of people affected by leprosy in 9 districts of Kanchanaburi province. Inclusion criteria were people who were not affected by leprosy but similar to people affected by leprosy in terms of sex, age. The sample size was determined based on the suggestion of a person who develop P-scale that 50 sample size is sufficient. Single proportion calculation formula was used result in sample size at 97. This study, therefore; was done in 104 subjects. The scores were 0,1,2,3, and 5 respectively with total score 0-90. 95th percentile was used to determine the cut-offs or normative value. Descriptive statistic used were frequency, percentage, minimum and maximum, mean, median, and standard deviation. Association of two variable was analyzed by using Independent – Sample T – Test, One – Way ANOVA, and Pearson's product moment correlation coefficient. Multiple variables were analyzed by using Stepwise multiple regression analysis.

Results: Most of 104 study subjects were male with over 61 years old. 61.5% of them were married living with families of not more than 4 members in their own shelters or small houses. Common highest education was primary school. 73.1% of them earned income through labor and agriculture not more than 5,000 baht per month. 50% of them were in debt with 35,010 baht per person. Most of them did not use assistant aids or prostheses. The characteristics of study subjects were similar to those of people affected by leprosy accept employment status and the amount of debts. After applying Independent – Sample T - Test and One – Way ANOVA to analyze the association between different factors and P- scale scores, it was found that there was association between participation level and education level and economic status. According to Potential predicting factor was non-education. It was found that the normative values (95th percentile) was 20 that was greater than 12, the original P-scale normative value. The minimum and maximum scores were 0 and 78 respectively. Mean, median, and standard deviation were 7,4, and 11 respectively.

Conclusion: Further study should be done to identify normative value of social participation in relatively high prevalent area in order to get average normative value of Thai people.

P-272

Presentation Time: **Thursday 19/09/2013 at 12.50 – 13.00**
Abstract Topic Name: **Social Sciences**
Presentation Screen Number: **8**
Presenter: Eliane Silva

ASSOCIATION BETWEEN DEPRESSIVE SYMPTOMS, CURRENT OCCUPATION AND DEGREE OF DISABILITY IN LEPROSY

B. J. Corrêa [1], L. H. S. C. Marciano [1], T. Marques [2], E. A. Silva [1,*], S. T. Nardi [3], T. F. Assis [1], R. B. R. Prado [1]

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Introduction: Leprosy when diagnosed late or left untreated, can progress to physical deformities and disabilities, leading to decreased capacity for work, limited social life, activities of daily living and depressive symptoms. Depression is the most common psychiatric disorder in leprosy and with high depressive symptoms. The aim of this study was to assess the prevalence and frequency of depressive symptoms and their relationship to the WHO degree of disability (GI) and sociodemographic variables.

Methods: A structured questionnaire containing sociodemographic and clinical questions was used. The GI indicates which indicates decrease or loss of protective sensation and visible deformities was evaluated. The Beck Depression Inventory (BDI) containing 21 items was applied. The first 13 items were analyzed using the Beck Depression Inventory - Short Form (BDI-SF), applied to patients with physical illnesses, considering an individuals with depression that who scored 10 or above. The 21 items were evaluated to identify the frequency of depressive

symptoms, a score of zero indicates absence of symptom and scores one, two and three, the presence of symptoms. The data were analyzed with EPI-INFO version 7.1.1.0. Data was analyzed using descriptive statistics, with frequency distribution to characterize the sample. The corrected Chi-square test- (Yates), considering significant results p-value <0.05 was used for the combination of variables of protocol BDI-SF, GI and other response variables.

Results: We evaluated 130 patients undergoing treatment for leprosy in the Lauro de Souza Lima Institute, Bauru, SP, Brazil. The age of patients ranged from 18 and 78 years, with mean 49.64 ± (SD14, 04). The majority were males (64.6%), living with their family (87.7%), and who had completed elementary school (66.2%), stable civil union (61.6%), unemployed (75.4 %) and retired or receiving health aid (63.9%). In regards to clinical forms of leprosy, 94.5% were multibacillary, 74.6% took multidrug therapy and most presented with loss of protective sensation and / or deformities (31.5% grade 1 and 37% grade 2). In respect to the depressive symptoms, most individuals were not depressed (56.9%), but 43.1% were moderate to severely depressed. There was no significant correlation between BDI-SF and GI (p-value = 0.950), but current occupation was significantly associated with BDI-SF (p-value = <0.05). Somatic preoccupation was the most common symptom (80.7%), followed by difficulties at work (78.5%), irritability (68.5%), fatigue (67.7%), self-blame (62.3%) and tearfulness (60%).

Conclusion: There was a predominance of patients with some kind of disability and not currently working. Although the majority of respondents did not have symptoms of depression, a high percentage of these cases showed symptoms. The most frequent depressive symptoms were somatic preoccupation, difficulty at work, irritability, fatigue, tearfulness and self-blame. Depressive symptoms showed no significant correlation when compared to the degree of disability, but compared to the current occupation, showed significant evidence of a relationship between individuals who do not work and work.

P-062

Presentation Time: **Thursday 19/09/2013 at 13:00 – 13:10**
Abstract Topic Name: **Nerve Functions and Impairements**
Presentation Screen Number: **8**
Presenter: Inge Wagenaar

NORMATIVE VALUES FOR MONOFILAMENT TESTING IN RADIAL CUTANEOUS AND SURAL NERVES

I. Wagenaar [1,*], W. Brandsma [2], E. Post [3], J. H. Richardus [1]

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Introduction: In leprosy, nerve function impairment (NFI) has to be diagnosed and monitored accurately in order to prevent disabilities. Monofilaments are a reliable and quick tool to assess sensory nerve function loss and are therefore widely used in clinical practice. Next to the ulnar, median and posterior tibial nerves, that are usually assessed, the additional assessment of the radial cutaneous and sural nerve can be helpful for better diagnosis and monitoring of NFI. However, in order to determine the definite sensory impairment in leprosy patients it is important to know what the monofilament threshold is in normal subjects. Therefore, in this study we will establish normal values for three test-sites on the radial cutaneous and sural nerves.

Methods: The radial cutaneous, sural, ulnar, median and posterior tibial nerves of healthy Indian and Nepali volunteers are tested using a standard "pocket" set of six colored Semmes-Weinstein monofilaments. For all nerves, the area of the skin innervated by a nerve is tested at three sites on both left and right body side. This is done by recording the 'lightest' filament felt by the subject for each of three sites. To establish the normative value, the cut-off for the proportion of subjects detecting a certain monofilament (threshold) is set at the 95th percentile. Normal monofilament thresholds will be calculated per test-site and per nerve. Additionally, data is collected on age, occupation, dominant hand, smoking status, habits of wearing footwear, types of footwear and whether the subjects sit cross-legged. The influence of these variables on the threshold is examined using uni- and multivariate analysis.

Results: Results of this normative study will be presented and discussed at the ILC 2013.

P-063

Presentation Time: **Thursday 19/09/2013 at 13:10 – 13:20**
Abstract Topic Name: **Nerve Functions and Impairements**
Presentation Screen Number: **8**
Presenter: Chandrakant Poulkar

"EVALUATION OF NERVE FUNCTION IMPAIRMENT (NFI) IN PAUCIBACILLARY LEPROSY (PB) PATIENTS ON WHO PAUCIBACILLARY MULTIDRUG THERAPY (PB-MDT) ALONG WITH OR WITHOUT CLOFAZIMINE"

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Introduction: Nerve function assessment is important for early diagnosis of NFI and evaluation of therapy in leprosy. NFI may be present without clinical symptoms which can be detected by nerve function assessment. The WHO Technical Advisory Group (TAG), in its third meeting in 2002, proposed uniform MDT regimen (U-MDT) of 6 months duration to treat all types of leprosy. Previous study (S. Arunthati et al in 1997) showed that clofazimine may have a useful prophylactic role against neuritis/type 1 reaction and nerve damage. However, no study investigating the possible efficacy of clofazimine as part of Uniform MDT in prevention or improvement of nerve function impairment in PB Leprosy has been reported.

Methods: 60 paucibacillary leprosy patients were enrolled in randomized double blind trial. Study group (30 patients) received 6 months of standard WHO PB-MDT along with clofazimine. Clofazimine was given in a dose of 50 mg daily & 300 mg once a month in adults. Control group (30 patients) received 6 months of standard WHO MDT-PB only. Nerve function assessment were done in both groups using clinical tests (nerve palpation, sensory testing using monofilament and voluntary muscle testing) and sensory and motor nerve conduction studies before initiation of treatment and after completion of treatment. Both study and control groups were assessed at 6 months as compared to baseline by clinical tests and nerve conduction studies. Analysis was performed using SPSS version 17. The significance of association was tested using Chi square and Fisher's exact tests.

Results: Using clinical tests (nerve palpation, monofilament and voluntary muscle testing) and nerve conduction studies the proportion of sensory and motor nerves showing improvement or deterioration were similar in the both groups as compared to baseline. (P > 0.05)

Conclusion: There is no significant difference in improvement or deterioration of NFI in paucibacillary leprosy (PB) patients on standard WHO paucibacillary multidrug therapy (PB-MDT) when administered with or without clofazimine.

P-064

Presentation Time: **Thursday 19/09/2013 at 13:20 – 13:30**
Abstract Topic Name: **Nerve Functions and Impairements**
Presentation Screen Number: **8**
Presenter: Dr Rosa Arantes

SKIN DENERVATION AND CORRELATION TO OBJECTIVE THERMAL SENSORY TEST IN LEPROSY PATIENTS

I. A. Rodrigues Júnior [1], I. C. Silva [1], M. Noviello [1], C. Cartelle [1], S. Lyon [2], M. Vilarroel [3], R. M. E. Arantes [1,*]

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Introduction: Leprosy is an infectious disease affecting skin and peripheral nerves resulting in increased morbidity and physical deformities. Early diagnosis provides opportune treatment and reduces its complications, relying fundamentally in the demonstration of impaired sensation in suggestive cutaneous lesions.
The loss of tactile sensitivity in the lesions is preceded by the loss of thermal sensitivity, stressing the importance of the thermal test in the suspicious lesions approach. The gold-standard method for the assessment of thermal sensitivity is the quantitative sensory test (QST). Morphological study of intraepidermal and dermal nerve endings may be an alternative approach to access the thin nerve fibers responsible for the thermal sensitivity transduction. The few studies reported in leprosy patients pointed out a rarefaction of thin dermo-epidermal fibers in lesions, but used semi-quantitative evaluation methods.

Methods: This work aimed to study the correlation between the degree of thermal sensitivity impairment measured by QST and the degree of denervation in leprosy skin lesions, evaluated by immunohistochemistry anti-PGP 9.5 and morphometry. Twenty-two patients were included.

Results: There were significant differences in skin thermal thresholds among lesions and contralateral skin (cold, warm, cold induced pain and heat induced pain). The mean reduction in the density of intraepidermal and subepidermal fibers in lesions was 79.5% (SD = 19.6) and 80.8% (SD = 24.9), respectively. We observed good correlation between intraepidermal and

subepidermal fibers deficit, but no correlation between these variables and those accounting for the degree of impairment in thermal thresholds, since the thin fibers rarefaction was homogeneously intense in all patients, regardless of the degree of sensory deficit.

Conclusion: We believe that the homogeneously intense denervation in leprosy lesions should be objective of further investigations focused on its diagnostic applicability, particularly in selected cases with only discrete sensory impairment, patients unable to perform the sensory test and especially those with nonspecific histopathological finds.

P-065

Presentation Time: **Thursday 19/09/2013 at 13:30 – 13:40**
Abstract Topic Name: **Nerve Functions and Impairements**
Presentation Screen Number: **8**
Presenter: Dr Isabela M. B. Goulart

THERMOGRAPHY AS AN EARLY INDICATOR OF NERVE INJURY IN LEPROSY PATIENTS

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Introduction: Leprosy bacilli may directly or indirectly cause damage to skin and peripheral nerves which may result in nerve function impairment and disability. Sensory innervation has been implicated in a variety of biological processes such as maintaining tissue homeostasis, which is involved in blood flow and pressure regulation. Reduced blood flow to the distal parts of the limbs leads to ischemia and inflammation around the vessels and nerves which precede clinical manifestations. Vascular alterations and lymphocytic infiltrates in the muscular tissue are likely to be a primary responsible for deformity and ulceration in leprosy. These variations in regional blood flow and microcirculation consequently amends the skin surface temperature. Although is familiar that cutaneous sensory innervation influence the skin temperature, there are no reports in the literature regarding leprosy neuropathy on skin temperature.Thermography is a highly sensitive non-invasive technique capable of detecting qualitative and quantitative alterations in skin surface temperature allowinga reliable assessment of normal and abnormal functioning of the sensory and sympathetic nervous system.

Methods: Comparative and bilateral skin surface temperature measurements of hands and feet's were obtained using an infrared video camera and a differential thermometer data logger. Palm and sole areas corresponding to innervation points of the median, ulnar, radial and tibial nerves were evaluated. Student's paired t-test was performed to compare temperature variation means between symmetric sites with significance level of p <0.05.

Results: Data from 20 leprosy patients at diagnosis were assessed, 25% (5/20) presented grade-0, 30% (6/20) grade-1 e 45% (9/20) grade-2 disabilities. In total, 70% (14/20) of the patients showed temperature variations between hemispheres of the body. Temperature variations in grade-0 patients were not significative. Among those with grade-1, 83.4% (5/6) presented an average difference of 2.5°C between right and left limbs, statistically significant. In 77% (7/9) of patients with grade-2 disabilities that presented temperature variation between limbs, an impressive average difference of 10°C was observed. All patients with observed temperature variance were referred for physiotherapeutic attendance. Regarding the innervation correspondence of nerves in those with temperature discrepancy, 50% (7/14) related to the ulnar, followed by 35% (4/14) to the median and 42% (6/14) to the tibial nerve.

Conclusion: The peripheral neuropathy deriving from the manifestation of leprosy can lead to a partial or complete loss of motor, sensory and autonomic functions, which in turn are related to changes in skin temperature in the involved segments of the body. The thermography is a non-invasive imaging exam that provides consistent images with reproducible thermal patterns in most commonly sites affected by leprosy bacilli, even before the occurrence of clinical signs, and it can be a viable tool in the early diagnosis of nerve injury, hence enabling forehand interventions which could prevent disabilities and avoid irreversible nerve damage related to the stigma that comes with the disease, as well as reducing expenditures on reconstructive and rehabilitative surgeries.

P-066

Presentation Time: **Thursday 19/09/2013 at 13:40 – 13:50**
Abstract Topic Name: **Nerve Functions and Impairements**
Presentation Screen Number: **8**
Presenter: Mrinmoy Karmakar

CORRELATION BETWEEN NERVE CONDUCTION VELOCITY RESULTS AND VMT/ST IN PREDICTING THE PROGNOSIS IN PATIENTS WITH ACUTE NEURITIS

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Introduction: Although overall prevalence of leprosy is decreasing, this disease continues to be a major cause of neuropathy worldwide, because *Mycobacterium leprae* has the capacity to invade the peripheral nervous system and cause neuropathy. Leprosy neuropathy is a chronic condition which begins as an infection of the Schwann cells and may end in a demyelinating neuropathy which increases during the inflammatory process accompanying the leprosy reactions.
The nerve lesion may be insidious without any clinical manifestations, with mild clinical manifestations or an acute event especially during reactions. Oral steroid treatments are used to treat these reactions with variable outcomes. Following the protocol for reaction/neuritis treatment (steroid, splints, electrical stimulation and exercises) may arrest the progress of the neural damage and in several cases clinical recovery does occur.

In recent years several electrophysiological studies have been done, some on early diagnosis, to find the pattern of neuropathy in the peripheral nerves in leprosy. Extensive literature revealed that no study has been published yet correlating the findings of Nerve Conduction Velocity studies and the prognosis of the neuritis patients.

Methods: All leprosy patients reporting at The Leprosy Mission Hospital in Kolkata undergo detailed neurological assessment. Among them, all Patients with new nerve involvement with less than 6 months duration, as defined by complaints such as loss of sensation and paresthesia, sensory and / or motor impairment, nerve tenderness are included in the study. Patients at risk of neuropathy from causes other than leprosy such as diabetes, alcoholism, patients with family history of hereditary neuropathy, patients with history of neuropathy of more than 6 months duration are excluded.
Patient's whose of the VMT/ST deteriorated during treatment or default on steroid therapy is removed from the study.
In addition to the clinical Voluntary Muscle Testing and Sensory Testing, Nerve Conduction Velocity test is being done for ulnar and median nerves (depending on the nerve involved). Compound motor axon potential (CMAP) and Conduction Velocity (CV) motor nerves are recorded and the existing protocol for neuritis treatment was followed.
The severity grades of neuro-physiological involvement will be classified as: 1. Normal: CV range: >50m/s; CMAP range: >3.9 mV, 2. slightly abnormal: CV RANGE: 40m/s to 49 m/s; CMAP RANGE: 3 mV to 3.9mV, 3. moderate abnormal: CV range: 30m/s to 39m/s; CMAP range: 2mV to 2.9 mV, 4. pronounced abnormal: CV range: 20m/s to 29m/s; CMAP range: 1mV to 1.9mV, 4. severe abnormal: CV range< 20m/s; CMAP range <1mV.
Patients are examined at base line and on each subsequent visit for 3 months NCV and VMT/ST results recorded. Data will be analyzed to find the correlation between the baseline NCV and the VMT/ST of every follow up for 3 months and correlation will be found out.

Results: 7 patients have been included so far and the results show that there is between the VMT status and the prognosis in terms of the degree of improvement likely to be attained with treatment.

Conclusion: Nerve Conduction Velocity testing may prove to be helpful in predicting the degree of improvement expected and so contribute to modifications in management of neuritis.

P-067

Presentation Time: **Thursday 19/09/2013 at 13:50 – 14:00**
Symposium Session: **Nerve Functions and Impairements**
Presentation Screen Number: **8**
Presenter: Erik Post

RELIABILITY OF NERVE FUNCTION ASSESSMENT, INCLUDING THE SURAL AND RADIAL-CUTANEOUS NERVES: A MULTICENTRE, INTER-TESTER STUDY IN FOUR ASIAN COUNTRIES

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Introduction: Nerve Function Assessment (NFA) is an important tool to assess the impact of leprosy on the peripheral nervous system and in the diagnosis of leprosy. It also has an important place in following patients with Nerve Function Impairment (NFI) in the course of treatment and following 'reactional' states of the disease in which NFI has occurred.

Methods: As part of an on-going study (Treatment of Early Neuropathy in LEProsy-TENLEP) in four leprosy endemic countries in Asia (India, Nepal, Bangladesh, and Indonesia), the therapists from six participating centres were trained in muscle- and monofilament testing prior to the enrolment of patients. Voluntary Muscle Testing (VMT) and monofilament testing included nerves that are not normally part of routine NFA. For VMT, big toe flexion and -extension were included in the procedure to test the posterior tibial nerve and the deep branch of the common peroneal nerve respectively. For sensory testing with monofilaments, radial-cutaneous and sural nerves were added in the neuropathy study. Following training , an inter-tester reliability study was undertaken, requiring a minimum of 35 subjects in each participating centre. For muscle strength testing, the Medical Research Council (MRC 0-5) scale was used. Five Semmes-Weinstein filaments (SOORI-Bauru) were used for hands and four for assessment of sensation in feet.

Results: Results of inter-tester assessment for all centres reached acceptable reliable Kappa coefficients. Following this assessment, enrolment of patients was commenced. (Training methods and actual reliability results will be presented in an oral presentation)

Conclusion: This study showed that by following a protocol both monofilament testing and muscle testing can be done reliably for nerves normally not included in NFA, and can serve as a useful tool in clinical decision making. The two newer tests for assessing motor nerve function of important nerves that innervate the intrinsic muscles of the foot also showed acceptable reliability.

P-105

Presentation Time: **Thursday 19/09/2013 at 12:30 – 12:40**
Abstract Topic Name: **Immunology**
Presentation Screen Number: **9**
Presenter: Vânia Brito de Souza

NEGLIGIBLE IL-12P70 PRODUCTION BY THE DCS FROM LEPROMATOUS PATIENTS

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Introduction: Dendritic cells (DCs) connect innate and adaptive immunity during infection diseases. According to their maturation state, interaction with pathogens and the subsequent production of cytokines, DCs direct the course of adaptive immunity. However, little is known about the participation of these cells in the polarization of immune response in leprosy. Thus, the present study evaluated cytokines production by DCs in leprosy patients for better understanding of their role in leprosy.

Methods: Monocytes-derived DCs were generated *in vitro* from lepromatous and tuberculoid leprosy patients and healthy controls with IL-4 and GM-CSF and stimulated with a cocktail of cytokines (TNF, IL-1β, IL-6 and PGE), LPS and sonicated antigen from *Mycobacterium leprae*. The levels of IL-10, IL-12 p40, IL-12 p70, IL-15, TNF and TGF-β1 in the supernatant were evaluated by ELISA

Results: Impaired production of IL-12 p70 was observed only in the DCs from lepromatous leprosy patients compared to DCs from tuberculoid patients and healthy controls. TNF production was increased after stimulation with sonicated antigen of *M. leprae* in all groups studied. There were no statistically significant differences in the production of IL-10, IL-12p40 and TGF-β1 whereas no production of IL-15 was observed by the DCs of the studied groups.

Conclusion: Our results show negligible capacity of IL-12 p70 production by DCs derived from lepromatous leprosy patients, without the ligation of CD40, that may lead to the *M. leprae* specific Th1 anergy. However, this speculation should be taken with caution until the results of further ongoing studies are completed.

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P-106

Presentation Time: **Thursday 19/09/2013 at 12:40 – 12:50**
Abstract Topic Name: **Immunology**
Presentation Screen Number: **9**
Presenter: Maria Renata Nogueira Costa

KROX-20 MODULATION DURING EXPERIMENTAL INFECTION BY MYCOBACTERIUM LEPRAE

M. R. S. N. Costa [1,*], F. A. Lara [2], L. B. Michellin [1], M. Cury Filho [3], A. C. Pereira Latini [1], L. S. Rodrigues [2], R. M. R. Lemes [2], M. E. S. Nogueira [1], N. G. Amôr [1], P. S. Rosa [1], M. C. V. Pessolani [2]

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Introduction: The interaction of *Mycobacterium leprae* (*M. leprae*) with glial cells in peripheral nervous system is a determining factor of leprosy nerve damage. Infected Schwann cells perpetuate themselves phenotypic characteristics linked to the stages that precede cell differentiation. Krox-20 is a key factor that guides immature Schwann cells into the myelinating profile. Changes on signaling cascade involving this transcription factor may be related to disturbances in neural regeneration. The aim of this study was to investigate the relationship of *M. leprae*/Schwann cells interaction with the expression of Krox-20, adopting as experimental tools, primary Schwann cells culture, myelinating co-cultures and infection on sciatic nerves of athymic nu/nu mice (*nude*).

Methods: In order to evaluate the expression of Krox-20 in Schwann cells, we performed human primary cell culture obtained from nerve fragments of healthy donors (N = 07) that suffered trauma on upper limbs, and in which there was indication for surgical amputation. After dissociation and expansion for 03-04 weeks, Schwann cells were divided into two groups (control and experimental) and incubated for 48 hours with 10μg/ml of *M. leprae* (whole cell, killed by irradiation). *In vitro* myelination assay was performed through neuron/Schwann cells co-culture, from E14 embryos of BALB/c mice dorsal root ganglia (DRGs), exposed to *M. leprae* for 48 hours with 10μg/ml of *M. leprae* (whole cell, killed by irradiation). Experimental infection in nude mice was achieved at eight months, following the inoculation of live *M. leprae* (10^9 AFB/ml) inside left popliteal fossa of each animal, without directly reaching the sciatic nerve. Specimens were evaluated by immunofluorescence and Western blotting.

Results: The obtained data demonstrated that in human Schwann cell culture, myelinating co-culture and sciatic nerves of *nude* mice experimentally infected with *M. leprae*, there is a decrease on Krox-20 expression ($p < 0.05$).

Conclusion: The current study allowed us to conclude that *M. leprae* is able to modulate the expression of Krox-20 in Schwann cells, *in vitro* and *in vivo*; suggesting that alterations on intracellular signaling pathway related to this growth factor may be among the pathogenic mechanisms of leprosy nerve damage (Financial Support: São Paulo Research Foundation).

P-107

Presentation Time: **Thursday 19/09/2013 at 12:50 – 13:00**
Abstract Topic Name: **Immunology**
Presentation Screen Number: **9**
Presenter: Roberta Pinheiro

CIRCULATING NEUTROPHILS OF ERYTHEMA NODOSUM LEPROSUM PATIENTS CONSTITUTIVELY EXPRESS CD64

V. Schmitz [1], R. B. Prata [1], S. S. Brandão [1], A. Miranda [1], J. A. C. Nery [1], R. O. Pinheiro [1,*], E. N. Sarno [1]

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Introduction: Erythema nodosum leprosum (ENL) is the most severe immunological complications of leprosy and affects approximately 50% of multibacillary patients especially in the first year of chemotherapy, although it can occur before treatment begins. The rapid diagnosis and monitoring of patients with ENL is a fundamental tool. The CD64 expression on neutrophils has been proposed as a biomarker of inflammation such as in systemic sepsis. The aim of the present study was to evaluate the expression of CD64 in ENL patients by flow cytometry assays in comparison with non-reactional multibacillary leprosy patients and healthy donors of the Ambulatory Souza Araújo (Fiocruz).

Methods: Prospective analysis of blood samples from patients with lepromatous leprosy with or without ENL was performed for neutrophil CD64 expression. All patients were diagnosed according to Ridley and Jopling criteria and accompanied at Leprosy Outpatient Unit – Fiocruz. The laboratory findings were compared with clinical score. The data was analyzed by QuantiCALC and the results were expressed in PMN CD64 index. Healthy individuals have levels of CD64 neutrophil less than 1.0. Hospitalized patients have rates between 1.0 and 2.0 and patients with acute systemic infections have rates higher than 3.0. The study was approved by Fiocruz Ethics Committee and written consent was obtained from patients before blood sampling. Voluntary healthy individuals from endemic leprosy area were studied as control group.

Results: We observed that PMN CD64 Index form circulating ENL neutrophils was elevated, above 1.0 (n=15; mean (SD) = 2,50 (1,85)). However, PMN CD64 index from patients who have other clinical manifestations of leprosy, as well as healthy donors were smaller than 1.0 (LL, n=5; mean (SD) = 0,96 (0,07); HD, n=14; mean (SD) = 0,65 (0,23)).

Conclusion: Neutrophil CD64 expression quantification can be used to discrimination of ENL. This test may provide improved diagnostic detection of ENL compared with the standard diagnostic tests used in current medical practice.

P-108

Presentation Time: **Thursday 19/09/2013 at 13:00 – 13:10**
Abstract Topic Name: **Immunology**
Presentation Screen Number: **9**
Presenter: Eliane Silva

SERUM LEVELS OF NEOPTERIN AND INTERLEUKIN-18 IN PATIENTS ON THE SPECTRUM OF LEPROSY AND IN THE REACTIONAL FORMS

E. A. Silva [1,*], A. F. F. Belone [2], A. P. F. Trombone [2], S. Ura [3], P. S. Rosa [4]

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Introduction: Several studies concerning in situ and systemic immune markers in the context of leprosy diagnosis and prognosis have been reported, however, with controversial results on the serum biomarkers levels in the clinical forms of leprosy and during reactional episodes. Recent reports showed that increased neopterin levels are associated with reactional leprosy episodes, also, the serum levels of neopterin seem to be useful in distinguishing multibacillary (MB) from paucibacillary (PB) patients. The role of interleukine·18 (IL·18) has been investigated as a possible triggering factor for type 1 hypersensitivity response to mycobacterial infection and shared pathogenesis between inflammatory response and infectious diseases process. Thisstudy aimed at further analyzing possible association of neopterin and IL·18 with the different clinical forms of the leprosy spectrum and in the reactional forms.

Methods: Serum neopterin and IL·18 were determined by ELISA in 28 newly diagnosed leprosy cases with and without reactional episodes. Leprosy diagnosis based on clinical and histopathological findings, according to Ridley and Jopling's classification, thus the samples was constituted by 06 tuberculoid (TT), 06 borderline tuberculoid (BT), 01 borderline borderline (BB), 05 borderline lepromatous (BL) and 10 lepromatous (LL) patients. Among these, 14 patients presented with reactional episodes (reversal reaction = RR and erythema nodosum leprosum = ENL). In addition, 12 healthy individuals were analyzed as controls. For comparisons purpose the TT, BT, and BB patients (n=7) without RR were grouped together as NRR, as they were clinical forms prone to presenting RR. Similarly BL and LL patients without ENL were grouped as NENL (n=7), as they were clinical forms prone to presenting ENL. The neopterin and IL·18 serum levels were compared between RR (n=7) and ENL (n=7), and between the grouped clinical forms.

Results: Neopterin and IL·18 serum levels were increased in BL, LL and in BL, LL with ENL patients when compared with TT, BT and BB group without reaction and control group ($p<0,005$). In contrast, no significant differences in neopterin and IL·18 serum levels were observed between reactional patients (RR versus ENL), or when the reactional patients were compared with their respective clinical forms (NRR and NENL).

Conclusion: Neopterin and IL·18 serum determination may represent markers to be used for diagnosis of MB patients and early detection of complications such as ENL reaction. Neopterin and IL·18 levels should be used together with the clinical diagnosis and other inflammatory markers to predict ENL reaction.

Financial support: Fundação Paulista Contra Hanseníase

P-109

Presentation Time: **Thursday 19/09/2013 at 13:10 – 13:20**
Abstract Topic Name: **Immunology**
Presentation Screen Number: **9**
Presenter: Mariane Stefani

SEROLOGIC PROFILE TO LID-1 AND PGL-I DURING LEPROSY REACTIONS

E. Hungria [1], A. Freitas [1], R. Oliveira [1], L. Cardoso [1], D. Mizoguti [1], M. Costa [1], A. Sousa [1], S. Reed [2], M. Duthie [2], M. Stefani [1,*] on behalf of Mariane Stefani

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Introduction: Leprosy reactions (type 1/T1R and type 2/T2R) are major complication in the clinical management of patients because they may cause irreversible nerve damage and permanent disabilities. While T1R is associated with alterations in Th1 type cell·mediated immunity (CMI) to *Mycobacterium leprae* antigens, T2R is associated with Th2 type immune response with immune complex deposition and transient CMI activation. Currently no biomarker to predict or to diagnose leprosy reactions is available. This study evaluated the serological profile of paucibacillary (PB) and multibacillary (MB) leprosy patients that developed T1R and T2R.

Methods: Patients were recruited in a cohort study that monitored patients during MDT at central western Brazil. The following study groups were tested: Group A1: MB patients who had T1R or T2R at diagnosis; Group A2: PB patients presenting T1R at diagnosis; Group B1. MB leprosy patients that developed either T1R or T2R during MDT; Group B2: PB leprosy patients that developed T1R during MDT; Group C1. MB leprosy patients who did not develop reactions during follow up; Group C2: PB leprosy patients who did not develop reactions during follow·up. Patients that developed reactions had a sample collected during the reactional episode and another when the patient was not under reaction. For leprosy patients that did not develop reactions, a blood sample was collected at diagnosis and another at the end of MDT. IgG antibodies to LID·1 fusion protein (cut·off optical density/OD ≥0.300) and IgM antibodies to PGL·I (cut·off OD≥0.250) were detected by ELISA.

Results: Group A1: MB patients with T1R or T2R at diagnosis: All MB patients diagnosed during T1R were seropositive to LID·1 while the seropositivity to PGL·I was 58%. After the reactional episode, the seropositivity to both LID·1 and PGL·I declined (p=0.01 and p=0.007, respectively). All MB patients diagnosed during T2R were seropositive to LID·1 while half was positive to PGL·I and after the reaction the seropositivity to LID·1 declined (p>0.05) and approximately half remained positive to PGL·I (p>0.05). Group A2: PB patients presenting T1R at diagnosis: In this group low seropositivity was observed for both LID·1 and PGL·I during and after T1R. Group B1: MB leprosy patients that developed either T1R or T2R during MDT: the great majority was positive to LID·1 and PGL·I at diagnosis and the seropositivity declined during the reactional episode (p>0.05). Group B2: Among PB patients that developed T1R during MDT the seroreactivity to LID·1 and PGL·I was low before and during T1R. Group C1: Among MB patients who did not develop reactions 90% were seropositive to LID·1 at diagnosis and 30% after MDT while reactivity to PGL·I at diagnosis was 80% and declined to 60% after MDT. Group C2: Among PB patients who did not develop reactions the seroreactivity to LID·1 and PGL·I was low before and after MDT.

Conclusion: PB patients that developed T1R and the ones that did not develop reactions had low antibody levels at all moments evaluated indicating that the reacional episode had no impact in antibody production. MB leprosy patients that developed T1R/T2R had high antibody levels and these levels were higher during the reacional episode. The significant humoral immune response detected during T1R indicates that antibodies may also play a role in T1R. For MB patients diagnosed during T2R a lower decline in seropositivity was observed after MDT when compared to MB patients that did not develop T2R. These results suggest that maintenance of high antibody levels to LID·1 after MDT may be associated with T2R.

P-110

Presentation Time: **Thursday 19/09/2013 at 13:20 – 13:30**
Abstract Topic Name: **Immunology**
Presentation Screen Number: **9**
Presenter: Mariane Stefani

DIFFERENTIAL DIAGNOSIS OF MULTIBACILLARY LEPROSY AND OTHER DERMATOSES: POTENTIAL APPLICATION OF SEROLOGY

A. Freitas [1], R. Oliveira [1], E. Hungria [1], L. Cardoso [1], M. Costa [1], A. Sousa [1], S. Reed [2], M. Duthie [2], M. Stefani [1,*]

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Introduction: Leprosy diagnosis is based on clinical signs and symptoms and in clinical practice, the differential diagnosis of leprosy and other dermatoses remains a concern. This study assessed the seroreactivity to *Mycobacterium leprae* (*M. leprae*) recombinant proteins (rML) and to PGL·I among leprosy patients (multibacillary/MB and paucibacillary/PB) and patients with others dermatoses.

Methods: The study groups were: 1. Newly diagnosed untreated MB leprosy patients (BL/LL) and PB leprosy patients (TT/BT); 2. Patients with other dermatoses (chronic eczema, pityriasis alba, drug induced skin reactions, dermatitis, lupus, dermatophytosis, necrobiosis lipoidica diabeticorum, progressive macular hypomelanosis, lichenoid drug eruption). Twenty patients per group were tested for IgG antibodies to rML (LID·1, 46f, 92f, ML0405, 33f; 1mg/mL; sera at 1/200 dilution; optical density/OD cut·off ≥ 0.300) and the IgM response to phenolic glycolipid·I (PGL·I; 0,01 mg/mL; sera at 1/300 dilution; cut·off OD ≥0.250.) by ELISA.

Results: Most MB leprosy patients were seropositive to rML ranging from 55% (46f) to 80% (LID·1); 57% of MB leprosy patients were seropositive to PGL·I. As expected, low positivity was observed among PB leprosy ranging from 0% to 10% to both LID·1 and PGL·I. No patient with other dermatoses was seropositive for *M. leprae* proteins LID·1, 92f, ML0405; only one patient with chronic eczema had a borderline response to 46f. The entire group of patients with other dermatoses was negative to PGL·I.

Conclusion: The humoral response to new *M.leprae* proteins, mainly to LID·1, ML0405 and 92f was able to discriminate MB leprosy patients from patients with other dermatoses suggesting that serology (to LID·1) could aid the clinician in the differential diagnosis of MB leprosy and other dermatoses.

P-497

Presentation Time: Thursday 19/09/2013 at 13:30 – 13:40
Abstract Topic Name: Immunology
Presentation Screen Number: 9
Presenter: Patricia S Rosa

A DETRIMENTAL ROLE FOR TH17 AND TREGS SUBSETS IN THE CONTROL OF MYCOBACTERIUM LEPRAE MULTIPLICATION: IN VIVO EVIDENCES FROM KNOCKOUT MICE STRAINS

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Introduction: In the absence of a definitive experimental model for leprosy, the inoculation of *Mycobacterium leprae* in the mice footpads comprise a useful experimental tool in the study of leprosy. While a Th1/Th2 dichotomy is suggested to play a critical role in human leprosy outcome, the role of regulatory (Tregs) and Th17 subsets in disease pathogenesis remains unknown. In this study, we investigated the possible role of Tregs and Th17 cells in response to *M. leprae* comparing C57Bl/6(WT) and IL·17KO, IL·23KO, IL·6KO and CCR4KO mice strains.

Methods: Mice were infected with $1x10^4$ bacilli per footpad (according to classic Shepard´s technique) and after nine months were sacrificed; samples (foodpads) were submitted to histopathological analysis and bacillary counting by cold Ziehl·Neelsen staining.

Results: As previously described, *M. leprae* footpad challenge did not resulted in the development of macroscopic leprosy-like lesions, but Ziehl·Neelsen staining demonstrated the presence of a significant bacillary load, associated with the presence of inflammatory cells (mainly epithelioid macrophages) in the surrounding connective tissue. As described to WT strain, no evidences of macroscopic lesions were observed in IL·17KO, IL·23KO, IL·6KO and CCR4KO mice strains. While no differences were observed between IL·17KO, IL·6KO and WT strains, our results showed a significant decrease in the numbers of bacilli in CCR4KO and IL·23KO strains when compared to WT mice.

Conclusion: These results suggest a detrimental role for Th17 and Tregs subsets in the control of *Mycobacterium leprae* multiplication, since the absence of the Th·17·related cytokine IL·23 and the Treg·associated chemokine receptor CCR4 affect the multiplication of the *M. leprae* bacilli *in vivo*. Further studies are required to confirm such data and to clarify the mechanisms by which such molecules could be implicated in the control of *M. leprae* and possibly in the pathogenesis of leprosy. Supported by grants from FAPESP (2009/06122·5).

P-112

Presentation Time: Thursday 19/09/2013 at 13:40 – 13:50
Abstract Topic Name: Immunology
Presentation Screen Number: 9
Presenter: Mariane Stefani

THE IMPACT OF MULTIDRUG THERAPY ON CELL MEDIATED AND HUMORAL IMMUNE RESPONSES TO MYCOBACTERIUM LEPRAE PROTEIN ANTIGENS

A. Freitas [1], R. Oliveira [1], E. Hungria [1], L. Cardoso [1], M. Costa [1], A. Sousa [1], S. Reed [2], M. Duthie [2], M. Stefani [1,*]

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Introduction: The differentiation of paucibacillary (PB) and multibacillary (MB) leprosy is not only important to define multidrug therapy regimen (MDT) but also because MB patients represent the main disseminators of the bacilli and are also at increased risk of complications such as reactional episodes. Leprosy diagnosis is still based on clinical signs and no laboratory test is commercially available for its diagnosis, prognosis or to monitor MDT. A laboratory test for leprosy diagnosis or prognosis needs to consider the dichotomy in immune responses in which PB patients present strong specific cell mediated immunity (CMI) and MB patients have high titers of specific antibodies. This study assessed the impact of MDT on CMI and humoral immune responses among MB and PB leprosy patients.

Methods: The study groups consisted of MB patients, and PB patients recruited in central·western Brazil. Patients were evaluated at the moment of the diagnosis (newly diagnosed, untreated patients) and after completing MDT (post-MDT group). The CMI to *M. leprae* recombinant proteins (rML) was assessed by whole blood assay (WBA) stimulated with LID·1, 46f, ML0276, ML2055, and ML2629 as negative control. After 24 hours incubation, plasma was collected for IFNg detection by ELISA (QuantiFERON/ CMI/ Cellestis, cut-off:50pg/mL). ELISA was used to detect both IgG response to LID·1, 46f, 92f, ML0405 and 33f as negative control (cut-off OD≥0.300) and anti IgM antibodies to PGL·I (cut-off OD≥0.250).

Results: Among newly diagnosed untreated MB patients the IFNg production to *M. leprae* proteins was low/absent ranging from 0 to 10pg/ml. Among the post-MDT MB patients, IFNg production was detected to LID·1 protein only (p=0.03). Among newly diagnosed untreated PB patients IFNg production to all rML was above the cut-off. After the conclusion of MDT a decrease in the production of IFNg to most proteins was observed (p=0.002) whereas an increase in IFNg production was only observed to LID·1 fusion protein (p>0.05). Seropositivity to rML among newly diagnosed untreated MB patients ranged from 40% (92f) to 90% (LID·1); 70% were anti PGL·I positive. Among the post·MDT MB patients a significant decline in the IgG response to all proteins was detected (p=0.005) and 20% remained seropositive (LID·1, ML0405 and 92f). In constrast, most of the post·MDT MB patients remained seropositive to PGL·I (p>0.05). Among PB patients before MDT, the seroreactivity to all rML and to PGL·I was below the cut-off. No change in this serological profile was observed after MDT.

Conclusion: Surprisingly most MB patients, that are anergic to rML before MDT, presented CMI to LID·1 protein after completing MDT. Among PB leprosy patients, known to have a strong specific CMI before treatment, MDT caused a decline in the response, except to LID·1 protein. The serologic response to rML in the MB group declined post·MDT, however absent/low serological response of PB patients was not changed by MDT. The meaning and potential applications of CMI response to LID·1 protein for monitoring MDT among PB and MB patients deserve further studies.

P-113

Presentation Time: Thursday 19/09/2013 at 13:50 – 14:00
Abstract Topic Name: Immunology
Presentation Screen Number: 9
Presenter: Mariane Stefani

CASE REPORT: CLINICAL AND SEROLOGICAL PROFILE OF A POSSIBLE RELAPSE OR REINFECTION OBSERVED DURING UNIFORM MULTIDRUG THERAPY TRIAL (U- MDT)

M. Stefani [1,*], S. Bührer-Sékula [1], A. Freitas [1], E. Hungria [1], L. Cardoso [1], R. Moura [1], M. Matsuoka [2], P. Rosa [3], A. Pontes [4], R. Cruz [5], H. Gonçalves [4], M. Penna [6], G. Penna [7]

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Introduction: A uniform regimen of multidrug therapy for leprosy (Brazil U·MDT/CT·BR) consisting of 6 months treatment with rifampicin (monthly), dapsone and clofazimine (daily) for both multibacillary (MB) and paucibacillary (PB) patients is under way in two highly endemic regions in northeast and north Brazil. In this open·label, randomized clinical trial U·MDT outcomes are compared to regular MDT (6 months for PB disease and 12 months for MB leprosy). Relapse, defined as the reappearance of signs and symptoms after completing MDT is one of the important outcomes monitored. Relapses have been associated either with irregular or incorrect MDT regimen or drug resistance and they usually occur 5 years after MDT. Relapses can include skin signs (new lesions or enlargement of previously observed lesions) or neural signs (hypersthesia, new anesthetic areas, increase or loss of sensitivity in previously affected skin areas). This is a serologic and molecular study of one possible case of relapse or reinfection observed in the Brazil U·MDT/CT·BR arm that received 6 months treatment.

Methods: This patient was monitored monthly during the first year and then yearly for the next 3 years. During follow up one blood sample was collected at each visit including diagnosis, at the end of U·MDT and in the post U·MDT period in a total of 14 visits/ sequential samples. Sera samples collected during this period were used to study the serological response employing ELISA to detect IgG antibodies to LID·1 fusion protein (cut-off: >0.300) and IgM antibodies to PGL·I (cut-off:>0.250).

Results: At leprosy diagnosis this 36 years male patient from Fortaleza, Ceará had >10 disseminated skin lesions, reduced termic sensitivity and joint pain in the superior and inferior limbs. The bacilloscopic índex (BI) during diagnosis was 4+, and the patient was classified as borderline·lepromatous/BL, according Ridley Jopling (clinical, histopathological and baciloscopy) criteria. Following randomization this patient was part of the U·MDT arm receiving 6 months therapy. At diagnosis anti LID·1 and PGL·I serology were highly positive (LID·1 O.D=1.339; PGL·I OD=0.837) and high antibody titers were detected during the next 5 months after initiating U·MDT (anti LID·1 IgG: OD range=1.339 – 1.091; anti PGL·I IgM OD range= 0.661 – 0.850). In the second and third months after completing U·MDT antibody levels declined (anti LID·1 IgG O.D=0.807 and 0.753; anti PGL·I IgM O.D=0.605 and 0.604). In the 5th month after conclusion of U·MDT serology remained low reaching values below the cut off. In the 6th month after U·MDT antibody levels started to fluctuate and 18 months after completing U·MDT the patient developed Type 2 reaction and neuritis and was prescribed with thalidomide and prednisone. Around 48 months after completing U·MDT, new nodular lesions appeared and the BI=5+ was detected and lesions biopsied for histhopatological examination, which revealed lepromatous form. *M. leprae folP1*, *gyrA*, *rpoB* gene sequencing did not reveal any drug resistance mutation to dapsone, rifampin nor quinolones. Therefore this patient was considered a relapse case and regular 12 months MDT for MB leprosy was started although possible reinfection cannot be excluded.

Conclusion: Significant decay in antibody levels was observed after completing U-MDT, however the fluctuation observed 18 months after was probably associated with bad prognosis which included T2R, relapse or reinfection. Whole *M. leprae* genome sequencing at diagnosis and during relapse or reinfection may potentially contribute to clarify this patient's outocome.

P-021

Presentation Time: **Thursday 19/09/2013 at 12:30 – 12:40**
Abstract Topic Name: **Stigma**
Presentation Screen Number: **10**
Presenter: Uday Thakar

EMPOWERMENT OF LEPROSY AFFECTED PERSONS TO FIGHT AGAINST STIGMA AND DISCRIMINATION.

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Introduction: Over the centuries Leprosy Affected Persons have been stigmatized. Misconceptions, deformities, non availability of effective medicines were some of the reasons. Society and Family members segregated them from the main stream. Leprosy affected person's have left no option but to take shelter either in Asylum or in Leprosy Colonies. Law also discriminates affected persons. Some of the Indian Acts are having derogatory provisions against leprosy affected persons. As a result many of them are living in a miserable condition.

Methods: Survey of leprosy colonies was conducted with a view to identify their needs, problems & social issues. 800 colonies were identified. Derogatory provisions of the Acts were examined. Empowerment workshops in 22 states were organized. State wise leaders & team from the colonies were selected. Capacity building programmes were organized for them. Awareness about their rights, duties and welfare schemes were organized. Law professionals were invited to orient, Leprosy Affected Persons about their human rights. National Forum has provided platform to share their views, experiences, feelings and expectations.

Results: State team and colony people regain confidence. Voice of the affected persons is now being heard at various levels. Petition was filed before Petition Committee of Parliament. Government has taken action on the recommendation of the committee. More than 150 cases were referred to Human Right Commission. 90% cases were decided in favor of affected persons. Civic amenities are being provided to leprosy colonies on Intervention of Human Right Commission. Public Interest Litigation (PIL) was submitted to Supreme Court of India seeking amendments in the provisions of the derogatory Act. Odisha Government amended local Panchayat Election Act. Leprosy Affected Persons are seeking details of Government schemes & expenditure incurred under "Right to information Act". Leprosy affected Persons are being invited in decision making process at Government level and WHO has given guidelines for strengthening participation of affected persons in leprosy services.

Conclusion: Net working among colonies, individuals, Government & NGO's along with Training & socio economic empowerment, leads a way to dignified life without stigma & discrimination.

P-023

Presentation Time: **Thursday 19/09/2013 at 12:40 – 12:50**
Abstract Topic Name: **Stigma**
Presentation Screen Number: **10**
Presenter: Mr David Jaganathan

ROLE OF SCHOOL CHILDREN IN REDUCING LEPROSY RELATED STIGMA

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Introduction: While involvement of community has been known to be highly influential in success of any public health programme, it is felt worth experimenting a leprosy stigma reduction programme through involving school children as basic communicators. In response, The Leprosy Mission Trust India has adopted an innovative strategy, which intends to reduce stigma in the community through promoting awareness about leprosy.
The main objective of this study is to assess the impact of communication programme carried out by the volunteers comprising of school children and teachers, on leprosy stigma in the community.

Methods: Schools in endemic areas, from 3 Districts in the state of Chhattisgarh, India were selected, for the intervention. The project staff, trained in leprosy and communication, have trained the volunteers and facilitated their communication action. In the process of training, the volunteers, were provided with basic knowledge about Leprosy, HIV/AIDS and TB, followed by practical orientation on how they could disseminate the key messages to the other students and members of their families and communities. Under the facilitation of the project staff, the volunteers conveyed the message to the villages in their area.

In order to assess the impact of the intervention, pre and post surveys were conducted, using interview checklists, to ascertain the change in knowledge, attitude and practice pertaining to leprosy among key stakeholders viz. teachers (82), students (3260), community members-including SHG members (1162), panchayat members (25) and village health workers (25). Participatory scale (p-scale) was administered to individuals affected by leprosy (236) to determine changes in their level of participation in family and community activities.

Results: The survey results showed a significant increase in the knowledge about the diseases among children, community members, SHG members and Panchayat leaders. There is a positive change in the attitudes and practices of the public with regard to leprosy,. Voluntary reporting has considerably increased. However, the P-scale analysis did not reflect any major changes in level of participation of individuals affected by leprosy over a 2 year period.

Conclusion: Education of children plays an effective e role in building up right attitude and practices. Sensitizing them at young stage helps them to grow up with positive attitude towards leprosy. The messages conveyed by children to the family members appear to be the most cost effective with greater impact on the family members, especially those who have little access to such information.

P-024

Presentation Time: **Thursday 19/09/2013 at 12:50 – 13:00**
Abstract Topic Name: **Stigma**
Presentation Screen Number: **10**
Presenter: Tse-Chun Lai

PROMOTING TRANSNATIONAL WORLD HERITAGE OF HANSEN'S DISEASE HISTORICAL SITES AND SPIRIT.

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Introduction: Now people could continue the issue and keep trying to make strong linkage to each other. I will thanks IDEA international; Anwei and Henry held a formal conference to make international net from 2012 in Seneca Falls of USA. I know the issue gradually gathering solidarity all over the world. And I know Sasakawa Foundation also prepared a wonderful workshop to promoting the work last year October. Like the several topics discuss in this congress, everybody here all involved in the evolution of HD history.The most important thing is the corporation between WHO, non-government organization, religions, and the individual affected by HD, the participators here have change the darkest history of leprosy; make a significant contribution to human civilization. Wish to promote "TWH of HD" has a symbolic meaning: to get Nomination to remind the world the road "Isolation to Integration" is really very cherish to leave future generation to honor all the old generation affected by Hansen's Disease.

Methods: This paper is based on my action research which participated in the international campaign for Hansen's disease with Lo-sheng in Taiwan and Solocku island in Korea. Besides, I prepared the "International Workshop of HD" on March 3-7, 2009, in Taiwan offered a platform for discussing the conversation.

Results: Fortunately, the workshop in Taiwan become a mile stone for stigma reduction movement because at that time met Taiwan authority was planned to demolish many cherish architecture and landscape of Lo sheng Sanatorium and people here faced eviction. There were our members of IDEA International, almost 100 people from 7 countries, Korea, Japan, Norway, Malaysia, Guam, and United states to Taiwan concerned the eviction and demotion. It is the first time everyone started to think about the issue "Transnational World Heritage Nomination of Leprosy / Hansen's Disease".At the same time, the UNESCO World Heritage Centre and ICOMOS have been assisting the States Parties in identifying new types of properties for World Heritage nomination, such as the Silk Roads for serial and nomination, spanning a quarter of the globe.With my Statistics for the database of the global project of Leprosy History, ILA, discovered there were more than 505 leprosarium which spread more than 78 countries in the past centuries. But as we know it's just a tip of the iceberg, we can say the leprosy / Hansen's disease historical sites are similar to the Silk Roads, traced to almost 2000-4000 years of human civilization, spanning in different area of the world, rich of historical and cultural diversity. Moreover, the evolution of policies in modern, the medical and scientifically contributions and universal values of human rights all related to the transnational achievement and shall meet the World Heritage list.

Conclusion: Now people could continue the issue and keep trying to make strong linkage to each other. I will thanks IDEA international;Like the several topics discuss in this congress, everybody here all involved in the evolution of HD history.The most important thing is the corporation between WHO, non-government organization, religions, and the individual affected by HD, the participators here have change the darkest history of leprosy; make a significant contribution to human civilization. Wish to promote "TWH of HD" has a symbolic meaning: to get Nomination to remind the world the road "Isolation to Integration" is really very cherish to leave future generation to honor all the old generation affected by Hansen's Disease.

P-020

Presentation Time: Thursday 19/09/2013 at 13.00 – 13.10
Abstract Topic Name: Stigma
Presentation Screen Number: 10
Presenter: Ruth Peters

COMICS MADE BY PEOPLE AFFECTED BY LEPROSY AS A STIGMA-REDUCTION STRATEGY; LESSON LEARNT

R. M. H. Peters [1,*], B. Miranda-Galarza [1], .. Dadun [2], M. Lusli [3], M. Zweekhorst [1], W. van Brakel [1], .. Irwanto [3], J. Bunders [1]

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Introduction: The importance of stigma in the context of leprosy has been acknowledged. The usual way to address stigma is through educational messages in the media. Thus far, to the authors knowledge, techniques to involve people affected by leprosy in exploring issues and voice concerns through creating their own comics has not yet been applied. A comic is a story in a pictorial form, often incorporating text and presented in panels. The approach is promising because of the empowering process and inexpensive, easy to distribute and potentially powerful end-product. The aim of this poster is to reflect upon the process and share lessons learnt.

Methods: This study is part of the Stigma Assessment and Reduction of Impact (SARI) Project in Cirebon District, West Java, Indonesia. The SARI project aims to implement and assess the effectiveness of three stigma-reduction interventions. The comic-making activity is part of the contact intervention that primarily aims to change attitudes and beliefs of the community. It brings people affected by leprosy and community member 'into contact', either indirectly through the comics, or directly, if the artist presents about the comic.

The first two-day comic workshop took place in November 2012. The 'Grasroots comics – a development communication tool' by Packalen & Sharma was used as a guideline. The workshop can be divided in two parts: i) enhancing drawing skills, and ii) making the actual comics (finding message and story). In total, ten young people affected by leprosy participated; four women and six men.
This study draws upon a range of qualitative methods including observations, informal interviews and focus group discussions.

Results: During the first workshop 14 comics were developed. Key messages the participants wanted to bring across included: i) leprosy is curable, ii) medicine is free, iii) leprosy will not spread after medication is started, iv) there are more people affected by leprosy, v) friendship is imperative, and vi) people affected can work and be successful. Often one comic conveyed multiple messages. Some comics depict discrimination, for example, children who do not want to buy noodles from an affected person, because 'your skin is very dirty'. Also the strength of people affected is an important theme illustrated by the title 'patience and resilience'.
The comics were a means through which the participants were able express experiences of their own life. Overall, the participants indicated they enjoyed meeting new people, the comic-making process and were proud with, as one participant put it, the 'worthwhile' end-result. A potential advantage is the possibility for anonymity, but all artists wanted their name written under the comic. All were willing to present about their comic to people in the community, according to them to bring understanding, knowledge and to eliminate the fear for transmission. One hesitated to disclose in his home village.
Several elements in the workshop can be improved for example more days, shorter programmes per day, more interactive exercises and concrete end-product to take home. We aim to implement these improvements in a second workshop.

Conclusion: Comics seem a powerful tool for people affected by leprosy to express themselves. Comics can convey multiple simple but indispensable messages for stigma reduction and stress important life experience such as discrimination and resilience. The impact of the comics in the community is being studied. This will determine its utility as a stigma-reduction strategy.

P-450

Presentation Time: Thursday 19/09/2013 at 13:10 – 13:20
Abstract Topic Name: Specialised Centres
Presentation Screen Number: 10
Presenter: Dr José Nery

EVALUATION OF LEPROSY PATIENT HOSPITAL ADMISSIONS IN AN INFECTIOUS DISEASE REFERENCE HOSPITAL

J. A. D. C. Nery [1,*], T. F. L. R. Dresch [1], M. C. Gutierrez-Galhardo [1], A. M. Sales [1], E. N. Sarno [1]

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Introduction: Leprosy control programs are conducted in the State of Rio de Janeiro at the Souza Araújo Outpatient Clinic along with regular outpatient visits. Some leprosy patients, however, require hospitalization due to the evolving severity of the disease. Those undergoing reactional episodes and/or severe adverse effects of multidrug therapy are most in need of therapeutic intervention in a hospital setting. Few studies are available in the literature regarding the reasons leading to hospital admissions or the frequency at which they occur. This study aims to assess the causes triggering the hospitalization of leprosy patients and the specific clinical factors associated with treatment and patient outcomes.

Methods: A retrospective study was conducted by reviewing the medical records of the leprosy patients hospitalized between January 2000 and January 2010 at the Evandro Chagas Hospital Research Institute, a reference center for infectious diseases located on the Fiocruz Campus. All these patients were followed up at the Outpatient Clinic referred to above both before and after the detection of any adverse effects.

Results: A total of 114 leprosy patients were analyzed, encompassing 164 hospital admissions. A full 75.8% of the patients were diagnosed as lepromatous-lepromatous and borderline-lepromatous. The majority (51.2%) had already completed MDT. The main causes of hospitalization were an isolated reactional episode (54.3%) or one in conjunction with an infection (24.4%), an adverse drug reaction (12.2%), metabolic endocrine disorder (4.9%), or gastrointestinal disorder (3.7%). Pulse therapy with metilprednisolone was widely used in 79 hospitalizations (48.2%). While 92.7% of the hospitalized patients had a favorable outcome, four died (2.4%).

Conclusion: Severe cases of leprosy often require hospitalization. Leprosy control programs in endemic countries for the disease must be adequately equipped to meet this demand.

P-452

Presentation Time: Thursday 19/09/2013 at 13:20 – 13:30
Abstract Topic Name: Specialised Centres
Presentation Screen Number: 10
Presenter: Mr John Kurian George

DERIVING BENCHMARKED COSTS FOR PROVIDING LEPROSY SERVICES IN INDIA

D. Verma [1,*], A. K. Mishra [2], T. Von Stamm [3], T. Gass [4], J. K. George [5]

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Introduction: In India, FAIRMED (FM) has been providing support to people affected by Leprosy for the last 5 decades through it's network of NGO supported Leprosy hospitals across 4 states. In order to provide free services to the affected communities, FM embarked on the exercise to clearly establish core service delivery areas in its supported hospitals, derive the cost per service, and subsequently benchmark the costs.

Rationale: To benchmark and standardize costs for the core leprosy services.

Methods: A technical team comprising of a cost accountant, project staff, technical & finance team from FM India, and the North Western University of Health Sciences, Switzerland was formed. Real time expenditure was considered while deriving costs per service. This included both pre and post treatment expenses where various components such as medical supplies, general supplies, number of bed occupancy days, food, staff salaries, and other overhead costs was factored in while finalizing the cost. Patients were divided into different categories (in-patient [IP] and out-patient [OP]) on the basis of which cost for each category was calculated. Most importantly the number of patients being provided service played an integral part in finalizing the budgets per hospital. Patient uptake of services was reported through FM's hospital information system (HIS).
In 2011, review of the costing exercise for all the five hospitals was undertaken after which it was suggested to arrive at a suitable benchmark cost. Median was preferred over mean as the former is resistant against outliers. Thus after considering the un-weighted median and the acceptance range it was decided to consider the third Quartile (Q3) as the benchmark cost. The North Western University of Health Sciences developed a balance score card based on which hospitals were assessed on key perspectives that included financial, customer, internal business, and learning & growth.

Results: Benchmarking has facilitated in standardizing the cost per service across all 5 FM supported hospitals. 8 IP and 3 OP service categories were developed. The 8 IP service with their respective costs include general treatment (IP_0: INR 1,431); Reaction Treatment (IP_1: INR 3,079); Simple Ulcer (IP_2: INR 2,301); Complicated Ulcer (IP_3: INR 5,098); Septic Ulcer/Amputation (IP_4: INR 9,727); Foot Reconstruction Surgery (IP_5: INR 9,455); Hand Reconstructive Surgery (IP_6: INR 9,736); and Eye Surgery (IP_7: INR 3,244). Likewise, 3 OP services with their respective costs include General Treatment (OP_0: INR 261); Ulcer Treatment (OP_1: INR 341); and Reaction Treatment (OP_2: INR 313). Essentially, all the 5 FM supported hospitals receive the same cost for the core service area. However, the final budget per hospital is contingent upon the total number of patients that have been provided service.
This exercise has facilitated in simplifying FM's budgeting exercise and at the same time has significantly contributed in avoiding over budgeting. For instance, the Foot RCS cost has come down to INR 9,455 in 2013 when compared to INR 14,813 in 2008. Thus there was a reduction of almost 56% in one major category and a similar pattern was observed in other categories as well.

Conclusion: The OBA tool has helped FAIRMED to develop a cost-effective mechanism for supporting the hospitals by taking into account the realistic figure for their expenses.

P-457

Presentation Time: **Thursday 19/09/2013 at 13:30 – 13:40**
Abstract Topic Name: **Specialised Centres**
Presentation Screen Number: **10**
Presenter: Sathish Kumar Paul

LEVEL OF SATISFACTION OF IN-PATIENTS ON THE NURSING CARE PROVIDED TO THOSE AFFECTED BY LEPROSY

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Introduction: In the dynamic health care system that we live in, In-patient facilities in many hospitals treating Leprosy is static. Shortage of healthcare professionals and also infrastructure facilities is commonly seen. Patient satisfaction stands to play an important role in the growing push towards accountability among health care providers. The health care professionals work towards improving the quality of outcomes, enhance safety of patients and lower the cost of care. Greater attention and scrutiny needs to be given to the accounting in which patient satisfaction measurement can be integrated into an overall measure of clinical outcome.

Methods: This is a descriptive study conducted in a secondary level community hospital catering to the needs of Leprosy affected. All the patients who were admitted for a minimum period of 3 days and provided consent were included in the study. Convenience sampling method was used to collect data.

The instrument used for data collection was a questionnaire. An interview was conducted with each patient and a Visual analogue scale was used to assess their satisfaction in each area of care. The questionnaire had 7 different categories of care that included the care at admission, comfort needs, nutritional needs, hygienic needs, care during procedures, psychological needs and administration of medications.

Results: A total of 91 patients were included in the study. The average duration of stay in the hospital was 14 days. The minimum stay was for 3 days and the maximum duration of stay was 38 days. Of the 91 patients who were included, 42 were females and there were 49 males.

The analysis of the data collected showed that 83 (91.21%) patients were satisfied with the care at admission and 8 (8.79%) were moderately satisfied. 79 (86.81%) were satisfied with the comfort needs provided and the remaining 12 (13.19%) were moderately satisfied. 89 (97.80%) were satisfied with the nutritional needs and 2 (2.2%) were only moderately satisfied. 85 (93.41%) patients were highly satisfied with the psychological care provided and 6 (6.59%) were only moderately satisfied. 47 (51.65%) were satisfied with various procedures done for them, 23 (25.28%) were moderately satisfied while 21 (23.08%) were not satisfied with the care.
69 (75.82%) were highly satisfied with the hygienic needs provided, 14 (15.39%) patients were moderately satisfied and 8 (8.79%) were not satisfied with the care and provision for their hygienic needs. 3 4 (37.36%) were highly satisfied with the administration of medications. 15 (16.48%) were moderately satisfied, but 42 (46.15%) patients were not satisfied with the administration of medications. The questions through which the satisfaction on administration of medications was assessed were about the information given regarding the side effects of medications and the information on the medications that need to be used at home at the time of discharge.

Conclusion: The In patients are mostly satisfied with the care provided to them at the hospital. There were only two areas where the patients found some lacunae in the care provided to them. The patients were not satisfied with the explanation provided by the nurses regarding the medications and the side effects of the medications that were given to them.
Another area of concern which caused patients to be dissatisfied with the care provided, was the lack of privacy provided to them. These areas need more attention. Adequate training provided to the nursing personnel regarding these specific needs would make them more empathetic towards these needs of the Leprosy affected who are admitted to the hospital.

P-454

Presentation Time: **Thursday 19/09/2013 at 13:40 – 13:50**
Abstract Topic Name: **Specialised Centres**
Presentation Screen Number: **10**
Presenter: Dr Aparna Srikantam

A STUDY ON DELAY IN DIAGNOSIS AND STARTING OF MDT IN 124 NEW CASES OF LEPROSY IN ANDHRA PRADESH, SOUTH INDIA

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Introduction: Leprosy has a long incubation period and the early signs and symptoms are not painful. It is also misunderstood as a skin disease. Besides the stigma associated with leprosy plays an important role in the early diagnosis.

Identifying the delay if any and the reasons will help in reducing associated disability and start of MDT early and reducing the risk of transmission of the disease in the community.

Methods: LEPRA India – Blue Peter Public Health Research Centre (BPHRC) is conducting a study on quality leprosy services provided at 12 PHCs in Krishna and Adilabad districts with the support of Indian Council of Medical Research (ICMR). The study period is 3 years from June 2011-December 2013. During the period 2011-12 in 12 Primary Health Centers situated in 2 districts of Andhra Pradesh in India 124 new cases of leprosy were detected. A detailed in-depth interview was done in these cases to obtain the history of events starting from early symptoms to the final diagnosis and start of MDT besides other information. We have to depend on recall of the patient or their relative for the history with its limitations. The data was entered in MS Excel and analyzed and the results are presented.

Results: Out of 124 Adilabad have 73 (58.9%) and Krishna 51 (41.1%) cases. Females are 47 (37.9%) and males are 77 (62.1%). It is observed that the clients first seek initial consultations with the private sector and later after a prolonged period they move to government health institutions for seeking further care and management.
The average delay in diagnosis is 429 days with an SD of 309 days. The average delay in females is higher by 65 days compared to males. There is no significant difference in delay between the 2 districts. The mean delay in diagnosis in children below 15 years is only 266 days compared to 538 days in the age group 30-50 years. In 22 (17.7%) cases diagnosis of leprosy was made within 6 months of the early symptoms of the disease.
There is no delay in starting MDT once diagnosis is made in 97 (76.4%) of the 124 cases in the government run PHCs. In 15 (12.1%) cases there is a delay of more than 10 days in starting MDT. It is observed that the delay in starting MDT was due to operational reasons in Krishna district.

Conclusion: In females more delay was there in diagnosis while in children delay was less.
In 35 (28.2%) cases in the first visit itself diagnosis of leprosy was made while in 61 (49.2%) it was in the 2nd visit. The remaining 28 (22.6%) has to make 3 or more visits to arrive at the correct diagnosis. The reason being in many it was treated as a skin disorder. The study reveals that there is urgent need in sensitizing the private medical health care providers in the diagnosis and management of leprosy and coordinate with the government for the treatment.

P-455

Presentation Time: **Thursday 19/09/2013 at 13:50 – 14:00**
Abstract Topic Name: **Specialised Centres**
Presentation Screen Number: **10**
Presenter: Naveen Kothari

QUALITY LEPROSY CARE THROUGH REFERRAL CENTRE-A WORKING MODEL OF SETTING TERTIARY CARE CENTRE THROUGH GOVERNMENT ORGANISATION(GO) AND NON GOVERNMENTAL ORGANISATIONS (NGO) COLLABORATION

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Introduction: Medical rehabilitation and other leprosy services under the general health care system became more theoretical than practical, following declaration of elimination and integration of leprosy services. The idea of retaining expertise in leprosy for the benefit of people affected by leprosy and ensuring availability of services was floated in a State level review meeting attended by representatives of State and district level programme managers, NGOs and Medical Colleges at the State Capital in the year 2008. By the end of 2009 Jabalpur Referral Centre was set up at the District government hospital with active collaboration of LEPRA Society and Fontilles.

Methods: The Referral Centre started with management of reactions, ulcer care, physiotherapy to the cases with early deformity, self-care exercises to the deformity cases, diagnosis, providing laboratory services to the new and under treatment cases and foot care. A footwear unit was set up providing customised care. Nerve function assessment is stressed as an important component, as a result of which the centre started identifying cases with early nerve impairment needing Nerve decompression Surgery. Cases with deformity and severe nerve damage were identified for Reconstructive surgery.The Referral centre was then upgraded with the facility of Surgery.Now apart from the basic services, the centre started organizing screening camps in nearby blocks and districts in vicinity. Systematic pre and post-operative physiotherapy and self-care training were provided. The general operation theatre was made available for reconstructive surgery.To meet the increasing demand sufficient beds and in-patient facilities were made available in the district hospital.

Results: The unit that started as a referral unit to manage complications has now been established as a full-fledged centre providing specialised care for leprosy as well as surgical services.The centre has got its recognition as RCS centre by Government of India.2566 people affected by leprosy benefitted from various services through this centre during the past three years. The demand for reconstructive surgeries is increasing and a total of 162 operations were undertaken at the centre and the cases are being followed up with support of field staff.The

beneficiaries include 151 reaction cases and 211people with ulcers. The achievement of the centre also includes detection of 148 new cases.

Conclusion:
- Two or more independent organizations working together achieve more effective result than they could by working separately.
- Has proved itself a good practice and a success model of GO NGO collaboration.
- Sustainability is ensured as the centre is fully operational within the public health care system but devoted and trained man-power is made available for the Referral Centre.

P-448

Presentation Time: **Thursday 19/09/2013 at 15:30 – 15:40**
Abstract Topic Name: **Reconstructive Surgery**
Presentation Screen Number: **1**
Presenter: Ryinmon Lanong

PROVISION OF RECONSTRUCTIVE SURGERY SERVICES TO UNDERSERVED POPULATION IN THE STATE OF ASSAM INDIA UTILISING ALL AVAILABLE RESOURCES AND INVOLVING ALL PARTNERS.

R. R. Lanong [1,*], M. Natarajan [1], J. Manikkathan [1], B. Mahato [1]

[1]AIFO, Bangalore, India

Introduction: Persons Affected by Leprosy from 5 neighbouring districts Sonitpur, Sibsagar, Dibrugarh, Dhamaji, and Lakimpur, underserved population that are difficult to access reeling under constant effects due to Tribal, Immigrant Social unrest, civil disturbances, added by remoteness, natural calamities like flood during Monsoon and lack of Reconstructive Surgery facilities. There are no Leprosy NGO's nor Non-Leprosy NGO's operating in this State providing Leprosy RCS Services. Efforts to involve Medical Colleges to provide RCS supporting National Leprosy Programme in the State did not yield result. A pilot study was initiated to provide RCS – leprosy services to Underserved populations dwelling in these 5 Districts in Assam which is the transit State and main business centre for North Eastern States of India.

Methods: The State and District Leprosy Programme Officers where sensitised along with a local NGO – Catholic Hospital operating in a remote area -Borgang, Tezpur/ Sonitpur District. A Physio-technician was made operative to collect available information, trace, assess, motivate and prepare/provide physiotherapy to cases fit for RCS. Expert RCS surgeon was engaged – who trained the Hospital Surgeon/Staff and carried out Surgeries in 3 (three) phases. The focus was to build up confidence in the mind-set of people and service providers. Physiotherapy appliances along with psycho-social support – and information dissemination had played a key role.

Results: From March 2011 to December 2011 a total of 172 patients were screened and 34 found to be fit for surgery and 18 patients agreed to undergo surgery (the rest were not willing for surgery) were operated (20 operations).Reconstructive Surgeries carried out in 3 (three) phases, including ulcer care, while the Surgeon and Staff of the Institution underwent training.The Exercise created awareness and demand for surgery among Persons Affected and the Community – cases started to report voluntarily for Surgery to the District Leprosy Programme and the local NGO. The District, State Health System got sensitized and participation increased.

Conclusion: This study has not only assessed the feasibility of providing RCS even in a remote area where there is an Institution with Surgery Facility but also brought out ownership of the Partners to address the need of the persons affected. It has also sensitised the State and District Health System and created interest to the partners in establishing RCS referral System and consequently more participation by both the Government Health System and the NGO Health Delivery System.

P-260

Presentation Time: **Thursday 19/09/2013 at 15:40 – 15:50**
Abstract Topic Name: **Vaccines**
Presentation Screen Number: **1**
Presenter: Vanaja Shetty

BCG IMMUNOTHERAPY AS AN ADJUNCT TO CHEMOTHERAPY IN BL-LL PATIENTS – ITS EFFECT ON CLINICAL REGRESSION, REACTION SEVERITY, NERVE FUNCTION, LEPROMIN CONVERSION, BACTERIAL/ANTIGEN CLEARANCE AND 'PERSISTER' M. LEPRAE

V. P. Shetty [1,*], N. F. Mistry [2], A. V. Wakade [3], S. D. Ghate [3], G. D. Capadia [3], V. V. Pai [4]

[1]Deputy Director/Senior Scientist, [2]Director, [3]The Foundation for Medical Research, [4]Director, Bombay Leprosy Project, Mumbai, India

Introduction: *Background and Objective:* Multidrug therapy in leprosy has failed to eliminate the problem of persister bacilli. Clearance of bacterial antigens is extremely slow which could predispose to continued nerve damage even after release from treatment. In the present study the immunomodulatory efficacy of BCG vaccine administered post-MDT in BL-LL leprosy patients was investigated in depth with a view to determining if augmenting chemotherapy with immunotherapy would help in faster clearance of *M. leprae*/antigens, bring down the level of persisters and minimise the occurrence/severity of reaction and nerve damage.

Methods: This is a placebo-controlled study in treated BL-LL patients. The patients are matched with respect to age, sex, bacteriological index and history of reaction, stratified and allocated to the two groups. One group (Gr A) received two doses of BCG-MOSCOW ($3{\cdot}33x10^5$ cells) and the other (Gr B) normal saline (0.85%), injected intra-dermally at 3 month intervals. The Primary outcomes assessed at the end of 6 months were bacterial/antigen clearance, lepromin conversion, granuloma clearance and the occurrence of persisters. The secondary outcomes were clinical regression, occurrence and severity of reaction and changes in nerve functions.

Material: A total of 107 BL-LL patients comprised of 49 in Gr A and 58 in Gr B; of which 36 and 42 respectively completed the study as per protocol, and are included in the final analysis.

Results: *Findings:* The study findings show that both the primary and the secondary out comes were comparable in the two groups. Two doses of BCG administered post-MDT (Gr A) did not significantly alter the level of persisters or help in hastening the bacterial/antigen clearance, clinical regression of lesions and granuloma clearance. Lepromin conversion rates were also comparable. While the frequency of lepra reaction/ neuritis following the intervention was comparable, the severity of reactions was significantly higher in Gr A. On the positive side neural functions assessed by nerve conduction studies showed that deterioration of motor nerve conduction was significantly lower in the BCG arm. Since all patients developing moderate to severe reactions, immediately received a course of corticosteroids, it is possible that the timely use might have helped.

Conclusion: The study findings show that both the primary and the secondary out comes were comparable in the two groups.

P-261

Presentation Time: **Thursday 19/09/2013 at 15:50 – 16:00**
Abstract Topic Name: **Vaccines**
Presentation Screen Number: **1**
Presenter: Mohan Gupte

EFFICACY OF ANTI-LEPROSY VACCINES AFTER TEN-YEARS OF VACCINATION: COMPARATIVE LEPROSY VACCINE TRIAL IN SOUTH INDIA

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Introduction: We conducted a controlled, double-blind, randomized, prophylactic leprosy vaccine trial in a high leprosy endemic area in South India with the objective to assess the prophylactic efficacy of then available four candidate vaccines against progressive and serious forms of leprosy. Earlier BCG was withheld in the study area to study tuberculosis trends. However, as per the ethics committee recommendations, BCG was introduced in the area in programme mode. Intake was completed during 1991-93. First re-survey was conducted during 1993-95 with the objective to remove missed prevalent cases during intake. We observed statistically insignificant negative effect of the vaccines in the first re-survey. Second re-survey was completed during 1997-98. The rationale, design and efficacy levels based on second re-survey had been published (Gupte et al, 1998). A third re-survey was conducted from 1999 to 2002 to assess the protective efficacy of candidate leprosy vaccines after 10 years. We report here vaccine efficacy for the vaccinated cohorts, household contacts and prior BCG vaccinated individuals.

Methods: The study area comprised of 300,000 people from 264 contiguous villages in Chingelput district, Tamil Nadu, India. Totally 171,400 (59% of the total area population) were recruited as healthy volunteers based on their voluntary informed written consent. Allocation to anyone of the four vaccines [BCG + Killed *M. leprae* (KML), BCG, ICRC, Mycobacterium. w (M.w)] or placebo (normal saline) was randomly done. All the examinations were conducted by trained field investigators blinded to prior clinical or vaccination status. Final decoding was done in 2003. We estitmated cumulative vaccine efficacy (%) and 95% Confidence Interval (CI) based on Mantel-Hanzel test adjusted for age, sex and arms for general population, household contacts and those with BCG scars.

Results: At the third re-survey, 68% of the original cohort and 90% of the available cohort were examined. Totally 168 new cases were identified. More than 70% of the cases were having single patch and 2% had smear-positivity. At the end of third re-survey, cumulative vaccine efficacy (95% CI) adjusted for arms, age and sex for individual vaccines was: BCG: 13% (-2, 25); BCG+KML: 39% (27, 49); M.w: 9% (4, 32) and ICRC: 37% (20, 50). Among household contacts, the cumulative efficacy estimates (95% CI) were: BCG: 16% (-14, 38); BCG+KML: 49% (27, 64); M.w: 45% (21, 62) and ICRC:46% (12,66). The cumulative efficacy (95% CI) among those with BCG scar was: BCG: 15% (-88, 62); BCG+KML: 77% (19, 94); M.w: 57% (-22, 85) and ICRC: 75% (-20,95).

Conclusion: A single-dose of BCG + KML and ICRC offered moderate protection against leprosy among both general population and household contacts even at the end of 10 years. BCG+KML offered significant protection for those with prior BCG vaccination. As such there is no sufficient justification for universal use but they may be considered for vaccinating total population in areas or pockets, where leprosy is still highly endemic.

P-207

Presentation Time: Thursday 19/09/2013 at 15:30 – 15:40
Abstract Topic Name: Epidemiological Surveillance
Presentation Screen Number: 2
Presenter: Abraham Selvasekar

POPULATION BASED LEPROSY REGISTRY AS AN ALTERNATE METHOD TESTED TO ASSESS & DOCUMENT THE MAGNITUDE OF LEPROSY IN URBAN METROPOLIS: ITS MERITS AND DEMERITS

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Introduction: Migratory shift of population in large number from rural to urban is becoming a serious phenomenon causes duplication of statistics, defaulter from therapy, difficulties in implementing medical services and welfare schemes, destabilising health infrastructure meant for urban areas etc. In urban areas 80% health care service providers are from the private sector, hence a sizable number of leprosy cases could go unreported to the national statistics. Leprosy being a stigmatizing disease naturally many would not prefer to get treated in crowded Govt institutions rather seeks a private medical practitioner (PMP) secretly. The PMP can be grouped into allopathy and non-allopathy. Non allopathy ie., Indian system of medicine can be further divided into AYUSH (Ayurveda, Unani, Sidda, Homoepathy), registered medical practitioners, bone setters, traditional healers, quacks etc. hence the patients can seek from a wide choice. Delhi is one of the fastest growing metropolises with 17 million popn (2011 census). The city attracts huge migrant populations seeking livelihood options from the nearby states of Bihar, UP, Jharkhand etc. that are leprosy endemic. To recapitulate Delhi has peculiar problem of multiplicity of service provider, huge migrant population, and population mobility inter states. In response to this, a novel registry concept replicated from cancer control program to improve documentation in chronic diseases like Leprosy.

Methods: The method of developing a PBLR is described in 5 stages. First 4 defined areas has been selected preferably single ward in 4 strategic locations with boundaries with each area having a population of 1.25 lacs. The selected areas are as follow Dilshad garden (1.1 lac popn), Seema puri (1.0 lac popn), Trilok puri (2.1 lac popn) & Prem nagar (1.1 lac popn) with a total aggregate of 5.3 lac populations. There are about 15 major govt and private hospital located in these areas and so far 427 PMPs have been identified. **Stage 1:** is the secondary data collection: Leprosy cases identified from the prominent tertiary care institutions such as The Leprosy Mission, Guru Teg Bahadur, All India Institute of Medical Sciences, Ram Manohar Lohia, Safdharjung Hospitals etc traced back many years retrospectively and collected. The leprosy cases arising from these 4 areas segregated and stratified according to sex, grouping, treatment status, disability details etc. **Stage 2:** is locating the institutions under public sector and identifying the individual PMPs of both allopathy & non-allopathy. Project staff made repeated visits to their clinics and collected information about leprosy cases treated by them. **Stage 3:** is updating the registry on monthly basis by the primary data collection. **Stage 4:** Medical camps followed by A modified leprosy elimination campaign (MLEC) type cost-effective search exercise were conducted in the study area. **Stage 5:** lastly a house-to-house rapid survey was conducted.

Results: A total leprosy cases identified were 3975 (100%), of which stratified 3253 (82%) as MB & rest as PB; 1106 (28%) cases on records and 2869 (72%) were RFT ed ones. 310 (8%) had WHO grade 1, 311 (8%) had WHO grade 2. 418 (11%) from Delhi. 2246 (56%) from suburbs, 1311 (33%) from states. So far 30 cases treated by PMP have been brought into the registry, updated on monthly basis.

Conclusion: PMP plays a significant role in treating leprosy and in updating the leprosy registry. In general, morethan 1/3 of the leprosy cases are getting cured without any visible disability; hence the need for maintaining such a labour intensive exercise is questionable.

P-208

Presentation Time: Thursday 19/09/2013 at 15:40 – 15:50
Abstract Topic Name: Epidemiological Surveillance
Presentation Screen Number: 2
Presenter: Dr Maria Katia Gomes

STUDY OF THE INCIDENCE OF LEPROSY IN CHILDREN UNDER 15 YEARS IN STATE REFERENCE CENTER POLYCLINIC OSWALDO CRUZ, PORTO VELHO (RO), 2007-2012

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Introduction: Leprosy is endemic in Brazil, specially in the north region. Besides the improvement in public health strategies and the introduction of multiple drug therapy, the elimination of this disease continues distant in most parts of our country. The incidence of new cases of leprosy in children under 15 years is the most important index of epidemiological risk. The objective of this study is access the incidence of new cases of leprosy in children under 15 years in State Reference Center in Rondônia, Brazil.

Methods: This descriptive study by gathering data from 33 reporting forms and leprosy control in under 15 years, the overall total of 537 patients diagnosed between January 2007 and December 2012.

Results: The cases of leprosy in children under 15 years account for 6.14% of the total cases detected in the period. The gender distribution was stable, with 51.5% in males and 48.5% females. The predominant age group was 10 to 14 years, accounting for 72.7%. Regarding clinical form, it is perceived as predominantly with borderline tuberculoid and 33.3% with 30.3%. The degree of disability was assessed at 100% of cases, of which 9.1% had physical disabilities.

Conclusion: The detection rate in this age group remained at very high level, with an increase in incidence in the last two years. This fact may be related to the constant influx of families to the region in search of job opportunities in the construction of the Hydroelectric Plants. The detection in this age group still occurs late, the difficulty of access to basic health services in municipal and State Reference centralization, culminating in the installation of physical disabilities, keeping the prejudice and stigma of the disease.

P-209

Presentation Time: Thursday 19/09/2013 at 15:50 – 16:00
Abstract Topic Name: Epidemiological Surveillance
Presentation Screen Number: 2
Presenter: Dr Maria Katia Gomes

RELAPSE CASES (OR RE-INFECTION) DETECTED SINCE 1997 TO 2012 IN REFERENCE HEALTH UNITS OF PORTO VELHO, RONDONIA, BRAZIL

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Introduction: Leprosy is endemic in Brazil,specially in the north region. Besides the improvement in public health strategies and the introduction of multiple drug therapy, the elimination of this disease continues distant in most parts of our country. Multidrug therapy for multibacillary forms (MDT /MB) continues to be a safe and effective in the treatment of leprosy. However some relapse cases have been detected in Rondonia state in Brazil. The aim of this study is to present the results of relapse cases since 1997 to 2012 in this endemic state of the country.

Methods: The study was conducted through medical consultations and data described in medical records.

Results: We identified 39 relapse cases of MB leprosy, most of them was treated with DNDS MDT/MB 12-39 doses. Since the begining of this study we found one case in 1998, 2001, 2003, 2004; five cases in 2005; three cases in 2006; five cases in 2007; three cases in 2008; four cases in 2009; three cases in 2010; six in 2011 and five in 2012. Men were predominant. The preiod of new manifestations varied from 4.5 years to 20 years.

Conclusion: The results of this study demonstrate the need for monitoring post discharge patients. It is important to point out that relapse cases should be analyzed carefully and also the treatment approach that were ineffective. It is difficult to identify if this cases can be considered as relapse or re-infection. We believe that these cases may contribute to maintenance of endemic characteristic of leprosy. Reinforce the need for monitor cases of relapse/re-infection.

P-494

Presentation Time: Thursday 19/09/2013 at 15:30 – 15:40
Abstract Topic Name: Eye in Leprosy
Presentation Screen Number: 3
Presenter: Saibaba Alampur

CORTISONE INDUCED CATARACTS AND GLAUCOMA IN ETYTHEMA NODOSUM LEPROSUM

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Introduction: Erythema nodosum leprosum occurs mostly in lepromatic leprosy, occasionalyl in border line lepromatic leprosy. It can occur any time even during the course of the treatment or in long standing cases. These are immunological responses. Immune system plays an important in Leprosy determines how the disease develops. In these cases it is essential to use cortisones and sometimes repeated use. The cortisones are used in the dose of one milligram for one kg body weight for 12 weeks in tapering doses in our hospital we have followed up for ocular complications.

Methods: In our outpatient department daily we get about 100 new and old cases not only from our state from Maharastra and Karnataka. We have studied the effect of cortisones in Erythema nodosum leprosum reactions in 100 cases which are admitted in our hospital. They were given

cortisones 1 mg for 1 kg body weight in tapering dose for 12 weeks and they are observed for about 2 months in cases of recurrence cortisone was repeated. These patients are followed up to 5 years till the bacterial index is zero.
This study is done on all these patients for ocular complications.
We have examined 100 patients 63 males, 37 females but only 45 patients (45%) could be followed till the end. 8(17.7%) patients developed cataracts, 7(15.5%) patients developed Glaucoma and 3 (6.6%) patients had both.

Results: We have used oral cortisones in all admitted ENL reaction patients. Out of which we have taken up 100 cases for our study. 45 patients were followed till the end. Cataract was seen in 8 patients. The mechanism of development of cataract is not understand. The development of Glaucoma is due to changes in mucopolysaceharides in trabacular mesh work, causing hindrance to the drainage of aqueous resulting in raised intra ocular pressure.

Conclusion: Development of cataract and Glaucome is irreversible but can't be interfered during the course of treatment or relapses. The glaucoma can be controlled by using the topical drops. The use of cortisones in saving the life of patients outweigh the complications but one should be cautious. In mild reactions use of non steroid anti inflammatory drugs with antibiotics may be sufficient.

P-308

Presentation Time: Thursday 19/09/2013 at 15:40 - 1550
Abstract Topic Name: Other Micobacterial Diseases
Presentation Screen Number: 3
Presenter: Rie Yotsu

EPIDEMIOLOGY AND CLINICAL CHARACTERISTICS OF BURULI ULCER IN JAPAN

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Introduction: Buruli ulcer is commonly known as a disease confined to areas with tropical climate. However, interestingly, there are also, a few, but cases of Buruli ulcers in Japan. The first case was reported by Mikoshiba *et al*. in 1982 which was a case of a 19 year-old female who presented a chronic and necrotic ulcer on her left elbow. The case was considered to be an endemic infection due to lack of travel history outside the country. Later, Tsukamura *et al*. reported the mycobacterium obtained from this ulcer showed a close resemblance to *M. ulcerans*, but with some differences, in which with further research, he advocated this novel subspecies as "*M. ulcerans* subsp. *shinshuense*". As of end of the year 2012, similar cases have accumulated to 36 in total diagnosed in different parts of Japan. In our presentation, we will summarize the epidemiology and characteristics of these cases for us to gain a better knowledge of the disease.

Methods: At the Leprosy Research Center, National Institute of Infectious Diseases (Tokyo, Japan), we keep a database of all cases of Buruli ulcer diagnosed in Japan. We analyzed the records of 36 cases in this database using both quantitative and qualitative methods.

Results: Twelve (33%) were male, and 24 were female (67%). The age distribution was 8, 18, and 10 cases for 0-15 year-old, 16-60 year-old, and over 60 year-old, respectively. Cases were reported sporadically across the country, but some prefectures (similar to states) had concentration of cases such as Okayama where they had a total of 9 cases diagnosed to date. Out of the total, 22 (61%) were cases diagnosed 2010 onwards. 29 cases (81%) were category I, 7 cases (19%) were category II, and 0 cases (0%) were category III. Nine (25%) had achieved complete cure by treatment with rifampicin, clarithromycin, and levofloxacin regimen. We performed 16S rRNA sequencing in 27 cases (75%), and *M. ulcerans* subsp. *shinshuense* was identified in all these cases.

Conclusion: Our cases of Buruli ulcers are unique with particular distribution and pathogen. A further case finding and epidemiological study is needed in Japan, for there lies a possibility of hidden cases due to low awareness. Though we only have small number of cases diagnosed as of now, investigating in-depth of these cases may aid us in discovering the unknown aspects of the disease including the mode of transmission and its vector(s).

P-402

Presentation Time: Thursday 19/09/2013 at 15:30 – 15:40
Abstract Topic Name: Genetics and Leprosy
Presentation Screen Number: 4
Presenter: Dr Yong Ning

GENETIC VARIANTS IN NOD2, C13ORF31 AND CCDC122 GENES ARE ASSOCIATED WITH LEPROSY IN THE YI CHINESE POPULATION

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Introduction: A significant association between single nucleotide polymorphisms (SNPs) in the NOD2, C13orf31, CCDC122 genes and leprosy have been reported in previous Genome Wide Association Study (GWAS) of leprosy. This study investigated the association between SNPs in NOD2, C13orf31 and CCDC122 and leprosy in the Yi Chinese population.

Methods: We genotyped rs9302752, rs7194886, rs8057341 and rs3135499 in the NOD2 gene, rs3764147 and rs10507522 in the C13orf31 gene, rs3088362 and rs9533634 in the CCDC122 gene in a Yi Chinese cohort composed of 319 patients with leprosy and 355 ethnic matched controls. The differences between the cases and controls were compared using $\chi 2$ analysis.

Results: Significant differences of rs3135499 in the NOD2 gene, rs3764147 and rs10507522 in the C13orf31 gene, rs3088362 and rs9533634 in the CCDC122 gene were observed between the case and control groups in this cohort. The allelic p-value was 1.0×10-8 with an odd ratio of 2.5 for rs3135499; the allelic p-value was 1.7×10-7 with an odd ratio of 1.88 for rs3764147; the allelic p-value was 1.16×10-5 with an odd ratio of 1.95 for rs10507522; the allelic p-value was 8.2×10-4 with an odd ratio of 1.51 for rs3088362; the allelic p-value was 5.34×10-5 with an odd ratio of 1.73 for rs9533634. No Significant differences were found in the distributions of rs9302752, rs7194886 and rs8057341 between the case and control groups in this study.

Conclusion: We demonstrated that genetic variants in the NOD2, C13orf31 and CCDC122 genes are significantly associated with leprosy in the Yi Chinese population, which expands the pathogenesis role of NOD2, C13orf31 and CCDC122 genes in a different ethnicity.

P-403

Presentation Time: Thursday 19/09/2013 at 15:40 – 15:50
Abstract Topic Name: Genetics and Leprosy
Presentation Screen Number: 4
Presenter: Xiang-Yang Han

ON THE AGE OF LEPROSY

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Introduction: Leprosy is a chronic infection of the skin and nerves caused by *Mycobacterium leprae* and the newly discovered *Mycobacterium lepromatosis*. Human leprosy has been documented for millennia in ancient cultures. Recent genomic studies of worldwide *M. leprae* strains have further traced it along global human migration routes during the past ~100,000 years. Because leprosy bacilli are strictly intracellular, we wonder how long humans have been affected by this disease-causing parasitism.

Methods: We reviewed and analyzed studies published in the past decade on *M. leprae* genome, discovery of the new leprosy agent M. lepromatosis, evolution of the leprosy bacilli, human evolution, and human susceptibility to leprosy. We proposed hypotheses on the age of leprosy and examined them. We also used the proposed age to explain leprosy pathogenesis.

Results: It is most likely that the leprosy bacilli started parasitic evolution in humans or early hominids millions of years ago. The alternative hypothesis of incidental transmission of leprosy to humans in the past a few hundred thousand years is unlikely. This makes leprosy the oldest human-specific infection. The unique long adaptive evolution has likely molded the indolent growth and immune evasion to human defense that may explain leprosy pathogenesis. Accordingly, leprosy can be viewed as a natural consequence of a long parasitism. The burden of leprosy may have affected selection on human genetic polymorphisms.

Conclusion: Human beings have likely been affected by leprosy for millions of years.

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Presentation Time: Thursday 19/09/2013 at 15:50 – 16:00
Abstract Topic Name: Genetics and Leprosy
Presentation Screen Number: 4
Presenter: Evaldo Amaral

INFLUENCE OF IFNG +874 T/A AND IL10 -819 C/T SINGLE NUCLEOTIDE POLYMORPHISMS (SNP) ON THE SUSCEPTIBILITY TO LEPROSY: A FAMILY-BASED STUDY AND META-ANALYSIS

E. P. Amaral [1], A. C. O. C. Fabri [1], A. P. M. Carvalho [1], M. A. F. A. Lautner [1], F. N. Lopes [1], M. O. Moraes [2], F. C. F. Lana [1,*]

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Introduction: Leprosy is an infectious disease that presents a large spectrum of clinical manifestations. The outcome of the infection by *Mycobacterium leprae* ranges from self-healing to the polar forms of disease. This variation is correlated to the level of host immune response to the pathogen, which in turn is influenced by the individual genetic background. The majority of genes and genomic regions associated with susceptibility/resistance to leprosy are related to the production of cytokines and other important molecules in the immunological pathways, like interferon-gamma and interleukin-10. However, although this hypothesis is widely accepted, different studies with distinct populations have often discordant or controversial results. For this reason, it is necessary to perform additional studies, with different designs and populations, aiming to replicate and validate the results already found. The objective of this study was to evaluate the association of the interferon-gamma gene (*IFNG*) +874 T/A and interleukin-10 gene (*IL10*) -819 C/T SNPs with leprosy *per se*.

Methods: We conducted a family-based study and the analysis was performed using the Transmission Disequilibrium Test (TDT). A total of 447 individuals, including 147 leprosy cases, distributed for 125 nuclear families were recruited from the microregion of Almenara, a hyperendemic area of Brazil. The software FBAT v.2.0.3 was used for the analysis. Then, we searched for published reports about association studies correlating that polymorphisms and leprosy in Medline. The eligible studies were selected using pre-established criteria and their data were combined with the results of TDT in the meta-analysis to define consensus odds-ratio (OR) estimates. Three papers were included in the *IFNG* +874 T/A meta-analysis, with a total of 3565 individuals involved (1561 cases), while six papers were used for the *IL10* -819 C/T, involving 5097 individuals (2015 cases). Meta-analysis was performed with fixed-effects model because no heterogeneity was observed between the studies and data were analyzed in respect to associations between alleles. These analysis were carried out using the software R v.2.10 and the package "*meta*".

Results: No association was observed between *IFNG* +874 T/A ($P = 0.977$) and *IL10* -819 C/T ($P = 0.910$) and the susceptibility to leprosy in the family-based study. However, meta-analysis found statistically significant results for both SNPs. It showed a protective effect of the *IFNG* +874 T allele (Pooled OR = 0.841; 95% CI 0.754-0.939; P = 0.003). The *IL10* -819 T allele was associated to disease susceptibility (Pooled OR = 1.28; 95% CI 1.177-1.384; $P = 0.001$).

Conclusion: The results of meta-analysis suggest the role of *IFNG* +874 T/A and *IL10* -819 C/T as genetic markers for leprosy susceptibility, but further studies will be required for conclusive validation.

P-436

Presentation Time: Thursday 19/09/2013 at 15:30 – 15:40
Abstract Topic Name: Leprosy Control
Presentation Screen Number: 5
Presenter: Fàtima Moll Cervera

WORK OF ASOCIACIÓN FONTILLES IN INDIA

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Introduction: The Asociacion Fontilles started to fight againts the disease of leprosy in 1909 in Spain. During over 100 years its work in Spain together with the implementation of the multidrug therapy recommended by the World Health Organization (WHO) and the general social and economical improvement of the country initiated in the 1960s has managed to eliminate the disease as a public health problem.
During those years The Asociacion Fontilles started its international cooperation, becoming a member of The International Federation of Anti-Leprosy Associations (ILEP) in 1969 and therefore extending its collaboration to other countries where leprosy was still a major health problem like India. The work of Fontilles in India at present is reviewed.

Methods: The different projects Fontilles is undergoing in India, its local partners and potential benefits for the control of the disease are reviewed.

Results: At present Fontilles collaborates in 5 different health related projects in India: Gujarat, Karnataka and Madhya Pradesh with local partners and under the coordination of the institution's representative in India, B. Vijayakrishnan. The projects cover different aspects of the disease: case detection, public awareness and perception of the disease, training health personnel and rehabilitation and social and economical care of the individuals affected.
The projects that are being carried out by Fontilles in India are:
- Collaboration with Jabalpur Referral Centre of Victorian Hospital, Madhya Pradesh.
- Collaboration with St. Joseph Leprosy Centre, Sanawad, Madhya. Pradesh.
- Elimination of leprosy and mainstreaming of leprosy related services in Bangalore, Karnataka.
- Work with the Parvatibai leprosy hospital, Surat, Gujarat.
- Collaboration with the Arogya Matha Health Centre, Harapanahalli, Karnataka.

Conclusion: The control of leprosy in any country has to be coordinated with all the partners implicated with the individuals affected by the disease. From the very beginning of its international collaboration the Asociacion Fontilles has always worked with local social/religious partners and relied on the support of the local health authorities responsible for the control of leprosy and other international organizations implicated in this field to improve the coordination and services needed by the affected individuals.

P-437

Presentation Time: Thursday 19/09/2013 at 15:40 – 15:50
Abstract Topic Name: Leprosy Control
Presentation Screen Number: 5
Presenter: Annamma John

SOCIO-CULTURAL FACTORS AND NLEP INPUTS FOR PREVENTION OF RECURRENT REACTION AMONG LEPROSY PATIENTS

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Introduction: Though it is well understood that psychological stress plays a major role in causing physiological disturbances leading to type-1&2 reactions in leprosy, a strategy for prevention of recurrent ulcers could not be developed due to lack of adequate knowledge on the behavioral and environmental circumstances causing the psychological stress, which are unique in case of each individual in diverse cultural settings. Development of a strategy for prevention of reactions should be of today's priority than treating the recurrent reactions for which detailed qualitative understanding of these causative factors is of vital importance.

Methods: In order to establish a profile socio-cultural risk factors associated with leprosy reactions, a qualitative and epidemiological study has been carried out, involving all the leprosy patients treated for type-1&2 in TLM, Kolkata and the surrounding leprosy hospitals, from the age group of 10-60 years. The necessary data has been collected from the patients/ family members using interview schedule and the hospitals' medical records respectively.

Results: The paper presents the significant the psycho-socio-cultural and disease-treatment related factors that could be utilized for prevention of leprosy reactions among the patients of various profiles.

Conclusion: The paper is intended to draw conclusions on behavioural inputs for prevention of type-1&2 reactions, to be incorporated in the National Leprosy Eradication Programme (NLEP) with involvement of National Rural Health Mission (NRHM) functionaries in India.

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Presentation Time: Thursday 19/09/2013 at 15:50 – 16:00
Abstract Topic Name: Leprosy Control
Presentation Screen Number: 5
Presenter: Yohanna Abdou

EVALUATION OF THE IMPACT OF THE LEPROSY MISSION'S SUPPORT TO LEPROSY CONTROL IN MARADI REGION, NIGER REPUBLIC

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Introduction: The Leprosy Mission (TLM) has been supporting leprosy work in the Maradi region for over 2 decades. The work is conducted through our partners, the Ministry of Health in Maradi Region and the evangelical missionary society, SIM. Over the years, the work that TLM has supported has grown from medical management only to physical and socio-economic rehabilitation, the latter in collaboration with IDEA Niger.
In April 2012, an evaluation was conducted of the work in the Danja area of Maradi Region. The evaluation looked at the achievements and impact in the SIM-owned hospital, the field leprosy programme and the targeted communities.

Methods: Using participatory learning methodology where possible, the evaluation collected both quantitative and qualitative data from key informants, including hospital staff, community members and people affected by leprosy themselves.

Results: The main achievements include:
- Key indicators for leprosy control, POD and socio-economic issues show improvement over the past 5 years.
- Infrastructure development at the referral hospital to improve the quality of services provided to people affected by leprosy.
- Training of key staff for sustainable quality care
- Improved management of leprosy complications
- Development of cooperative groups in the 5 targeted communities.
- Literacy classes, in particular with the women.
- Food security has been addressed and seed banks have been improved.
- Various trainings were offered to the communities including financial management and leadership training.
- Self care groups and self care implementation in the community has resulted in fewer ulcers, decreased ulcer recurrence and fewer hospital admissions.

Lessons learned include:
- Community development in a group of people with a very low baseline income and capacity level will take a long time with a lot of input initially to get them up to a level comparable to surrounding communities.
- The outcome after trainings without follow up will be poor and may not achieve the objective to reach out to the wider region of Maradi.

Conclusion: Sustainability of the impact of this programme is dependent on the continuation of a combination of hospital and community work – community-based rehabilitation with a strong relationship with the specialist services available at Danja Hospital. The great benefit of the current 5 communities is worth sharing so the plan is to expand the CBR programme into other communities.

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Presentation Time: Thursday 19/09/2013 at 15:30 – 15:40
Abstract Topic Name: Detection and Treatment of Reactions
Presentation Screen Number: 6
Presenter: David Scollard

RISK FACTORS FOR LEPROSY REACTIONS IN THREE ENDEMIC COUNTRIES

D. Scollard [1,*], C. M. T. Martelli [2], M. Stefani [3], M. de Fatima Maroja [4], L. Villahermosa [5], F. Pardillo [5], K. B. Tamang [6]

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Introduction: Reactions and neuritis are major complications of leprosy. The goal of this study was to ascertain risk factors for these complications in leprosy patients at the time of diagnosis and during multiple drug treatment (MDT).

Methods: Newly diagnosed patients were enrolled in this prospective study conducted in Goias and Manaus, Brazil; Cebu, Republic of the Philippines; and Lalgadh, Nepal. A standardized history and physical exam were performed at the initial visit and these were repeated at the time of a reaction or, if no reaction occurred, at the end of the treatment period. Patients were excluded from the study if treated with corticosteroids immediately prior to the initial visit, or if poor follow up was anticipated due to distance from the clinic. Baseline (pre-treatment) data were analyzed using a case-control approach; follow-up data during MDT were analyzed as a cohort study.

Results: Of the 1972 patients enrolled in this study, 22% had a reaction or neuritis at the first visit, prior to treatment. Overall the most frequent event was Type 1 reaction (13.7%) followed by neuritis with no signs of reactions (6.9%) and 1.4% of Type 2 reaction. At baseline, Type 1 reaction was diagnosed in 14.6% of males and 12.1% of females, and T2R in 1.6% and 1.7% respectively. Overall, nutritional status was not significantly associated with reactions or neuritis. MB forms were more likely to be independently associated with reactions or neuritis combined. Of 581 patients followed to completion of MDT, the overall incidence of acute events (T1R or T2R or neuritis) was 33.3%. Multibacillary patients had an incidence of any events of 54.5%, almost 3 fold higher than PB patients (16.9%). It was not possible to ascertain any association with phase of the menstrual cycle in women, due to a long duration of reaction prior to seeking medical attention in many cases.

Conclusion: Neuritis is a complication of leprosy that is often not associated with the other clinical signs and symptoms of reaction.
Both T1R and T2R were observed at the initial visit, prior to treatment, in 13.7 % and 1.4 % of patients, respectively, indicating that reactions are not the result of treatment.
Among patients who did not have a reaction at the time of diagnosis, T1R and T2R occurred during MDT in 16.7 % and 3.3%, respectively, comparable to baseline data.
Complications occur in both lepromatous and tuberculoid patients during treatment, but at a 3-fold greater frequency in lepromatous disease.
Reactions and neuritis occurred in many children with single-lesion disease, although children had the lowest incidence of these complications.
The risk of reaction appeared to be correlated with increasing age.
The incidence of T2R may have been underestimated in the baseline case-control study due to the exclusion of patients who had received corticosteroids prior to presentation.

P-384

Presentation Time: Thursday 19/09/2013 at 15:40 – 15:50
Abstract Topic Name: Detection and Treatment of Reactions
Presentation Screen Number: 6
Presenter: Meenu Sethi

ROLE OF THALIDOMIDE IN THE MANAGEMENT OF ERYTHEMA NODOSUM LEPROSUM (ENL) REACTIONS – EXPERIENCES REPORTED FROM REFERRAL HOSPITAL IN DELHI

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Introduction: Leprosy is a chronic disease caused by *Mycobacterium leprae*. Patients affected by leprosy are prone to reactions based on their clinical and immunological characteristics. Apart from the usual manifestation of anesthetic patches and loss of sensation in the extremities, leprosy also manifests as Reversal and ENL.The oral corticosteroids when given to ENL patients for a prolonged period, leads to its dependence and to other metabolic problems which becomes a reason of concern. Thalidomide is the miracle drug which can be used as a steroid sparing drug. Following Sheskin's serendipitous discovery in refractory ENL in 1961, it has been a good choice for men and post menopausal women particularly in chronic recurrent ENL, The only limitation of this drug which led to a major tragedy in 1961 owing to its disastrous teratogenic effects. It was later granted approval by the US FDA in 1998

Methods: This study was carried out in a leprosy referral centre in Delhi, all the patients treated for ENL during 2008-12 were taken into consideration and the data of the patients were retrieved and analyzed retrospectively. A total of 215 patients exhibited ENL, were initiated on standard tapering course of Prednisolone according to the protocol. Majority of them (> 95%) responded well to therapy. However 6 of them had severe recurrent ENL, dependency to higher doses of steroids with added complications. Increased doses of clofazimine and / or phentoxiphyline tried but proved futile. Also, Azathioprine could not be used because most of patients had anemia or past history of Tuberculosis (TB). Hence these 6 (3%) patients were considered for thalidomide therapy. Before commencing the treatment all routine investigations like complete blood count, chest x-ray, urine pregnancy test and ultra-sonogram were done. They were hospitalized, counseled and written consent was obtained from the patients/spouses before starting them on thalidomide. They were advised strictly about usage of condom even after withdrawal of thalidomide for an extended period of 3 months. Thalidomide was administered in the following tapering doses: 100 mg thrice daily, followed by twice daily and once daily lasting for 3 months.

Results: The frequency and the severity of ENL came down drastically after administering thalidomide. Steroid dependency and steroid induced complications reduced significantly .The hospital had to bear the entire cost of thalidomide and inpatient charges incurred. The cost of each thalidomide capsule was Rs. 80 (Indian Rupees); the costing of 3 month course is approximately Rs 14,400 losing its affordability. It is a huge financial liability for the hospital, moreover to the patients when getting admitted for extended period losing their source of income leading to serious financial instability expecting the hospital for extended support.

Conclusion: Thalidomide is a useful and indispensible drug in the management of ENLs at least for a small proportion of patients. An expert committee comprising of State Leprosy officer, a Leprologist / Dermatologist and an experienced Physician should be constituted at all high endemic states in India. Supply of Thalidomide should be made available in the state capital under Nation Leprosy Eradication Program (NLEP), get approved case-by-case by the committee; supplied either free of cost or in a subsidized manner. There is a need to conduct clinical trials on newer analogues of the thalidomide like lenalidomide or Pomalidomide.

P-385

Presentation Time: Thursday 19/09/2013 at 15:50 – 16:00
Abstract Topic Name: Detection and Treatment of Reactions
Presentation Screen Number: 6
Presenter: Dr Isabela M. B. Goulart

IDENTIFICATION OF CLINICAL, EPIDEMIOLOGICAL AND LABORATORY RISK FACTORS FOR LEPROSY REACTIONS DURING AND AFTER MULTIDRUG THERAPY

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Introduction: Albeit the highly effective multidrug therapy (MDT) against leprosy, difficulties persist in the clinical management of leprosy reactions. As these acute episodes are recognized to be closely related to morbidity and disability, this study evaluates an addition of new variables, at both times of diagnosis and medical discharge, that could be predictive factorsfor leprosy reactions during and after MDT, in order that the determination of risk groups can promote improvements in the prevention, treatment and monitoring, thereby preventing nerve damage and the appearance of impairments.

Methods: Clinical, epidemiological and laboratory data from 440 leprosy patients, including patients affected by reactions during or after treatment and patients without reactions, were evaluated. Results of BI and PCR in skin smears, anti-PGL·1 ELISA, Mitsuda test, CBC and biochemical blood tests were analysed. Logistic regression, odds ratio (OR) and Spearman correlation were applied for statistical analyses at significance level of 0.05.

Results: Among the 440 patients, 57% (251/440) had reactions during and/or after multidrug therapy (MDT), of which 80.5% (202/251) presented Multibacillary (MB) leprosy. At diagnosis, positive BI (OR= 6.39; 95% CI: 4.1 to 10.1) and PCR (OR=9.15; 95% CI: 5.4 to 15.5) in skin smears, anti-PGL·1 ELISA (OR= 4.77; 95% CI: 2.9 to 7.9), leucocytosis (OR= 9.97; 95% CI: 3.9 to 25.7), thrombocytopenia (OR= 5.72; 95% CI: 2.3 to 14.0) and elevated serum lactate dehydrogenase (OR= 2.38; 95% CI: 1.4 to 4.0) were potential predictive factors for leprosy reactions during treatment. A direct correlation was observed between the quantity of reactions in this period and BI (r= 0.22; p= 0.0019) and anti-PGL·1 ELISA (r= 0.25; p= 0,0007). The Mitsuda test at diagnosis correlated inversely with the amount of reactions during the treatment (r = · 0.22, p = 0.0132). After treatment, positive BI (OR= 8.47; 95% CI: 4.7 to 15.3) and PCR (OR= 6.46; 95% CI: 3.4 to 12.3) in skin smears, anti-PGL·1 ELISA (OR= 2.25; 95% CI: 1.3 to 3.9), anaemia (OR= 2.36; 95% CI: 1.2 to 4.5), leucocytosis (OR= 4.14; 95% CI: 1.5 to 11.6) and thrombocytopenia (OR= 3.70; 95% CI: 1.3 to 2.2) were risk factors for reactions in this period.

Conclusion: Theassociation of the bacterial loadand the prevalence of immunologically unstable borderline patients inendemic areas could justifythe higher frequency of reactions among MB patients. The presence of leucocytosisand thrombocytopeniacould indicateanunderlying inflammatoryprocessorinfection thatwould triggerthereaction. Elevatedserum lactate dehydrogenase, whichis observed duringcellular damage, could be due to nerve injury. The increase in antibody productionis a consequencetoincreased bacterial load,hence stimulatingthe development ofreactions. Oncethe Mitsuda testincreases, thebacterial loaddecreases, consistent with the inverse correlation with the number ofreactionsduring treatment. Higher frequency ofreactionsduring treatmentthanafter treatmentis probably due tobacterialclearanceand improvedcell·mediated immunityestablishedby the treatment. The identification of likely predictive factors for the occurrence of leprosy reactions during or after MDT can contributesignificantly to thecharacterization of risk groups, supporting the implementation of newstrategies forthe prevention,control and managementof leprosy reactions, which will allow an action planningin a timely mannerto preventnerve damageandthereforethe appearanceof disabling sequelae, which has held thestigmaof this disease.

P-480

Presentation Time: Thursday 19/09/2013 at 15:30 – 15:50
Abstract Topic Name: CBR
Presentation Screen Number: 7
Presenter: Erik Post

THE ROLE OF TRADITIONAL LEADERS IN THE REHABILITATION OF PERSONS WITH A DISABILITY IN NORTHERN NIGERIA

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Introduction: Different studies on Hausa culture in Northern Nigeria find that disabled persons are regarded as valuable members of the society. Traditionally leadership plays an important role in Hausa culture. In Northern Nigeria disabled persons are organized in four groups, each with their own traditional leader (sarakuna): the Blind (sarkin makafi), the Deaf (sarkin gurami), persons with limb·related disabilities (sarkin guragu), and persons affected by leprosy (sarkin kutare). Each group has a role in their communities in begging, directing traffic, singing religious poetry, or teaching Islam. This study aimed at gaining ideas for community based rehabilitation (CBR) in Northern Nigeria by studying the role of such traditional leaders.

Methods: A literature study was done about the role and history of sarakuna.Interviews (N=26) were held with sarakuna, Disabled People's Organizations (DPO), government officials, NGOs, deaf and blind children, members of the Emirate Council and individual persons with disabilities. In addition, six FGDs were held with disabled persons and two with sarakuna themselves to explore their views about the role and position of the sarakuna.

Results: Respondents indicated that the "sarakuna" mainly have a social function and are seen as "father and judge" among their people, especially "when there is a misunderstanding between people... he will try to solve the problem and to change the people without involving others, because he knows the people". Sarakuna have limited access to government officials, because they are not well educated or don't know how to approach them. Existing DPOs in a district, however, often work together with sarakuna. In practice, many persons with disabilities have little access to the sarakuna (for example women, those who live far away, or are very poor). Among NGOs, DPOs and government bodies, sarakuna are seen as grassroot leaders. Although having some respect, community members view sarakuna as 'beggars' and belonging to the lowest class of society. Disabled persons mention that sarakuna are often old, not well educated and having problems in communicating. They feel they have no influence on decisions by sarakuna.

Conclusion: *Sarakuna* are important in Hausa culture, but many disabled persons don't think their role is essential. Disabled women hardly have access to them, whereas disabled men feel they have little influence, as this is confined to a small group around the *sarakuna*.
The activities of *sarakuna* are limited, and of limited use to their constituencies.
Sarakuna hardly seem to cooperate with other stakeholders involved in rehabilitation.
Their cooperation with DPOs seems essential if they are to contribute to CBR programmes. Training in advocacy, lobby and leadership would be helpful, including of some of their immediate advisors.

P-488

Presentation Time: Thursday 19/09/2013 at 15:40 – 15:50
Abstract Topic Name: CBR
Presentation Screen Number: 7
Presenter: Dr. Krishna Prasad Dhakal

EXPERIENCES WITH PHOTO-VOICE ON IMPLEMENTING CBR IN NEPAL,A STUDY: IDENTIFYING EXISTING BARRIERS FOR SOCIAL INCLUSION OF PWD/LEPROSY, CHANGING COMMUNITIES

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Introduction: Photo-voice is a community-based participatory action research method in which right holders & service providers collaborate. Pictures with captions provide a creative and effective way to record and discuss often difficult and deeply felt issues and mobilize grassroots' groups to affect changes. This approach allows for participants' voices to be truly heard. This voice was hoped to be a better starting point for a multi-partner CBR project than conventional planning methods.

Methods: 30 PWD including leprosy and their families were given cameras &trained to document their daily activities. Nepali journalists engaged in a critical dialogue about the photos to capture information about personal and community issues. Most expressive photos were exhibited to policy makers & different service providers, discussing possible local solutions and needs for programmatic approaches. All these inputs were used in a collaborative planning of a CBR approach to address real problems in real life.

Results: Photo-voice documented difficulties in PWD performing their daily activities, and their dependence on family. Village Development Committees, DPOs, local leaders and politicians attended exhibitions. Impact included awareness of family circumstances at village level, PWD getting to know each other, awareness of officials and leaders about PWD, DPO & SCG formation, plans at VDC level, accelerated issuing of PWD ID cards, and inclusion of leprosy in CBR. Community-driven activities followed.

Conclusion: Photo-voice effectively identified existing community problems & issues through direct involvement and participation of right holders. It linked up with service providers to help change communities and achieve the goal of community based inclusive development. The impact at personal and community level was above expectation, and comprehensive planning for inclusion followed, both at community level and through a partnership of international and local NGOs in collaboration with various government agencies

P-092

Presentation Time: Thursday 19/09/2013 at 15:30 – 15:40
Abstract Topic Name: Information, Education and Communication
Presentation Screen Number: 8
Presenter: Shesh Dhote

"AWARENESS" AN IMPORTANT IMPLEMENT TO ELIMINATE HIDDEN LEPROSY

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Introduction: A huge work was done before to eliminate leprosy in madhya pradesh india in the form of (modified leprosy elimination campaign) MLEC / SAPEL (special action plan for elimination of leprosy) and many other activities but then also **Annual New Case Detection Rate (ANCDR)** was not decreasing but it was very constant and the MB and deformity case ratio was increasing continuously, every year the ANCDR was near the last year.

Methods: Strategy: we were thinking about the constant ratio and suddenly, a surprising fact came in front of us that the most of the new patients were having residence near the MB, RFT and UT patients and from the group where the awareness about the leprosy was still very low. And thus we started a new activity to aware the people about leprosy in RFT&UT patient majority areas. Methodology: Now our **DISTRICT NUCLEUS TEAM** scheduled our every month calender with new case door-to-door validation and RFT&UT patient's home visits at the marked majority area of patient of our district and we use to demonstrate the early signs and symptoms of leprosy patient among the crowd and the relief he/she got after the treatment to the peoples.

Results: After these campaigns done by DNT team as a result, people started coming at our centre with query about their skin lesion and we got following surprising ratio
2008-09----MB-73% deformity G II 11.4%
2012-13----MB-58% deformity G II 2%

Conclusion: Through this activity we detected hidden cases, we detected high risk cases and were able to control deformity developed in them and now we have surprisingly raised ratio of **LEPROSY AFFECTED CONTACT PERSON (LACP)** and decreased ratio of **MB & Deformity Grade II** cases this year.

P-093

Presentation Time: Thursday 19/09/2013 at 15:40 – 15:50
Abstract Topic Name: Information, Education and Communication
Presentation Screen Number: 8
Presenter: Natarajan Manimozhi

CAPACITY BUILDING ACTIVITIES FOR MEDICAL OFFICERS OF HEALTH CENTRES IN LEPROSY REVEALING IMPORTANCE OF SIMPLE, PRACTICAL IEC INTERVENTIONS IN TWO DISTRICTS OF ASSAM - INDIA

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Introduction: As a part of Capacity Building activities supporting the National Leprosy Programme in the State of Assam, India at Sibsagar and Dibrugarh high endemic Underserved districts to the Medical Officers and health staff from the prioritised blocks. The role of motivation and active participation of participants in the programme is vital to ensure effectives of training programmes

Methods: A study was carried out to assess the magnitude of problem due to leprosy in the districts of Sibsagar and Dibrugarh and, just before the start and during the training programme using simple practical IEC interventions. Case Studies, observations methods, along with Informal Semi structured interviews among 11 patients, 44 health staff, along with community members available during the training programme as a group. Along with the District Leprosy Officer there where external experts in leprosy who participated as facilitators in the training programme – Each batch had a programme for two days.

Results: The major findings: The participants showed resistance to touch patients during the training programme, while there was no role model to exhibit good practices. The patients invited to the training programme for practical purposes where found to be sitting in segregation. What was disseminated to the community during the past IEC activities was not understood, while leprosy was identified with deformity and not patches. Patients with patches however did seek medical attention. Most of the cases registered in these health facilities was delayed diagnosis with grade 2 disabilities / MB type.
Case Studies indicated among the patients, Severe Psycho-social disturbances, Lack of support from Health facilities, family and the community. While the IEC intervention had shown immediate changes among the participants in proper gathering of Information and planning Leprosy activities including IEC

Conclusion: Only general health care services are available in Assam so everyone is dependent on the general health care services. The problems identified during the training programme some of them where not IEC problems which however received IEC activity intervention. And the study concluded that simple, practical IEC activity during training programmes become crucial for enhancing motivation and active participation of Health Staff in providing Quality, Sustainable, Integrated Leprosy services utilizing all resources available in the given area.

P-094

Presentation Time: Thursday 19/09/2013 at 15:50 – 16:00
Abstract Topic Name: Information, Education and Communication
Presentation Screen Number: 8
Presenter: Manit Chaninporn

FACTORS CONTRIBUTING TO LEPROSY KNOWLEDGE AND PERCEPTION IN THE HIGHT RISK COMMUNITY, THAILAND; THE DEVELOPMENT OF THE INFORMATION, EDUCATION AND COMMUNICATION (IEC) MODEL.

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Introduction: Communicative strategies to prevention and disease control are become importance. Effective communication occurs if the receiver understands the exact information or idea that the sender intended to transmit. Many factor that cause to failure, culture experiences or background in the past can be change the meaning of the message or it is interfere with the communication process.

Methods: The qualitative study aimed to study factors contributing of leprosy in high risk community toward knowledge perception and concerning and development information education and communication model in appropriate. **Study populations** were divided into 4 groups 1.Public health officer 2. leader community 3. People who affected by leprosy (PAL) 4. General member community. **Sampling method** selective population by grouping to prevent overlap each group. **Data collections** were semi-structure with open-end questionnaire, in-dept interviewed and focus group discussion. **Study area** was high prevalence of leprosy rate were sampling by using 5 year retrospective data (2001-2005). **Duration of study**, April – October, 2006.

Results: A total of 107 participants were enrolled in this study. 65.42% were female, age average 46 years. 83.18% finished secondary school, 95.34% were agriculture, civil servant and merchant were equal 2.33%. For a channel of information, 97.20% watched TV, 63.55% listened to radio, 39.25% read a newspaper and 26.16% listened to sound public address. The propose of information 98.13% interested in political, 87.85% interested in sports, 73.83% interested in gossip, and 56.07% interested in general. The duration to get information, 95.34% watched TV in evening, 45.79% listened to radio in day time, 27.10% listened to sound public address in morning. For the health information, 78.50% received from health officer when they go to see doctor, 74.77% received from billboard or vinyl in the village, 60.75% receive from newspaper, and 48.59% received from community radio. For leprosy information, 89.71% received from printed media (e.g.vinyl, etc.), 10.28% received from health officer. there was inadequate of media. The lacks of knowledge about leprosy. 92% of participants miss conception about cause of disease, mode of transmission and sign of disease. These including health officers. The perception about leprosy were 72.89% thought non leprosy in the community, 64.49% accepted that can live with deformity and 15.89% stigma and 20.56% though punished from god. The concerning about health problem, 75.70% concerned about non communicable disease (e.g.DM, CVD, HT, CA, etc.), 69% concerned with body weight, 64.49% concerned with beauty surgical. For concerning about leprosy, 70.09% none concerned, 20.56% concerned about skin lesion, and 9.35% concerned about deformity. Chi–Square and multiple logistic regression were used to analyze the relationships among the variables. It was found that the overall the lack of knowledge, and concerning of leprosy were at a low level whereas perception was at good level. It was found that age, income, education level were significantly associated with a lack of knowledge. However, other factors were not associated with a lack of knowledge.

Conclusion: The appropriate model of IEC were printed media because of more effectiveness and low cost when compared with training health officer in low prevalence situation which they maybe hardly found suspected case. In addition to, printed media play roll a tailor made in each context.

P-115

Presentation Time: **Thursday 19/09/2013 at 15:30 – 15:40**
Abstract Topic Name: **Immunology**
Presentation Screen Number: **9**
Presenter: Danuza Esquenazi

PREDOMINANCE OF CENTRAL MEMORY T CELLS AND PRO-INFLAMMATORY CYTOKINES IN RESPONSE TO MYCOBACTERIUM LEPRAE IN LEPROMATOUS LEPROSY RELAPSED PATIENTS

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Introduction: Although MDT regimen is strongly able to kill *M. leprae* and stop the dissemination of leprosy, the survival of bacilli in their latent form allows that about 30% of cases still present signs and symptoms of the disease within a non-determined period after healing. Throughout the years, and due to mechanisms that still require a better clarification, said bacilli may once more multiply and cause a relapse of the disease. Together with well-known factors like growth of surviving bacilli post-multidrug therapy (MDT), dapsone monotherapy and inappropriate/irregular therapy, some unclear immunological mechanisms may contribute to trigger such event. This study focused on the investigation of immune response to *M. leprae* and its association with relapse.

Methods: Relapsed lepromatous patients (n=16) were studied. Non-relapsed cured lepromatous individuals (n=10) under follow-up after treatment who showed no sign of relapse were also included in this study. This work also included new and untreated lepromatous (n=6) diagnosed patients just before the beginning of MDT. All patients were diagnosed according to Ridley and Jopling criteria and accompanied at Leprosy Outpatient Unit – FIOCRUZ. Voluntary healthy individuals (n=6) from endemic leprosy area were studied as control group. Peripheral blood mononuclear cells (PBMC) were stimulated in 24h and 5-day cultures in AIM-V medium with 20µg/mL *M. leprae* armadillo-derived lethally irradiated (provided by Dr. Patrick Brennan, Colorado State University, USA). Short-term cultures were performed in the presence of costimulatory antibodies anti-CD28/anti-CD49d. Pro- and anti-inflammatory cytokines were measured in stimulated supernatants collections by multiplex assay. Multiparametric flow cytometry was performed to determine parameters of innate and adaptative immune response.

Results: We observed an expressive inhibition of B7.2 (CD86) in both monocytes and dendritic cells (DC) from relapsed patients, either *ex vivo* or at *M. leprae*-stimulated cultures. Relapsed patients presented no significant levels of IFN-γ in response to *M. leprae*, neither before nor after treatment. We still noted a significant increase of naïve Vγ9Vδ2+ T lymphocytes and central memory CD4+ and CD8+ T cells (T_{CM}) after *M. leprae* stimulation, as well as an augmentation of pro-inflammatory cytokines, especially TNF-α in these patients. In contrast, reduced levels of IL-10 were observed in leprosy relapse.

Conclusion: Our results lead us to conclude that inhibition of B7.2 (CD86) may contribute for an impaired or reduced expression of T_{EF} cells responses against *M. leprae*. In addition, a predominance of T_{CM} in association with high ratio between TNF-α/IL-10 without IFN-γ production in relapsed patients may be related to the pathogenesis of relapse. Taken together, these findings may be associated with a progressive loss of capacity to inhibit *M. leprae* proliferation in these patients, thus leading to leprosy reemergence.

P-116

Presentation Time: **Thursday 19/09/2013 at 15:40 – 15:50**
Abstract Topic Name: **Immunology**
Presentation Screen Number: **9**
Presenter: Naveenchandra Suryadevara

USE OF AG85A IN IN VITRO T CELL ASSAYS – AN IMMUNE CORRELATE OF PROTECTION IN LEPROSY

D. kamakshi prudhula [1,*], P. sudheer [1], A. kameswara rao [2], S. naveen [3], N. sanjeev [3], V. vijaya lakshmi [1]

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Introduction: With a broad range of clinical outcomes, leprosy stands as a chronic, ancient neglected tropical disease and is highly endemic in India. Though BCG confers protection against leprosy by inducing a shift in the immune response to a higher level of cell-mediated immunity, several controversies prevail on the efficaciousness of the vaccine. There is a need to identify an immunogenic protein that could act not only as a vaccine, but also useful to develop a T cell assay that would reflect the clinical status of patients with leprosy. The main goal of the study thus was to investigate whether stimulating T cells with recombinant Ag85A would elicit protective immune responses. We could demonstrate that Ag85A, a component of BCG induced IFN-γ mediated T cell responses in most of the healthy individuals infected with *M.tb* and in BCG-vaccinated children.

Methods: Patients with tuberculoid- (TLEP=47) or lepromatous- (LLEP=30) leprosy or PNL (4), household contacts (HHC=37) and healthy controls (HC =55) were recruited in the study. During the course of MDT, a follow-up at 6th (9 each for TLEP and LLEP cases) and 12th month (4 TLEP and 6 LLEP cases) was performed. Written informed consent was obtained from every subject and ethical guidelines were followed while collecting blood samples. Antigen (AG85A and MLSA) -stimulated IFN-γ, IL-10, IL-17 were measured by ELISA. AG85A stimulated cytokines were analysed in the patients, since the concentration of cytokines induced by this antigen were either higher or comparable to that of MLSA in the healthy controls (both HHCs and HCs).

Results: Significantly high levels of IFN-γ was observed in the TLEP group, compared with LLEP ($p<0.027$), PNL ($p<0.001$), HHC ($p<0.031$) and HC ($p<0.040$). There were no differences between groups, when IL-10 was compared. Significantly low levels of IL-17 were observed in the TLEP group ($p<0.02$) compared with LL. IFN-γ significantly declined post-treatment at 6 months ($p<0.001$) and 12 months ($p<0.019$) in the TLEP group while a reverse trend was observed in LLEP (though insignificant). Also, IL-10 significantly reduced at 12 months in both TLEP ($p<0.035$) and LLEP groups ($p<0.003$). IL-17 concentration increased significantly at 6 months in TLEP ($p<0.015$) and at 12 months in LLEP groups ($p<0.004$).

Conclusion: Our observations suggest the potential use of Ag85A as a stimulant in *in vitro* tests with IFN-g and IL-17 as read-outs, immune correlates of protection in leprosy.

P-111

Presentation Time: **Thursday 19/09/2013 at 15:50 – 16:00**
Abstract Topic Name: **Immunology**
Presentation Screen Number: **9**
Presenter: Marco Frade

IMMUNOHISTOPATHOLOGICAL DIFFERENCES BETWEEN SKIN WITH AND WITHOUT CHANGES OF SENSITIVITY IN LEPROSY.

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Introduction: The study of the immunological processes and his relation with the alterations of sensitivity are important to understand the mechanisms wrapped in the presentation and in the development of leprosy. The purpose was to analyze the neuroimmuno-histopathological differences of the skin with and without alteration of sensitivity.

Methods: Ten leprosy patients were selected: 5 were paucibacillary (PB) and 5 multibacillary (MB), what they were subjected to the biopsy from skin of areas with alterations of sensitivity (L) and without alterations of sensitivity (NL), which were stained for HE, Fite-Faraco and to the imunohistochemistry for the antibodies anti-S100, NGF (neural growth factor), IL-12, TGF β1, IFNγ, IL-10, IL-4, besides the anti-PGL-1. The slides were photographed for capture of 3 images by tested antibody, taken away of the regions of inflammatory infiltrated to the analysis by the program ImageJ, using the plugins: avareging filter, colour deconvolution for hematoxyline-DAB and threshold for calculation of the percentage marking in DAB. From these results the percentage averages were calculated for each antibody of the respective slides of the patients.

Results: The population sample presented average of age of 52.5 years, being 58 years for PB and 48.6 y MB, 8 males and 2 females. Clinically the patients were distributed in PB (2T, 3DT) and in MB (2V and 3 DV). The anti-PGL1 level was 2.9 mg/dL average between the PB and 4.5 mg/dL in the MB. Regarding the protein S100, his expression was bigger in the samples from not lesioned skin (NL) than in the lesioned ones (L) of the PB ($p=0.008$). The NGF showed strongly stained in lesioned areas of PB patients as compare to non lesioned areas ($p=0.03$) and to L areas of MB ($p=0.001$). There was bigger expression of IFN in PB L areas than MB L areas ($p=0.009$).The IL-12 was stronger stained in the L and NL areas of the MB than lesioned areas of the PB ($p=0.02$). About TGFβ1, it was expression in the MB patients than PB, as in L as NL areas with t difference between PB lesioned areas and MB-NL areas. The IL-10 cytokine presented more stained in L areas than NL rosy. rtant marker in situ among the paucibacillar patents with wed of the morphological DESARRANJO in of the MB patients ($p=0.04$). Qualitatively, the anti-PGL1 antibody was positive in the granulomatous lesioned areas of the MB patients and negative in the PB.

Conclusion: The skin from leprosy patient without sensitivity alterations presented few immunohistopathological changes, as described in the literature, while the skin without alterations from MB showed significant histopathological and immunological changes as bigger expression of TGFβ1 e IL-12, associated to lower expression of IFNγ. The skin with sensitive alterations from PB patients expressed lower S-100 protein followed of the morphological breakdown in the neural pathways than the skin from MB patients that presented more expression and the S-100 showed morphologically scattered and inside of the histiocytes. The NGF seemed to be directly related to in situ cellular response due to the neural damage, reaching ion of leprosy. rtant marker in situ among the paucibacillar patents with wed of the morphological DESARRANJO in the maximum in the skin with sensitivity alteration of the paucibacillar and the minimum of the multibacillar patients in contrast to the biggest expressions of TGFβ1 and IL-12 in the lesions of the MB, highlighting the NGF as an important marker in situ among the paucibacillar patents with clinical suspicion of leprosy.

P-456

Presentation Time: Thursday 19/09/2013 at 15:30 – 15:40
Abstract Topic Name: Specialised Centres
Presentation Screen Number: 10
Presenter: Lucrecia Acosta

DIAGNOSIS OF MYCOBACTERIUM LEPRAE IN FONTILLES, SPAIN

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Introduction: Since 1909, the Sanatorium Fontilles, has dedicated its work towards the diagnosis, treatment (started 1952) and care of leprosy patients. In relation to the diagnosis, the slit-skin smear is traditionally the technique most employed. However, it may be negative in patients with a low bacterial load (limit of sensitivity is ~100 acid fast bacilli) and if the results obtained with this technique are inconclusive molecular biology mainly PCR can be applied. This technique detects the presence of *M. leprae* DNA in the sample and is useful in the monitoring and evaluation of the response to treatment. Fontilles with this technique aims to provide a fast, effective and specific diagnosis of new cases or the follow-up of patients already in treatment.

Methods: The study includes samples obtained from patients attending or received at the laboratory of Fontilles during 2011 and 2012. They are slit skin smears from earlobes and skin lesions and biopsies (ethanol and paraffin). The techniques employed are staining and microscopic examination, DNA detection (PCR) using RLEP gene amplification target for confirmation of diagnosis or follow-up of treatment and evaluation of possible resistance (*rpoB, gyrA* and folP genes target) to multidrug therapy.

Results: From April 2011 to December 2012, a total of 208 samples from 45different patients were examined: 72 slit skin samples for staining and 104 slit skin swabs for PCR from 31 leprosy patients attended at the sanatorium for routine clinical examination after completing treatment and 11 slit skin smears and slit skin swabs and 21 skin biopsies from 14 different individuals for microscopic examination and DNA (PCR) detection were received from different Spanish hospitals to confirm the diagnosis. Three patients were positive by microscopic visualization and 11 by PCR (5 slit skin swabs and 6 skin biopsies). No resistance to dapsone, rifampicin or ofloxacin was detected in a patient not responding to treatment.

Conclusion: Given the low incidence of leprosy (either autochthonous or imported) in Spain a comprehensive perception of the disease and control of the detected cases is needed in the Spanish National Health System and so Fontilles offers the possibility of a rapid, specific and effective diagnosis of leprosy.

P-453

Presentation Time: Thursday 19/09/2013 at 15:40 – 15:50
Abstract Topic Name: Specialised Centres
Presentation Screen Number: 10
Presenter: Dr Mannam Ebenezer

CASE DETECTION METHODS OF LEPROSY IN THE PRE INTEGRATION AND POST INTEGRATION PHASES IN A DEFINED GEOGRAPHICAL AREA IN TAMIL NADU, INDIA

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Introduction: The objective of this study was to compare the various case detection methods of leprosy between the pre and the post integration phases. The study looked at the quantum of new cases detected and also the various methods used for case detection.

Methods: Data for this study was obtained from the field practice and research area of Schieffelin Leprosy Research and Training Centre (SLR&TC), Karigiri located in Tamilnadu, India. Data was collected from the computerized leprosy data bank for this field area. Every new case was initially screened by paramedical worker and confirmed by a Medical Officer. The data included body charts, smears, diagnosis, classification and complications. The active case detection methods used in the pre integration phase were general surveys, contact surveys, school surveys and ring surveys (focus survey). Services for leprosy were also made available once a month through a village clinic. The data was collected for the pre integration phase between 1986 and 1997 and the post integration phase between 1998 and 2009.

Results: The results showed that there was a significant drop (81.5%) in new cases detected between the pre and post integration phases. This was true of both male and female and rural and urban. The male female ratio also dropped from 1:1.1 to 1:1.32. In the rural areas the percentage of child case detection was 28.1% in the pre integration phase and 43.8% in the post integration phase. In the urban area the percentage of child case detection was 39.2 in the pre integration period and 23.5% in the post integration period.

In the pre integration phase 42% of new cases were detected by voluntary reporting. General survey detected 23.8%, contact and other surveys detected 22.9% and school surveys detected 11.3% of new cases.

In the post integration phase, 84.1% of new cases were detected by voluntary reporting, with school surveys and other surveys detected 8% each. The pattern for case detection methods between pre and post integration in the rural and urban areas remained similar.

There were no major differences in the grades of disability and types of leprosy detected under voluntary reporting between pre and post integration phases. The significant reduction in the number of new cases detected (82.5%) in the post integration phase has to be interpreted carefully. How much of this is due to a true reduction in transmission or due to cessation of active case detection must be explored further. The contribution of voluntary reporting of 42% in the rural and urban areas during the pre integration phase was probably due to creation of a high degree of awareness through Education in the limited geographical area and also the accessibility of services almost at their door step through the village clinics.

Conclusion: In conclusion it seems voluntary reporting remains the main mode of detection in the post integration phase, but needs to be viewed against the backdrop of a significant reduction in number of new cases.

Contact and school surveys contributed almost 12 to 14% of new cases in both the phases these must be continued

Since voluntary reporting depends on the twin factors of awareness about leprosy and also accessibility of services, it is critical that while awareness is being created, the community should be provided and made aware of the accessible services.

Gender bias has always been an issue and is seen more pronounced during the post integration phase. Efforts towards creating awareness among women to and improve their health seeking behaviour should be under taken.

P-451

Presentation Time: Thursday 196/09/2013 at 15:50 – 16:00
Abstract Topic Name: Specialised Centres
Presentation Screen Number: 10
Presenter: Mr. Marella Sathiraju

THE REFERRAL CENTERS IMPLICATIONS ON EFFICIENCY AND EFFECTIVE DELIVERY OF QUALITY LEPROSY CARE SERVICES IN POST-INTEGRATION AT DISTRICT LEVEL IN ANDHRA PRADESH

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Introduction: It is a descriptive study describes the situation, problem, phenomenon, services of Leprosy in the 5 districts of AP. Leprosy is a chronic infectious disease, which still strikes fear in the societies as a mutilating, disfiguring, and incurable disease.. During 2005 and the subsequent years, leprosy services were made to be delivered from all General Health Care institutions with active support from the erstwhile vertical staff. By March 2004, the strength of erstwhile vertical leprosy staff were reduced to 25% of the original and these staff were kept as support to sustain the leprosy services in the periphery formation of a district nucleus under the District Leprosy Officer. The training status of medical officers and multi-purpose workers in leprosy was low in Andhra Pradesh (6.9 and 22.4%), The involvement of sub-centers, in case referral, recording and dispensing MDT was poor in Andhra Pradesh. 38% clients in Andhra Pradesh did not get MDT in the nearest health facilities or sub-centers.

The leprosy situation as on March 2012 in Andhra Pradesh revealed an increase in grade II disability from 1% in 2004 to 4% in 2012. In last two years state data showed the increase in case detection and MB rates. There are 33897 disability cases in the state for care services. On detailed analysis and discussion of current situation in leprosy need to support GHS in providing quality leprosy services by a specialized leprosy referral unit surfaces very strongly.

Methods: It is observational study conducted within the referral centers established in 5 districts of AP, India. These centers cover rural villages and urban slum areas. The integration of leprosy programme with primary health care has taken place. Quantitative data were collected to know the leprosy related and their sources of referrals. The two years 2010-11 and 2011-12 data of the centers collected from the registers and records maintained at centers. Also collected the state data of the same period and compared the services.

Results: The state new case detection rates are 8.7 and 9.1 per lakh in 2010 -11 and 2011-12 respectively. The MB rate noticed 46% and 48% in the state. Above 90% Re-Constructive Surgery conducted at specialized leprosy hospitals historically managed by ILEP NGOs in the state. It is observed that 12% of cases detected with early nerve impairment by nerve function assessment at Referral Centres, 8% cases treated for complications E.g.: reactions and neuritis, 27% cases found skin smear positive for difficult to diagnose consultation, 39% of cases with plantar ulcer healed and 32% cases in the state received MCR foot wear by Referral Centers.

Conclusion: Increase in proportion of cases with grade 2 deformities, management of reaction, ulcer management and Micro Cellular Rubber footwear are matter of concern and suggests continued need of referral centers for their management and assist the General Health Care system at every district level. The bacteriological positive cases shown the presence of risk of infection in the community and it is positive sign of effective coverage in the post-integration scenario. Patients still face problems in getting free leprosy care services.

18th

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Hidden challenges

BRUSSELS, 16th-19th SEPTEMBER 2013

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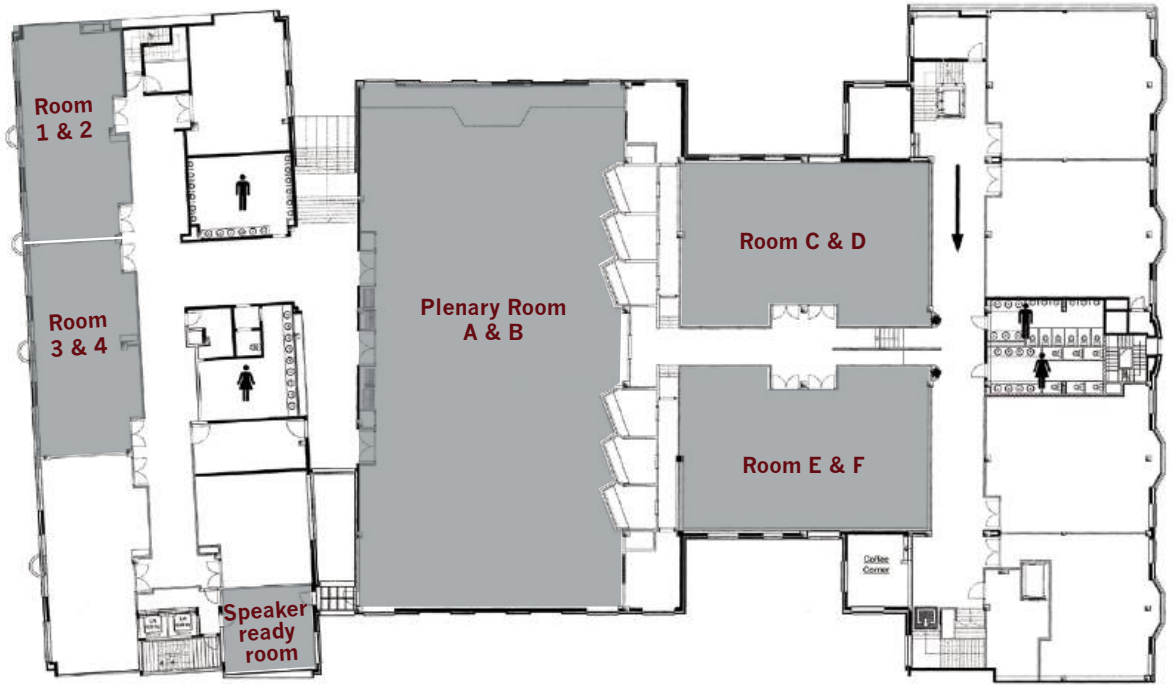

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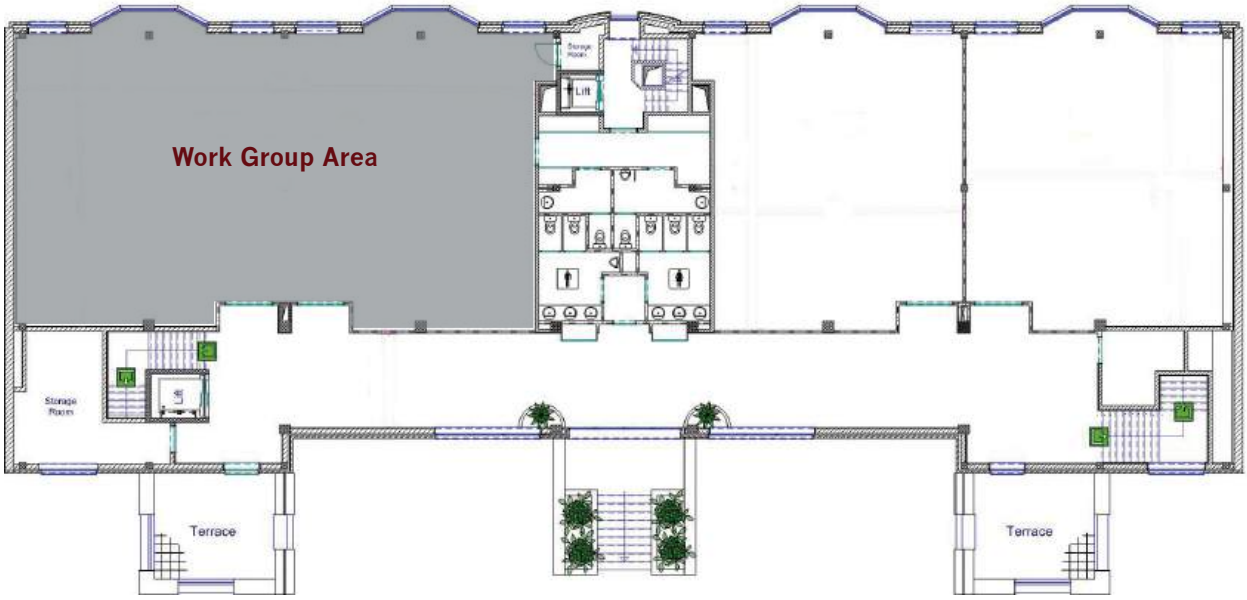

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