20th International Leprosy Congress

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BOOK OF ABSTRACTS

Global Partnerships

Zero Transmission. Zero Disability . Zero Discrimination

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INTERNATIONAL FEDERATION OF ANTI -LEROSY

INTERNATIONAL LEPROSY ASSOCIATION

BOOK OF ABSTRACTS

Global Partnership in Addressing Current Challenges

Zero Transmission.
Zero Disability.
Zero Discrimination.

DISCLAIMER

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ORAL PRESENTATIONS

ILC-1: CLINICAL SCIENCE:

1.1 Best Clinical Practice, Health Systems, Training and Referral

O-031

RISK FACTORS FOR DISABILITY AMONG NEW ADULT LEPROSY PATIENTS: CASE-CONTROL STUDY ACROSS ENDEMIC STATES OF INDIA

Presenter: Vivek Lal

Vivek Lal[1], Srinivas Govindarajulu[2], Thirumugam Muthuvel[3], Sindoora Adulapuram[4], Rajbir Singh[1]

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Objective: A high proportion of grade 2 disability (visible deformity) is indicative of delay in detection of leprosy. We conducted a study to determine risk factors associated with delayed presentation among adult leprosy patients with disability. The study was funded by Indian Council of Medical Research (ICMR).

Methods: A multi-centric, case-control study was undertaken in five states of India i.e. Andhra Pradesh, Delhi, Gujarat, Maharashtra and West Bengal. Among new adult patients, cases were defined as those with disability (WHO grade 1 or 2) at the time of diagnosis and controls were defined as those without any disability (WHO grade 0). Delays were quantified based on patient recall across a timeline: Patient delay defined as the time period between first noticed symptom by the patient and the first visit to any health care provider (HCP); HCP delay defined as the time period between patient's first visit to any HCP and the confirmation of diagnosis of leprosy; and Total delay defined as the sum of both patient and HCP delays.

Results: A total of 1400 new leprosy patients (700 cases and 700 controls) across five states were interviewed. Among cases, mean patient delay was 17.6 months (median- 8 months) compared with 10.3 months (median- 4 months) among controls. Mean HCP delay was 6.4 months (median- 2 months) for cases and 3.1 months (median- 1 month) for controls. Mean total delay was 24.0 months (median- 14 months) for cases and 13.4 months (median- 6.2 months) for controls; observed median difference between groups was statistically significant ($p<0.001$). When patient delay was more than 3 months, odds of grade 2/1 disability at diagnosis were 1.7 times higher compared to when patient delay was less than 3 months. When any HCP failed to diagnose leprosy in the first two visits by patient, the odds of grade 2/1 disability were 1.5 times higher compared to those diagnosed with leprosy within first two visits. Multiple visits to any private provider (qualified or unqualified) increased the HCP delay and was an important risk factor for disability.

Conclusion: Early case detection campaigns like active survey in endemic spots should be done periodically as this can reduce duration of delay and promote early diagnosis. Missed opportunity to suspect or diagnose leprosy is a major issue among HCPs. There is need to engage all HCPs in national programme for timely referral and early detection.

O-078

EVALUATION OF PROSPECTIVE HLA-B*13:01 SCREENING TO PREVENT DAPSONE HYPERSENSITIVITY SYNDROME IN PATIENTS WITH LEPROSY

Presenter: Furen Zhang

Furen Zhang[1], Hong Liu[1], Zhenzhen Wang[1], Fangfang Bao[1], Chuan Wang[1], Lele Sun[1], Gongqi Yu[1], Zihao Mi[1], Tongsheng Chu[1], Dianchang Liu[1], Shumin Chen[1]

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Objective: Dapsone hypersensitivity syndrome (DHS) is the most serious adverse reaction associated with dapsone administration and one of the major causes of death in patients with leprosy, whose standard treatment includes multidrug therapy (MDT) with dapsone, rifampicin, and clofazimine. Although the HLA-B*13:01 polymorphism has been identified as the genetic determinant of DHS in the Chinese population, no studies to date have been done to evaluate whether prospective HLA-B*13:01 screening could prevent DHS by identifying patients who should not receive dapsone. To evaluate the clinical use of prospective HLA-B*13:01 screening for reduction of the incidence of DHS by excluding dapsone from the treatment for patients with HLA-B*13:01–positive leprosy.

Methods: A prospective cohort study was conducted from February 15, 2015, to April 30, 2018, in 21 provinces throughout China. A total of 1539 patients with newly diagnosed leprosy were enrolled who had not received dapsone previously. After excluding patients who had a history of allergy to sulfones or glucose-6-phosphate dehydrogenase deficiency, 1512 individuals underwent HLA-B*13:01 genotyping. All of the patients were followed up weekly for the first 8 weeks after treatment to monitor for adverse events. Patients who were HLA-B*13:01 carriers were instructed to eliminate dapsone from their treatment regimens, and noncarrier patients received standard MDT. The primary outcome was the incidence of DHS. The historical incidence rate of DHS (1.0%) was used as a control.

Results: Among 1512 patients (1026 [67.9%] men, 486 [32.1%] women; mean [SD] age, 43.1 [16.2] years), 261 (17.3%) were identified as carriers of the HLA-B*13:01 allele. A total of 714 adverse events in 384 patients were observed during the follow-up period. Dapsone hypersensitivity syndrome did not develop in any of the 1251 patients who were HLA-B*13:01–negative who received dapsone, while approximately 13 patients would be expected to experience DHS, based on the historical incidence rate of 1.0% per year ($P = 2.05 \times 10-5$). No significant correlation was found between other adverse events, including dermatologic or other events, and HLA-B*13:01 status.

Conclusion: Prospective HLA-B*13:01 screening and subsequent elimination of dapsone from MDT for patients with HLA-B*13:01–positive leprosy may significantly reduce the incidence of DHS in the Chinese population.

O-119

INNOVATIVE APPROACHES IN LEPROSY TRAINING: THE WAY FORWARD

Presenter: David Prakash Kumar

David Prakash Kumar[1], Sathish Kumar Paul[1]

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Objectives: Innovation in Leprosy training to provide uniform training
To enhance use of technology and innovation in Leprosy training

Methods: Innovative use of technology in Leprosy training can be introduced through the use of:

1. Mobile digital devices in training: Use of mobile digital devices can help Leprosy health workers to access accurate information quickly. The handheld mobile digital devices in the clinical area will help them to learn effectively, thus enhancing patient care

2. Webinars & Tele teaching: Uniform access to Leprosy resources helps in connecting diverse groups of health workers. Leprosy health workers in remote areas are able to observe treatments, interact with qualified trainers and this promotes discovery learning.

3. E-Learning: E-learning is a concept that uses distance learning technology and promotes self directed and active learning. This methodology can be used for Leprosy health workers who are not able to access training centres because of lack of funding to travel and be trained in Leprosy training centres.

4. Customized teaching plan: A uniform teaching plan for different groups of health workers will enhance the Leprosy work. Customization of the training programme to suit individuals and specific training objectives will enhance the outcome.

Results: The above innovative teaching methods will be implemented in a phased manner

Conclusion: Use of innovative training methodology and technology in Leprosy training will help health workers working in rural and remote areas to access latest information. Health workers from all corners of the world can be provided Leprosy training by qualified faculty. Lack of infrastructure may not be a barrier for such training and learning when technology is used through methods as mentioned.

O-165

HOW EFFECTIVE IS ANTI-HELMINTHIC TREATMENT ALONGSIDE WATER, SANITATION AND HYGIENE (WASH) TRAINING IN SUSTAINING REDUCTION OF HELMINTH BURDEN IN LEPROSY PATIENTS?

Presenter: Divya RSJB Rana

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Objective: Over 94% of annual new leprosy cases are from populations co-endemic for soil-transmitted helminths (STH). We have previously demonstrated that >50% of Nepalese leprosy patients are infected with ≥1 STH species at leprosy diagnosis. Herein, we aim to investigate the effectiveness of anti-helminthic treatment alongside Water, Sanitation and Hygiene (WASH) counseling among Nepalese leprosy patients.

Methods: This is part of a larger cohort study involving enrolment of 225 new leprosy cases, 150 new reaction cases, and 200 household contacts (HHC). WASH counselling was provided at intake alongside albendazole and ivermectin, which was repeated 6-monthly during participation. Participants came for follow-up quarterly for up to 2 years. Questionnaires were used to collect relevant demographic, socioeconomic, and WASH factors. Stool samples from every visit were assessed by multiple microscopic methods as well as quantitative polymerase chain reaction (qPCR) for 5 species of STH endemic to Nepal.

Results: Since enrolment began in the wake of devastating earthquakes, many patients for the next two years were displaced or living in inadequate housing. 225 new leprosy and 79 reaction for a total of 304 patients were enrolled between January 2016 to June 2018. At intake, roughly 25% were employing or accessing some form of water purification; most were washing their hands and the majority (~93%) had access to some form of toilet. By 6 and 12 month follow-up, there were significant increases in reported improved water purification access by 50-60% ($p < 0.005$). While microscopy results are available, qPCR analyses are still ongoing. Preliminary results indicate that >50% of participants $\geq$ 1 STH species co-infection at intake. Compared to enrolment and based upon microscopy alone (which is less sensitive), the prevalence of STH infection for new cases decreased to 2.5% (n=201) at 6 month follow-up and 1.3% (n=154) at 1 year. The prevalence of STH infection for reaction patients also decreased to 0% at 6 month (n-59) and 1 year (n=48) follow up.

Conclusion: WASH and appropriate anti-helminthic treatment can be effective; however, contextual challenges remain in limited resource settings. Longitudinal analyses incorporating qPCR detection of helminths from this cohort will enable insight into longer term impact, challenges and sustainability.

O-168

PALMAS PROJECT FREE OF LEPROSY: IMPACT OF THE DECENTRALIZATION OF THE ATTENTION AND ASSISTANCE OF LEPROSY FOR PROFESSIONALS OF PALMAS PRIMARY HEALTH CARE, CAPITAL OF TOCANTINS, IN BRAZIL

Presenter: Nésio Fernandes de Medeiros Junior

Nésio Fernandes de Medeiros Junior[1], Whisllay Bastos[5], Lorena Monteiro[2], Vera Lúcia Gomes de Andrade[3], Jaison Barreto[4]

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Objective: To present the impact of an intervention project (PLH) with emphasis on the decentralization of care to the leprosy patient, aimed at Primary Health Care teams aiming to accelerate the process of elimination of the disease.

Methods: Undergoing in-service training sessions with patients was offered to professionals of the basic care network in clinical management and diagnosis of leprosy cases. Data from the SINAN and the results of field reports and their trends were analyzed.

Results: Between March and December 2016, 131 visits / meetings were held in 38 points of the care network, with 524 hours of care for 697 patients , 82 Family Health Teams (100%), 117 professionals from 13 Support Centers for Family Health, and 40 secondary and tertiary care specialists were trained for the adequate clinical management and diagnosis of leprosy cases. Comparing the period between 2001 and 2015 with 2016, the average detection per 100 thousand inhabitants increased from 123 to 236 new cases. The detection of cases between contacts was no more than 15 cases per year and rose to 198. The detection rate in children per 100,000 inhabitants rose from an average of 33 to 70/100 thousand.

Conclusion: These findings lead us to consider that the epidemiological surveillance and clinical examination of cases and contacts, when performed by untrained professionals, tends to hide the occurrence of the disease, that is, the proper discovery of new cases. In 2015 the disease was considered to be eliminated when diagnostic opportunities were reduced. The number of new and pedriatric cases and a high proportion of deformities do not attest to the expectation of a brief elimination of leprosy in Palmas. This work highlights the importance of

continuous, planned and systematic educational actions on the clinic and management of cases of leprosy with professionals specialized for Primary Health Care teams as a best practice.

O-176

A COMPARISON OF THE EFFECTS OF COMPUTERIZED FABRICATED CUSTOMISED PROTECTIVE FOOTWEAR USING EVA AND TRADITIONAL CUSTOMISED FOOTWEAR USING MCR ON THE INSENSITIVE FEET DUE TO LEPROSY: A MULTI-CENTRIC TRIAL

Presenter: Raja N R

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Objective: Micro Cellular rubber (MCR) has been a choice of footwear for anaesthetic feet due to leprosy and they are manually customized to suit the deformity of the feet. Over the years, MCR protective footwear has come to be associated with leprosy patients and as a result loss of compliance to wearing footwear due to stigma. The objective of this study is to compare the effectiveness of customised protective footwear made by computer assisted manufacturing machine (CAM) and manually made customized MCR footwear in prevention of the ulcers in anaesthetic feet.

Methods: A comparative study was carried at six hospitals of TLMTI, three hospitals each for intervention and control group. In both the groups all participants underwent standard foot assessment and prescribed footwear with appropriate orthosis. In the intervention group the participants foot was scanned at remote centres and the foot image was sent to central fabrication unit along with the prescription, where the insole (with appropriate orthosis) was designed according to the prescription using Computer Aided Designing (CAD) technology and fabricated orthosis by Computer Aided Manufacturing (CAM) method. The insole was fixed in Extra depth footwear and delivered to the participants in the respective centres. In the control group, the participants were provided with manually made customized MCR footwear with orthosis. The data were collected using structured questionnaire at baseline and followed up at every 6 months for 2 years. The primary outcome was the incidence of plantar ulcer and the secondary outcome was acceptability and compliance of using footwear. The outcomes were analysed using appropriate statistical tests.

Results: A total of 400 participants were enrolled, 200 in each intervention (and control group, respectively. The demographic and clinical data were comparable between the group. The preliminary analysis revealed that the incidence of new ulcer due to pressure was less in CFAB as compared to MCR group. The overall compliance score in Visual analogue scale was better in the CFAB group as compared to MCR. The participation level was significantly higher in CFAB as compared to MCR. The detailed analysis will be presented in the conference.

Conclusion: The preliminary findings suggest that the CFAB is as effective as MCR in preventing new ulcer and related signs and symptoms, with increased compliance and social participation. It's long term effect, such as prevention of Charcot joints and amputation is to be studied.

O-231

LEPROSY AUDITS: PAVING WAY FOR ADEQUATE DOCUMENTATION AND COMPREHENSIVE CARE FOR LEPROSY AFFECTED

Presenter: David Prakash Kumar

David Prakash Kumar[1], Sathish Kumar Paul[1]
[1]Schieffelin Institute of health research & leprosy Centre, karigiri

Objectives: Holistic care of Leprosy affected
Complete and comprehensive documentation.

Methods: Auditing is an activity that helps to identify mistakes and correct them. Regular monthly audits of the Out patient charts were done over a period of 2 years. The number of audits done was 24 in 2 years starting from 2014 January to 2017 January. The main aim of the audits was to ensure adequate documentation and implementing care pathway for the Leprosy affected.

30 randomly selected patient records after the audit period were compared to an equal number of patient records from the period before the leprosy audit. The departments visited, procedures performed, health education provided and compliance to MDT was compared between these 2 sets of records.

Results: The patient records checked after the audit period had 100% documentation. Also, the patient had a holistic care as they visited all the departments as they followed the care pathway. Health education and counselling was provided to 97% of the patients after the audit. In the period prior to the audit, it was only 70%. MDT compliance marginally increased by 6% from the earlier 54%. The documentation in the post audit period was 100% and this was 30% more than the pre audit period.

Conclusion: The Leprosy audits have helped to improve the level of care that was provided to patients. There was improvement in the comprehensive care provided to the patients as well as the documentation regarding the car e provided to patients. Implementation of care pathway can help in improving patient care and compliance to MDT.

O-241

CINTA SOBAT: LEPROSY ACTIVE CASE FINDING AMONG ELEMENTARY SCHOOL AGE CHILDREN IN PAPUA – INDONESIA

Presenter: Antonius Oktavian

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Objective: Leprosy still become a big problem in Indonesia. Papua is one of the top three province with highest number of leprosy prevalence in Indonesia. Prevalence rate of papua Province in 2017 is 4,06 per 10.000 population, which 24,28% were children cases. The leprosy in children proportion showed increasing trend since 2016. Base on our research in 2015, showed that lack of knowledge about leprosy and its management among household contacts become important factor for leprosy patients in Papua. We decided to design a method for school age children to arise their awareness about leprosy and also how to recognizing and find the cases.

Methods: Cinta Sobat / Friend's Love (in English) is an acronym of Cari dan Temukan Kusta Siap Obati (Seek and Find the Leprosy, Ready for Medication) is an active case finding among school age children. Cinta Sobat have 4 parts consists: Education (educated the agents (5th grade elementary school using puppet show, movie), Case Finding (the agents seek and find the leprosy suspects in their environment), Examination and Medication (by Public Health Centre).

Results: Cinta Sobat as pilot project was applied in two Elementary School in Jayapura City (Capital of Papua Province). From 690 students the agents found 91 students leprosy suspect and 8 students leprosy positive. Positive response arise from students and also from school and leprosy program.

Conclusion: Cinta Sobat can be used as a method for increasing the finding of leprosy cases in school age children.

O-300

LEPROSY ELIMINATION ACTION PROGRAM (LEAP): A HIGH-IMPACT INTERVENTION AMONG KEY STAKEHOLDERS TO SUSTAIN LEPROSY CONTROL – 10 YEARS OF EXPERIENCE IN 15 RURAL DISTRICTS OF MAHARASHTRA, INDIA

Presenter: Antony Samy

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Objective: Drastic reduction in prevalence of leprosy over past decades in India has prompted the Government to integrate leprosy services into general healthcare (GHC) system in 2002. Subsequently radical changes have been made to simplify the programme components. Since then much progress could not be made to sustain leprosy control as the GHC system is ill equipped to provide whole range of leprosy services due to limited resources and competing health priorities. ALERT-INDIA initiated a process of strategy development for strengthening GHC system with high-impact interventions among key stakeholders with the objective to sustain leprosy control in the integrated setting.

Methods: A situation analysis with key stakeholders for leprosy was carried out to identify the critical gaps in the programme. A roadmap was drawn in 2005 for 'Leprosy Elimination Action Programme – LEAP' with specific interventions as 1) Selective Special Drives (SSD) for the community; 2) Leprosy Referral Centers (LRC) for the people affected; 3) Continuing Medical Education (CME) for the healthcare providers and 4) LEAP advocacy and promotion (LAP) for the policy makers. Operational guidelines were developed with standard operative procedures. Subsequently, LEAP was implemented in 3 phases during 2008 to 2017 in 15 rural districts of Maharashtra in partnership with the Government and CBOs. The long term impact was evaluated using a result based framework with SMART indicators.

Results: An impact analysis confirmed that the SSDs promoted early new case detection with active community participation thereby help reducing stigma. LRCs ensured the availability of referral services at GHC system that improved the health status of persons affected by leprosy thus reduced disability burden. CMEs enhanced the skills and knowledge of GHC personnel that help sustain leprosy expertise within GHC system that strengthened 'integration'. Evidence based advocacy increased preparedness of GHC system to sustain leprosy control thus ensured the 'rights' of people affected by leprosy.

Conclusion: LEAP interventions increased access to quality leprosy services by people affected within GHC system that is equitable and affordable. It strengthened the GHC system to reduce the disease morbidity among

people affected and equipped the GHC system for sustained leprosy control measures. Advocacy efforts raised the responsiveness of GHC system to take effective ownership of interventions with adequate resources. It is concluded that promotion and adoption of LEAP strategy into existing leprosy control program at national level can strengthen the GHC system and propel the program to achieve a leprosy free India.

O-316

DELAY IN LEPROSY CASE DETECTION: AN OBSERVATIONAL STUDY UNDER HEALTH SYSTEM STRENGTHENING (HSS) PROJECT INITIATIVES IN BANGLADESH

Presenter: David Pahan

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Objective: To understand the delay in care seeking among leprosy patients registered in 2018 after implementing Health System Strengthening (HSS) Project in 8 districts of Bangladesh.

Methods: We measured the delay of care seeking by examining patient registration card through recording the duration between appearing the first sign of leprosy and registering into the clinic. We examined total 923 patients card registered in 2018 (among 979 patient) for recording duration of disease (appearing first sign of leprosy till reporting to the clinic) by local health staff working in sub-district level in 8 districts. Disease duration recorded under 4 Stratum, Stratum -1 (1 – 6 months), Stratum 2 (7 – 12 months), Stratum 3 (13 – 36 months), Stratum 4 (>36 months).

Results: It has been observed that among 923 leprosy patients (46% Female), 54% reported within 12 months (16% within 6 months),39% within 13 – 36 months and 9% > 37 months to local MDT centers. We also compared the percentage of PB, MB, Grade 2 disability, female and children among new cases diagnosed before (2012 national data from 8 districts) and after implementation (2018 national data) of Health System Strengthening Project. During this six years' period, female % increases from 37% to 46% and Grade 2 reduces from 9% to 6%.

Conclusion: A median delay of 12 months was reported in Bangladesh in 2005 (Bangladesh Leprosy Control Strategy 2016 - 2020). Still, 46% of leprosy patients reported into the local clinics between 1 – 3 years or more after developing first sign of leprosy. Currently, NLP is measuring early case detection by looking at the grade 2 disability rate among new cases as a proxy indicator. Grade 2 disability decreases 3 % (9 to 6) and female case detection increased by 9% (from 37 to 46) among new cases during this six-year intervention period. A formal study is necessary in future to measure the progress on early case detection by analyzing delay in care seeking under HSS initiatives.

ILC-1: CLINICAL SCIENCE:

1.2 Chemotherapy

O-002

EFFICACY OF UNIFORM MULTI-DRUG THERAPY FOR TREATING MULTIBACILLARY LEPROSY

Presenter: Linda B. Adams

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Objective: Leprosy manifests in a clinical spectrum ranging from few lesions with low numbers of bacilli (paucibacillary, PB), to multiple lesions with a high bacillary load (multibacillary, MB). The World Health Organization (WHO) recommends treating PB patients for 6 months with two antibiotics (dapsone and rifampin) and MB patients for 12 months with three antibiotics (dapsone, rifampin, and clofazimine). Prolonged antibiotic treatment not only increases the risk of adverse effects, but also reduces patient compliance and increases cost. To mitigate these problems, the WHO has proposed a new, uniform multi-drug therapy (U-MDT) regimen of 6 months with three antibiotics (dapsone, rifampin, and clofazimine) for both PB and MB patients. The objective of this study is to test the efficacy of U-MDT for treating leprosy in an animal model for MB leprosy.

Methods: Athymic nude mice were inoculated with $3x10^7$ *Mycobacterium leprae* in both hind footpads and were treated with either the vehicle (control), U-MDT, or MB-MDT. Mice were sacrificed at the end of the prescribed regimen and DNA and RNA were extracted from the footpads. *M. leprae* were enumerated on DNA via qPCR (RLEP) and RT-qPCR was performed on mRNA transcripts to determine viability (*esxA*).

Results: U-MDT was as effective as MB-MDT at controlling *M. leprae* growth. Furthermore, U-MDT showed no signs of *M. leprae* growth 10 months post-treatment. However, low levels of viability were detected in both U-MDT and MB-MDT post-treatment.

Conclusion: This study is the first to show the efficacy of U-MDT for treating leprosy in an animal model. U-MDT was shown to be as effective as MB-MDT in controlling the growth of *M. leprae* in a nude mouse foot pad, even after completion of treatment. However, low levels of *M. leprae* viability were detected in both regimens. The shorter treatment duration for U-MDT compared to MB-MDT (6 months vs. 12 months) would help improve patient compliance, reduce treatment costs, and reduce negative effects from extended antibiotic use. However, it is recommended that MB patients be closely monitored post-treatment due to the incomplete killing of *M. leprae* by both U-MDT and MB-MDT.

O-005

EFFICACY OF SHORT-TERM OR INTERMITTENT TREATMENTS WITH ALTERNATE COMBINATION THERAPIES FOR LEPROSY

Presenter: Linda B. Adams

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Objective: Since the implementation of multi-drug therapy (MDT), leprosy has gone from a debilitating disease to a treatable one. Unfortunately, the current MDT is a long-term treatment modality, making compliance difficult. Thus,

it is vital to discover new drug regimens. This study looks at three drug studies that utilized a molecular viability assay (MVA) to determine the efficiency of short-term or intermittent treatments in the athymic *nu/nu* mouse.

Methods:
Drug Study 1: Mice were inoculated with 3 x 10^7 *Mycobacterium leprae* and treated with vehicle control, rifampin, ofloxacin, minocycline, moxifloxacin, or rifapentine. The mice received drugs daily for 5 days by gastric gavage. Footpads were harvested one month after completion of treatments. RNA/DNA were extracted from the tissue, and *M. leprae* was enumerated by RLEP PCR. Molecular viability was ascertained using qRT-PCR for *esxA* and *hsp18* transcripts. BacLight viability staining and radiorespirometry were performed to compare to the MVA.

Drug Study 2: Mice were inoculated as above and treated with vehicle control, rifapentine, minocycline, moxifloxacin, or a combination of all three (PMM) by gastric gavage once monthly for three months. Footpads were harvested monthly, up to 3 months post treatment completion. RNA/DNA were extracted and molecular enumeration and viability of *M. leprae* were determined.

Drug Study 3: Mice were inoculated as above and treated with vehicle control or rifampin-ofloxacin-minocycline (ROM) monthly for 6 months. After two months break, treatment resumed for 5 additional months. RNA/DNA were extracted and molecular enumeration and viability of *M. leprae* were determined.

Results: The initial drug study found that moxifloxacin and rifapentine were more effective than rifampin. In the second drug study, rifapentine and moxifloxacin, as well as PMM, inhibited growth and reduced viability of *M. leprae*, even after completion of treatment. Minocycline inhibited bacterial growth during the first two treatments but then growth resumed; bacterial viability was maintained throughout. In the third study, ROM initially controlled growth, but multiplication resumed after treatment was stopped and continued even with further treatment.

Conclusion: Rifapentine, ofloxacin, and moxifloxacin are bactericidal drugs. Minocycline is bacteriostatic but exhibits some anti-inflammatory properties. The combination of PMM was significantly bactericidal against *M. leprae* after only three monthly doses, and the effects were maintained for an additional 3 months. The inhibitory effects of ROM were not maintained after treatment completion. These data suggest that PMM may be a short term alternative to MDT, whereas ROM should not be used in lepromatous cases.

O-029

THE ADVERSE DRUG EFFECTS OF DAPSONE AS PART OF MDT FOR LEPROSY: A SYSTEMATIC REVIEW

Presenter: Robin T Hilder

Dr Robin T Hilder, Prof Diana Lockwood
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Objective: A number of adverse drug reactions (ADRs) of Dapsone have been reported as part of multi-drug therapy (MDT). These reactions are under-recognised and under-reported in the literature. We aimed to establish the ADRs being reported and review the publications documenting these reactions.

Methods: A systematic review conducted on 12/07/2018 using Ovid Medline, Ovid Embase and Global Health according to the pre-specified eligibility criteria on publications since 1982.

Results: In total, 5859 citations were identified and reviewed. Relevant publications were divided into two data sets; 114 reporting ADR as the primary outcome and 98 papers reporting treatment efficacy. These publications were reviewed for the documentation of adverse effects. Of the 114 papers, 79 were case studies, 23 retrospective studies, 7 prospective studies and 7 literature reviews. Dapsone Hypersensitivity Syndrome (DHS) was the most commonly reported ADR. Others included haemolytic anaemia, cutaneous eruptions, gastrointestinal disturbance and hepatitis. Eleven studies report an average rate of DHS as 1.58% with an average fatality rate in 8 studies of

11.24%. Of the remaining 98 papers, 34 reported ADR to Dapsone, 33 mentioned ADRs to other medications and 36 publications had no documentation of drug reactions.

Conclusion: The majority of publications were case reports from India. DHS was the most commonly reported ADR, followed by individual features of the syndrome. Whilst many publications have no written record of ADRs, those that do were generally brief. Most reports lacked relevant patient information or any detail of the reaction or outcome. There is a need for improved prospective monitoring of adverse events associated with Dapsone as an implication of our findings.

O-041

CLINICAL CHARACTERISTICS AND OUTCOME IN RIFAMPICIN RESISTANT LEPROSY PATIENTS TREATED WITH 24 MONTHS WHO RECOMMENDED OFLOXACIN +MINOCYCLINE: A RETROSPECTIVE STUDY FROM TLM INDIA

Presenter: Mallika Lavania

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Objective: A subset of molecular confirmed rifampicin resistant leprosy patients manifests with clinical "non-responsiveness" to the Multidrug therapy (MDT). The aim of this retrospective study was to assess the effectiveness of recommended treatment with OFL+MINO in such patients and to document their experiences while on alternate regime. This is an analysis of patients' records, registered in the our TLM hospitals over a period of time and a structured interview to document the events and experiences with alternate regimen.

Methods: The criteria for inclusion of patients as follows: 1) molecularly characterized rifampicin resistant cases 2) persistent positive/increasing value of the bacteriological index (BI) and 3) histopathological active. Such cases were treated with WHO recommended treatment consisting of 400 mg ofloxacin and 100mg minocycline and 50mg clofazimine (24 months). Of 15 patients registered during the study period, 13 patients were having BI more than 3+ and two were having 2+ at the time of rifampicin resistance confirmation. Questionnaires are being administered, the analysed results will be shared at the conference

Results: Of 15 rifampicin resistance cases, 7 patients were administered again for 12 months of MB MDT and 7 for WHO recommended regimen for such resistant cases. The mean BI of these patients after completion of ≥ 12 months of WHO-MDT were 4.32. After 6 months of treatment with Ofloxacin and Minocycline, BI came down one log i.e. 3.22 in all these patients. Three patients are still on treatment and for remaining the mean BI became negative after completion of treatment. The patients which were taking MB MDT were still having BI >3+ after completion of 12 months of MDT and still visiting the hospital for various secondary impairments.

Conclusion: We conclude that this recommended alternate regimen for rifampicin resistant cases is safe and effective in the management of such resistant cases.

O-052

DERMAL PROTEOMIC ANALYSIS OF BORDERLINE LEPROSY TO IDENTIFY THE CHANGES IN EXPRESSION OF PROTEINS IN RESPONSE TO CHEMOTHERAPY AND CHEMOTHERAPY WITH IMMUNOTHERAPY. A DOUBLE BLIND RANDOMIZED PLACEBO CONTROLLED STUDY

Presenter: Raj Kamal

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National JALMA Institute for Leprosy & Other Mycobacterial Diseases, Tajganj, Agra (India)

Objective: The study aimed to identify the changes in expression of proteins from dermal proteome of borderline leprosy (BT,BB,BL) in response to chemotherapy and chemotherapy with immunotherapy **.**

Methods: Skin biopsies were taken from active lesions of 105 untreated borderline leprosy patients. Blinded therapeutic regimens containing MIP vaccine / placebo was injected intra-dermally at the start of therapy and every six months in addition to chemotherapy. Whole cell-lysate were prepared from skin biopsies & proteins from each fraction were separated by two-dimensional gel electrophoresis (2-DE) and Differentially expressed proteins were further identified by MALDI-ToF (Matrix assisted laser desorption ionization- time of flight). For mass spectrometry, protein spots of interest were excised from gel, reduced and digested with trypsin. After digesting overnight at 37ºC, digested peptides were eluted on MALDI target plate along with the matrix and analyzed by MALDI-ToF MS. The obtained PMF (Peptide mass fingerprint) was submitted into database for their identity.

Results: Dermal proteomic analysis revealed a total of 16 proteins , Alpha-1-antitrypsin,Serum Albumin, Fatty acid-binding protein,adipocyte , Fatty acid-binding protein, epidermal were identified in different stages of both treatment groups of borderline leprosy as well as in healthy contacts and psoriasis patients . Some proteins spots were differentially expressed in borderline groups (BT,BB,BL)but not in healthy and psoriatic patients like Vimentin, Actin.cytoplasmic1, Transthyretin, Indoleamine 2,3-dioxygenase 2,& Alpha-enolase). Some proteins spots were differentially expressed in BL, patients but not in BT & BB group of borderline patients like Hemoglobin subunit beta, Endoplasmic reticulum resident protein 29, Serotransferrin and some proteins spots were differentially expressed in BL, BB patients but not in BT group of borderline patients like Vimentin, Actin, cytoplasmic 1 and Serotransferrin). The protein Vimentin was unequally expressed in the immunotherapy group of BB &BL group of patients .In addition proteins such as Alpha-1-antitrypsin, described earlier for their functional role in leprosy were not only found to be unequally expressed in borderline leprosy but also found in healthy & Psoriatic skin.

Conclusion: Significance of these differentially expressed proteins as a prognostic/diagnostic marker in monitoring of therapy needs to be researched further. Such information will be of potential interest in the development of alternative therapeutic modalities, for improving the immunotherapeutic approaches for mycobacterial diseases in general and in leprosy in particular.

O-067

VIABLE M LEPRAE (PERSISTERS) REMAIN AFTER INTENSIVE THERAPY, INCLUDING MDT, AND MAY RESULT IN RELAPSE

Presenter: Robert Gelber

Robert Gelber
San Francisco General Hospital, USA

Objective: Two issues have long complicated the effective therapy of MB leprosy and its reliable cure-drug resistance and bacterial persistence. The components of MDT have largely negated the concern with antimicrobial

resistance. However, because persisting viable M leprae following MB chemotherapy have been demonstrated with considerable frequency and in some locales may result in unacceptably high relapse rates, herein we examine persisters and the threat they may pose to the effective chemotherapy of leprosy.

Methods: From the dapsone monotherapy era to that of MDT a comprehensive literature review of the propensity of M leprae persisters and the prospects they pose for relapse will be presented. Surely, there are studies demonstrating that MB relapsed leprosy after discontinuation of MDT is considerable and those finding it quite low. Herein we will detail variability in MB patient populations and follow-up procedures that may have influenced this disparate relapse frequency, including BI, histopathology and follow-up procedures and duration.

Results: In Malaysia drug sensitive persisters grew in mice commonly in one of more tissues obtained from lepromatous patients treated with daily dapsone for 10 or more years (7 of 12 patients) and, also, from patients treated with daily rifampin for at least 5 years (20 of 32 patients). Importantly in Malaysia it was documented that persisters are not an inconsequential curiosity but a source of viable M leprae causing relapse. Of 362 LL/BL patients treated with dapsone monotherapy for 18.5-22 years who were constantly smear negative for several years 25 patients (9%) relapsed clinically and bacteriologically when dapsone was discontinued. Those relapses began in the first year after treatment was discontinued and at a rate of about 1% per year for the next 9 years (total 9%). Also, we will present several studies demonstrating relapse following intensive rifampin-containing regimens, those relapses first observed 6 years after the completion of treatment.

Several consistent factors were evident in 3 countries (India, Mali and the Philippines) where a high (double-digit) frequency of relapse following 2 year MB MDT was found:

1. Relapses were associated with a high BI. In the Philippines all but one of the 23 relapsed patients had an average BI (6 sites) of 2.7 or greater. In Mali 20% of MB patients relapsed and of those with a BI of 4 or greater 39% relapsed. In India 7% of MB patients relapsed, while those with a BI of 4 or greater 17% relapsed.

2. Relapses in all countries were confined to patients with histopathologic BL/LL leprosy.

3. Follow up was conducted by experienced leprologists in all 3 countries. In the Philippines a minority of patients were followed up with the general health services wherein the rate of relapse was found to be 1/3 of that obtained by leprologists.

4. In all locales annual long term follow up to access relapse was performed for 7 or more years. In Mali and India most relapses occurred at the end of that time period, while in the Philippines the majority of relapses were detected after 10 years.

It is noteworthy that in the publications with a low MB relapse rate generally few patients had a high BI, a high percentage of BL/LL patients and were largely followed up by field workers and only rarely annually and for more than 6 years.

Conclusion: High relapse rates following MB MDT therapy appear only in cohorts with a high BI, who are BL/LL and followed up annually by the most experienced for many years as relapsed MB leprosy following several rifampin-containing regimens, as well as MDT, is generally first noted 6 years after the completion of therapy. In order to identify patients initiating chemotherapy who are at risk of relapse skin smears and even biopsies need to be performed. These, also, are especially important at the lepromatous pole, the source of the spread of contagion, as here anesthetic patches and nerve enlargement are often not present.

O-068

PERSISTENT ERYTHEMATOUS INFILTRATED PATCHES AFTER RELEASE FROM TREATMENT IN PAUCIBACILLARY AND BORDERLINE LEPROSY SPECTRUM: WAIT AND WATCH OR A PROACTIVE APPROACH?

Presenter: Sunil Dogra

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Department of Dermatology, Venereology and Leprology, Postgraduate Institute of Medical Education and Research, Chandigarh, India [1]

Objective: To evaluate the effectiveness of oral minocycline in leprosy patients presenting with persistent erythematous infiltrated patches after release from MDT treatment.

Methods: Six patients having persistent erythematous infiltrated patches following 6 months of completion of MDT with ascertained compliance were recruited from the leprosy clinic of a tertiary care center. None of the patients had experienced an increase in the number of lesions and all were slit skin smear negative. Though there was some improvement, the lesions were persistent. Post MDT skin biopsy had demonstrated no evidence of reaction and was suggestive of active leprous inflammation. AFB were not visualized in histopathology sections. All these patients were started on oral minocycline 100 mg once a day, which was continued for 4 months. The patients were further followed up for 6 months after stopping minocycline.

Results: The age of the patients (3 males, 3 females) ranged from 26-41 years who had completed WHO MDT (paucibacillary regimen- 3 and multibacillary regimen -3). The diagnosis before initiating WHO-MDT in accordance with Ridley Jopling classification was borderline tuberculoid (BT) in 5 patients and tuberculoid tuberculoid (TT) Hansen in 1 patient. The total number of lesions in 6 patients were 24 (range 1-7). The lesions were predominantly located on the head and neck. After initiating minocycline, the lesions started improving, and there was significant decrease in the erythema and infiltration by 2nd month. After 4 months, all the lesions had resolved; post minocycline histopathology revealed disappearance of granulomas, and an enhanced pigmentation of epidermal basal layer. Mild clinical hyperpigmentation of the lesions was seen in all patients but resolved after 3-4 months. There was no resurgence of infiltration or clinical activity of patches at 6 months of follow up.

Conclusion: There are significant proportion of paucibacillary and borderline leprosy patients who have persistent erythematous infiltrated lesions particularly on face without any evidence of type 1 lepra reaction following adequate MDT. These lesions apparently appear clinically active, demonstrate inflammation on histopathology and are a cause of great anxiety to patients and their relatives. Minocycline has immunomodulatory properties and has been shown to be effective in leprosy patients with recurrent erythema nodosum leprosum, granulomatous dermatitis and worsening nerve function impairment. We found it to be an effective and safe treatment modality in leprosy patients presenting with persistent granulomatous patches/plaques after release from treatment. Additionally, there was significant subjective improvement in the degree of anxiety, stigma.

O-069

RELAPSES IN LEPROSY – CLINICAL AND BACTERIOLOGICAL OBSERVATIONS

Presenter: Vivek Pai

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Objective: Though leprosy has been declared eliminated post implementation of MDT for almost three and a half decades several factors including relapses posing epidemiological challenges need to be considered in breaking chain of transmission. Relapses in leprosy pose not only clinical but also epidemiological challenges. Relapses

could be either due to persisters, drug resistance or re-infection. We share our experience on clinical and bacteriological observations pertaining to study of relapses.

Methods: Patients completed treatment and under follow up reported with new lesions and /or recurrence of lesions attending/referred to BLP Referral Centre Mumbai were subjected to detailed assessment and investigated including drug resistance studies.

During the period 2013 to 2018, we recorded 25 patients (4 females, 21 males) with new/recurrence pf lesions suspected relapse. Recurrence/ reappearance of lesions developed after stopping treatment after mean follow up of 10 years. Besides clinical assessment, bacteriological (BI and MI), screening for HIV, diabetes was done. Skin biopsy for histopathology and for investigating drug resistance was done after due informed written consent.

Clinically, of 25 patients, 19 (76%) patients reported with new lesions with sensory loss, 5(20%) had type 2 reactions and 1 (4%) with histoid like lesions.

Results: Of 25 patients 4 were true relapses from initial smear positive status to relapsing with smear positivity, 6 were initially positive and relapsed with new lesions but smear negative and 8 patients relapsed with baseline smear negativity to again smear negative disease, while one relapsed from initial smear negativity to smear positive relapse. In 6 patients initial B.I. was unavailable but at relapse BI was positive, MI of all smear positive patients at recurrence was 0. Among the relapses, 17 were investigated for molecular drug resistance 11 were sensitive to rifampicin, Dapsone and Ofloxacin while one was resistance to Ofloxacin but sensitive to Rifampicin and Dapsone. Reports are awaited in 5 patients.

Histopathologically BT features were present in 11, LL in 3, BL in 4 and BT with type 1 reaction in one patient. Interestingly 5 patients presented with Type 2 reactions. After confirmation of relapses, 15 patients restarted on WHO standard MDT for 12 months and all patients improved post retreatment.

Conclusion: Early diagnosis of relapses cannot be overemphasized and retreatment to interrupt the chain of transmission as unrecognised relapses will add to pool of reservoir of infection in the community. Drug resistance was not seen in these patients but surveillance is a must.

O-079

IMMUNOMODULATORS IN LEPRA REACTION: TRANSFER FACTOR

Presenter: Ma. Luisa Abad-Venida

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Background: Lepra reactions are periods of inflammation affecting 30-50% of cases of Leprosy. It is due to sudden alteration in the immunological status of the host before, during and even after completion of MDT regimen. It has devastating effect causing permanent damage physically if not properly treated. The WHO recommendation of Prednisone lasting 3-6months is effective only in 60% of patients suffering from severe Lepra reaction. The International Leprosy Association recommends research to develop alternative and more efficacious treatment for reactions and prevent nerve function loss. Many drugs have been tried but not as successful as Prednisone.

Objective: To determine the effectiveness of Transfer Factor in the suppression of lepra reaction in comparison with Prednisone.

Design: Randomized double-blind placebo controlled clinical trial.

Population: Leprosy patients with lepra reaction consulting at the Department of Dermatology of Jose R. Reyes Memorial Medical Center, Manila, Philippines.

Methods: The two treatment groups are composed of the Prednisone group and the Transfer Factor group. Prednisone 5mg capsule was administered, according to the World Health Organization recommended schedule for lepra reaction. Transfer factor 300 mg per capsule was administered similarly in tapered dose as follows:

2400mg (8 capsules), 1800 mg (6 capsules), 1200 mg (4 capsules), 900 mg (3 capsules), 600 mg (2 capsules) and 300 mg (1 capsule). All subjects were scored at weeks 0,2,4,6,8,12. The following outcomes were primary outcome, Global Leprosy Reaction Assessment Score (GLRAS) and the secondary outcomes: assessment of reaction signs and symptoms, sensory testing and voluntary muscle testing, eye assessment score, WHO disability score, bacillary index and adverse reaction.

Results: A total of 66 patients were included in the study, 25 Prednisone group and 41 Transfer Factor (TF) group. The TF group has a statistically significant proportion of patients with a past history of reaction (p-value=0.018). More than half of the patients in the Prednisone group have no previous treatment (56.0%) compared to TF group (68.2%). In the Prednisone group, a statistically significantly lower hemoglobin (p-value=0.0009), hematocrit (p-value=0.0006), RBC (p-value=0.0225), and alkaline phosphatase (p-value=0.0271) is noted at 12 weeks. The TF group showed a statistically significantly lower WBC (p-value=0.0084) and SGOT (p- value=0.0274). AFS was statistically significantly reduced at endline for both groups: Prednisone (p-value=0.0434) and TF(p-value=0.0104). Change in hemoglobin count in the Prednisone group is statistically significantly higher (12.14±14.29 SD) than the change in the TF group (2.66±17.57 SD). WBC count in Prednisone group increased by 0.98 (±4.61 SD) while that in the TF group has decreased to 2.82 (±5.66 SD) at week12. Creatinine level of patients in the Prednisone group increased by 7.81 (±20.96 SD) while those in the TF group decreased to 2.06 (±12.42 SD) at endline. There was no statistically significant difference in mean values between Prednisone and Transfer Factor group, except for the adverse reaction score (p- value=0.0197). At baseline, the mean reaction score of patients in the TF group is statistically significantly higher and more severe in the TF group than in the Prednisone group. The decrease in mean score from baseline to week 12 is more significant in the TF group than in the Prednisone group. Significant decrease in the mean score of the TF group in the Adverse reaction shows safety of the TF when taken for 12 weeks.

Prednisone group shows statistically significantly lower mean scores in reaction signs and symptoms (p-value<0.0001), sensory nerve function assessment (p- value=0.0010), and WHO disability grade (p-value=0.0127) at week 12. TF group have statistically significantly lower mean scores in reaction signs and symptoms (p-value<0.0001), sensory nerve function assessment (p-value=0.0006), eye evaluation (p-value=0.0392), WHO disability grade (p-value=0.0370), and steroidal adverse reaction (p-value=0.0001) at week 12.

Both groups showed improvement in the Lepra reaction signs and symptoms of the patients. The TF group showed a more stable decrease in the reaction signs and symptoms as compared to the Prednisone group showing sudden decrease from week 0 to week 2 plateauing in the weeks after. The mean nerve function-sensory assessment score showed comparable results in both groups but the TF group seems to show more stable and consistent decrease in the slope. Voluntary muscle test score for the TF group showed better improvement in the range of motion (with or without resistance) of the facial, ulnar, median, radial and lateral popliteal nerves tested.
Decrease in the WHO disability grade score show comparable results between the groups.
Conclusion: The use of Transfer Factor as an alternative treatment to Lepra reaction showed remarkable outcome and is comparable with Prednisone. It is safe with positive effect on the biochemical and laboratory profiles and no potential adverse events.

O-127

CLINICAL AND DRUG RESISTANCE PROFILES OF LEPROSY RELAPSE PATIENTS IN NEPAL

Presenter: Kapil Dev Neupane

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Objective: To investigate relapse cases and drug resistance patterns of patients attending Anandaban Hospital. Anandaban hospital serves as national referral centre for leprosy relapse confirmation in Nepal as well as a reporting sentinel site within the World Health Organisation (WHO) Global Surveillance Programme for Leprosy Drug Resistance.

Methods: A retrospective chart review of suspect relapse patients referred to Anandaban Hospital from 2012 January to 2018 December was performed. A definite occurrence of new skin or nerve lesions, an increase in bacterial index (BI) ≥2+ and confirmation by skin biopsy histopathology examinations were used as criteria for relapse determination. Leprosy drug sensitivity tests were performed by standard mouse foot pad growth assay in the presence of rifampicin, dapsone or control; and WHO protocols for molecular detection for known mutations in *rpoB*, *folP*, *gyrA* were done.

Results: A total of 143 of 194 (74%) suspected relapse patients referred to Anandaban hospital were confirmed as relapse, representing roughly 1% of annual cases in national consensus data. The mean duration from completion of multi-drug therapy (MDT) to relapse was 14.6 (Range 1.0-44) years. Among confirmed relapse patients, 111 were male and 32 were female with a mean age of 46.8 years (range=14-82). There was no significant difference between males and females in duration of relapse after completion of MDT ($p>0.05$). Of those with records, 112 were previously classified as MB (112/143, 78%), 25 as PB (25/143, 17%) and 6 DDS monotherapy (6/143, 4%). There was significant difference between the previous treatment regimen for duration of relapse ($p<0.001$): MB average duration 14.8 years (range: 4-25) and PB 11.2 years (range: 1.5-37). Eighty-five percent of relapse cases presented with lepromatous or borderline-lepromatous leprosy versus 15% borderline/borderline or borderline/tuberculoid; 126 BI positive (88%); and 9 (10%) presented with reaction at relapse. All relapse cases are prescribed a course of MB MDT according to WHO. (Other drug resistance test updates are in progress.)

Conclusion: Relapse cases are at highest risk for developing and transmitting leprosy drug resistance. While it could be argued that these cases are a minority, the vast majority in Nepal are presenting as BI+ (88%) and lepromatous (85%) cases – known factors indicative of delayed diagnosis and capable of jeopardizing prevailing control measures. Better follow up, contact tracing and earlier diagnosis measures in challenging and limited resource settings like Nepal are imperative.

O-134

LEPROSY RELAPSES IN A BRAZILIAN STATE WITH MEDIUM ENDEMICITY

Presenter: Mauricio Lisboa Nobre

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Objective: The State of Rio Grande do Norte organized its central registry of leprosy cases in 1984, computerized it in 1996 and, since then, the database has been constantly updated. This study was done to describe the characteristics of cases notified as relapses in this Brazilian state.

Methods: Microsoft Excel 2013 and Epi Info 7.2.0.1 software were used. The chi-square test with a significance level of 5% was adopted to test differences between groups. We excluded 35 records that were reported as relapses less than 2 years after completing chemotherapy treatment.

Results: Between 1984 and 2017, 8,016 cases of leprosy were reported in the State, of which 7,338 (91.6%) were notified as new cases, resulting in an average detection coefficient of 7.7 new cases per 100,000 inhabitants/year. Among new cases, 49% were paucibacillary (PB) and 51% multibacillary (MB). The notifications of relapsed cases amounted to 140 registries (1,8%) and were significantly more frequent ($p<0.05$) among: MB leprosy than PB (2.8%; 120/4,197 *vs* 0.5%; 20/3,809); the age group from 30-59 years (2.4%; 94/4,007 *vs* 1.1%; 46/3,975); and men than women (2.3%; 89/3,937 vs 1.2%; 51/4,045). Among the 140 relapses, 109 were previously notified as "new cases" in the same database (78%), allowing for comparisons of the two notifications. Among these 109 cases, 96 (88%) were initially treated with MDT (41 MDT/PB, 20 MDT/MB 12 doses and 35 MDT/MB 24 doses) and 13 used other treatment regimens. When registered as "new cases", 40% of those patients were notified as PB; however, among notification of relapses, only 15% of them were classified as PB cases, suggesting therapeutic insufficiency due to an initial misclassification instead of a real relapse. The percentage of cases with grade 2 disability was greater among the recurrent cases (21% vs 18%), but the difference was not statistically significant ($p=0.09$). The time between discharge due to cure and the diagnosis of relapse varied from 2.3 to 21.7 years, with a median of 8.2 years (Q25=4.2;Q75=11.9), 5.4 years for PB cases (Q25=3.4;Q75=11.4), and 9.6 years for MB cases (Q25=4.8;Q75=12.7). Considering the cohort of new cases and average regional lifespan, we estimated the accumulated incidence of relapses per 1,000 people/year as 1.22 for the MDT/PB treatment, 2.43 for MDT/MB (12 doses), and 1.97 for MDT/MB (24 doses).

Conclusion: Notifications of recurrent leprosy were rare in this study, which may be attributed to lower chance of reinfection in an area of medium endemicity.

O-183

MYCOBACTERIUM LEPRAE IS SUSCEPTIBLE TO Q203

Presenter: Ramanuj Lahiri

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Objective: Q203 is a small-molecule drug candidate for tuberculosis that inhibits the mycobacterial cytochrome bc1:aa3, the primary respiratory terminal oxidase of Mycobacterium tuberculosis. Q203 is a bacteriostatic agent; therefore, while it can inhibit M. tuberculosis multiplication, it is unable to kill replicating or antibiotic-tolerant, non-replicating sub-populations. The inability of Q203 to kill M. tuberculosis is explained by the presence of an alternate bd-type terminal oxidase - the cytochrome bd oxidase. Since Mycobacterium leprae has lost the cytochrome bd oxidase during the process of reductive evolution, we hypothesized that Q203 could be highly efficacious drug candidate for leprosy. The efficacy of Q203 against M. leprae, the causative agent for leprosy, was investigated in the present study.

Methods: Freshly harvested viable M. leprae (Thai-53 isolate), maintained by serial passages in athymic nude mice footpads, was used for all experiments. For axenic testing M. leprae were incubated in medium along with different concentrations of Q203 (200nM to 0.2nM) for 3, 7 and 14 days at 33oC. Following incubation radiorespirometry was done on drug-treated M. leprae to assess viability based on oxidation of 14C palmitate. For intracellular testing bone marrow derived macrophages from BALB/c mice were infected with M. leprae at 20:1

multiplicity of infection. After overnight infection extracellular bacteria were washed and drugs added at different concentrations and incubated for 3 and 7 days at 33oC. Following incubation cells were lysed to obtain the intracellular M. leprae for radiorespirometry. For in vivo studies groups of nude mice were inoculated in both hind foot pads with M. leprae. 8 weeks post-inoculation mice were treated with either 1, 5 or 20 consecutive doses of Q203 at 2mg/kg body weight. Foot pads were harvested 4 weeks after completion of treatment to determine growth (by RLEP) and viability by quantifying M. leprae esxA and hsp18 transcripts. Vehicle only and rifampin (2ug/mL or 10mg/kg) were used as controls.

Results: Q203 at 0.2 nM was able to significantly ($P<0.001$) reduce viability of M. leprae in axenic cultures with 3 days of incubation when compared to media only control. However, 2 nM concentration of Q203 was required to significantly ($P<0.001$) inhibit metabolism of intracellular M. leprae. In vivo results also indicated that Q203 is effective against M. leprae infection in mouse foot pad model.

Conclusion: Q203 is effective against M. leprae, potentially expanding the drug repertoire available to treat leprosy.

ILC-1: CLINICAL SCIENCE:

1.3 Reactions and Nerve Injury

O-011

A RANDOMIZED CONTROLLED ASSESSOR-BLINDED TRIAL OF METHOTREXATE COMPARED TO PREDNISONE IN THE MANAGEMENT OF HANSEN'S DISEASE PATIENTS WITH TYPE 1 REACTION IN A TERTIARY GOVERNMENT HOSPITAL

Presenter: Patricia Anne Nicole Ramirez

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Objective: To determine the effectiveness of methotrexate versus prednisone in the treatment of Hansen's Disease (HD) patients with type 1 reaction (T1R). Specific objectives were as follows: to describe the demographic profile of participants, to compare clinical severity scores, clinical outcomes, recurrence rates, frequency of adverse events, and difference of quality of life treatment scores between the two treatment arms.

Methods: A randomized controlled assessor-blinded trial among leprosy patients with T1R was conducted. A total of 33 patients were randomly allocated into two treatment groups: Prednisone or Methotrexate. Evaluation of lesions, nerve function impairment, sensory testing, and voluntary muscle power were assessed at enrollment and re-assessed periodically for 32 weeks. Quality of life was evaluated with an SF-36 health-related quality of life assessment tool. Outcomes were measured using the clinical severity score, recurrence rate, adverse events and quality of life.

Results: Results of the study show that T1R were most commonly observed in adult males with borderline to lepromatous leprosy subtype, occurring within 12 months of diagnosis and MDT treatment. Prednisone was observed to yield higher Clinical Severity Scores after 32 weeks of treatment. Faster T1R recovery and improvement in skin and sensory function was observed in those who took methotrexate. There is no significant difference in EHF (eyes, hand, feet) scores for both treatment arms. Although MTX had no relapse rates, there is no significant difference in recurrence of T1R between the two treatment arms. Minor adverse events such as moon face, acne, fungal infection and gastric pain were observed in those who took prednisone. Quality of life scores in both treatment arms improved.

Conclusion: This study is the first assessor-blinded randomized control trial assessing methotrexate, an immunosuppressant, in the management of leprosy type 1 reactions in the Philippines. After 32 weeks of treatment, methotrexate yielded lower Clinical Severity Scores and could be considered a safe alternative second-line drug for patients with T1R who are not improving with prednisone or are experiencing adverse effects related to prednisone. This study illustrates the intricacy in the management of leprosy inflammation. With that, further studies on better treatment agents for HD patients with reactions and nerve damage are warranted.

O-012

USING THE ENLIST SEVERITY SCALE IN THE HOSPITAL FOR TROPICAL DISEASES CLINIC, LONDON UK AS A CLINICAL TOOL TO ASSESS PATIENT RESPONSES

Presenter: Diana Nancy Johanna Lockwood

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Objective: The ENLIST Severity scale is a scale that has been developed for assessing ENL severity. The scale is not being used in routine practice as a clinical assessment tool. The scale was validated in several hospitals in leprosy endemic settings by 2 independent clinicians assessing their patients. We used the scale in London on 6 patients who attended the clinic regularly with ENL.

Methods: The scale has been administered to patients with ENL attending the Hospital for Tropical Diseases, London. The scale was used to assess their severity. It was used to assess response to treatment. Patients attending this clinic are treated for severe ENL with steroids or thalidomide. The scale has 10 items that are marked for each patient on a score of 0-3 depending on severity with 0 being no symptoms for that item. The items assessed include a pain score, (VAS), fever, number of skin lesions, skin inflammation, extent of skin lesions, peripheral oedema, bone pain, inflammation of joints, lymphadenopathy and nerve tenderness. The scores for each item are summated. Previous validation work has shown that a score of less than 8 occurs in mild ENL.

Results: The score was used in 6 patients with ENL over 12 months. All patients had LL leprosy. The patients had acquired their leprosy in India, Nepal, Brazil, Angola and Somalia. All the patients were treated with steroids, and 5 patients were treated with Thalidomide. The ENL severity scores ranged from 0-18. We shall report the longitudinal data in these patients and the correlation with treatment. Several patients had a persistent score of 9 whilst on thalidomide indicating that the treatment was only just controlling their symptoms. Further analysis will be presented on the contribution of the different items in the scale to routine management of ENL.

Conclusion: The ENLIST severity scale is a useful clinical tool that can be used to give reproducible assessments of patients ENL severity. It can be used to assess response to treatment. This tool should be used widely in Leprosy clinics where there are patients with ENL. [1]

O-038

INFLAMED SKIN LESIONS AS PATIENT SELF-HELP PROXY INDICATOR TO DETECT EARLY SIGNS OF NERVE ABNORMALITIES IN LEPROSY - AN INTERIM REPORT

Presenter: Armi Maghanoy

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Objective: This study was aimed to evaluate the functional state of a peripheral nerve in relation to its proximity to an inflamed skin lesion.

Methods: With the approval of an Ethical Regulatory Committee, newly diagnosed, untreated patients with leprosy who consented to participate in the study were recruited. Lesions were independently evaluated by both the patient and the clinician; while nerves proximal to or away from lesions were independently evaluated by another

clinical staff. The parameters used for the Lesion Assessment Severity Index (LASI; scores 0-15) were size, color, surface, swelling and tenderness. The parameters used for the Nerve Function Index (NFI; scores 0-15) were nerve enlargement, tenderness, pain, sensory and motor function. Monthly evaluation of the lesions and nerves were performed during WHO-Multi-drug therapy (MDT) before, during and after reaction until a year after treatment completion. To avoid bias, blinding of findings was maintained among the three evaluators.

For this interim report, to maintain blinding, a clinical monitor not directly involved in patient evaluation provided an updated, statistically analyzed data.

Results: A total of 188 patients were recruited. Clinically, 10% are PB's and 90% are MB's. Most patients (48%) presented >3 "nerve lesions" (lesions overlying or proximal to a peripheral nerve); while 31% presented only 1 lesion; 19% 2 lesions and 2% 3 lesions. Lesions were more commonly located along radial, facial and ulnar nerves respectively.

A total of 541 lesions and nerves were regularly monitored and scored using LASI and NFI respectively. Of these lesions, 184 had reactions – 104 type 1 and 80 type 2. Initial findings showed no significant difference between scores obtained by the clinician and the patients.

During reaction, both LASI and NFI scores proportionately increased, particularly at the peak of reaction; It also showed that nerves running along or proximal to inflamed lesions were at greater risk of nerve abnormalities compared to nerves away from inflamed skin lesions.

Conclusion: Although the study is still in progress, early findings suggest higher risk of abnormalities among nerves proximal to inflamed skin lesions. Once validated, this tool will certainly promote patient empowerment (self-monitoring; self-referral) and prevent disabilities due to prompt referral and timely treatment.

O-042

A SINGLE CENTER, OPEN LABEL PILOT STUDY TO EVALUATE THE SAFETY AND EFFICACY OF CC-11050, A NOVEL PHOSPHODIESTERASE 4 INHIBITOR, IN NEPALESE PATIENTS WITH ERYTHEMA NODOSUM LEPROSUM

Presenter: Mahesh Shah Shudi

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Objective: Erythema Nodosum Leprosum (ENL) is an immunological complication that can occur before, during or even years after curative multi-drug therapy in those affected by borderline lepromatous (BL) or lepromatous leprosy (LL). While prednisolone and thalidomide are recognized treatments for ENL, the majority of patients will need long term treatment, both drugs have significant side effects, and thalidomide is restricted or prohibited in some countries. Phosphodiesterase 4 inhibitors (PDE4i) are a class of compounds that affect cytokine production, neutrophil function, and antigen processing and presentation; therefore, a PDE4i could have potential for treating ENL. CC-11050 is a non-steroid, anti-inflammatory drug with few side effects acting as a Pde4i that has been previously trialed and shown to be safe in humans as well as tested against other inflammatory skin conditions.

Methods: This study is a single center, phase 2, open-label trial, to be performed in two steps. Step 1 will evaluate immediate effect in safety and efficacy of CC-11050 treatment over 10-28 days in 10 males with a new or new

recurrent episode of ENL. Upon review of all Step 1 data by the Data Safety and Monitoring Committee (DSMB), a decision will be made whether to proceed to Step 2: an additional 40 ENL patients will be enrolled for up to 52 weeks of CC-11050 treatment. A safety analysis will be conducted on all patients, will include the frequency of all adverse events and laboratory abnormalities as well as frequency of dose interruptions, dose reductions and treatment discontinuation. The ENL International Study Group (ENLIST) ENL severity scale alongside standard clinical and laboratory examinations was performed.

Results: To date (28th January 2019), 3 male subjects have been enrolled. According to preliminary observations, CC-11050 has been found safe and clinical improvements were observed in the first two subjects. Based on consensus between the study principal investigator and DSMB, the medication of the first two patients was extended from 10 to 28 days, while the third subject has not yet reached the 10th day in order to make a decision for extension to 28 days. No serious adverse events have occurred.

Conclusion: The last therapeutic agent for ENL treatment was developed about 50 years ago; and there is an imperative need for new therapies with fewer side effects to be identified. DSMB review of CC-11050 Step 1(10 patients) will determine progression to Step 2(40 patients) of the study. Data analyses from ongoing enrolment is in process.

O-053

MOXIFLOXACIN BASED REGIMENS IN LEPROSY - CLINICAL OBSERVATIONS ON OCCURENCE OF REACTIONS AND BACTERIOLOGICAL DECLINE

Presenter: Vivek Pai

Pai V V, Ashish Khodke, S Khanolkar, Kute Ashok, Shinde M, Jadhav V
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Objective: Observations on clinical trials in leprosy using Moxifloxacin based regimens were reported for the first time in 2009 (Ganapati et al 2009). Further observations on clinical parameters were reported in 2013 (Pai et al 2013, 2016). Moxifloxacin a fluoroquinolone has been shown to be powerful bacterial agent against M. leprae. We share our experience on further observations based on this regimen in a larger series of patients.

Methods: In an open ended observational comparative study aimed to make observations on selected sample of 290 multibacillary patients of which 145 patients were smear positive (age group of 16 to 71 years) and another group of 145 patients were smear positive (age group of 16 to 70 years). In this ongoing clinical study patients received Moxifloxacin 400mg, Rifampicin 600mg and Minocycline 200mg (MRM at monthly intervals for 12 months). The comparative group received (MRMC) additional Clofazamine to ascertain its anti-inflammatory property in preventing reactions. This group received 300mg clofazamine in addition under supervision along with MRM followed by unsupervised doses of 50mg daily clofazimine. The bacillated patients in MRM and MRMC groups were studied from point of view of yearly BI status of patients assessed in both the groups and relapse. In multibacillary smear negative patients they received MRM and MRMC in two groups while in paucibacillary patients they received MRM for 6 months and were assessed using clinical, neurological and photographic assessment.

Results: It was observed that high proportion of patients had reactions in 52(35.8%) patients in smear positive MRM group, while reactions were seen in 57(39.3%) patients in MRMC group. In PB group, 6(4%) of the 174 patients and 5 (12%) of 53 smear negative MB patients of MRM group had reactions, while(16.2%) of the comparative group of smear negative MB patients receiving MRMC had reactions. Addition of Clofazamine did not appear to influence occurrence of reactions. Long term observations are in progress. Average BI in both groups with initial mean BI of >3.0+ showed steady decline. No relapse was observed in the patients followed so far.

Conclusion: Good and early clinical Improvement was seen in cases of MB and PB though reactions were predominant features in smear positive MB patients. BI decline in both smear positive groups was comparable. Further observations on rate of decline of BI, reactions and on relapses will be studied.

O-089

A PROSPECTIVE, RANDOMIZED TRIAL TO INVESTIGATE THE ROLE OF NERVE DECOMPRESSION IN LEPROSY PATIENTS

Presenter: Jose Antonio Garbino

Marcos. C. L. Virmond[1], José. A. Garbino[1], Milton Cury F[o1], Daniel. R. Kirchner[1], Jaison. A. Barreto[1], Marcelo T. Torquato[1], Wladimir F. B. Delanina[1]
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Objective: To date it is not clear the role of surgical decompression in leprosy neuropathy treatment. This study aims to investigate the role of surgical nerve decompression in leprosy neuropathy after failure of steroids treatment.

Methods: It is a prospective randomized study including leprosy cases presenting nerve function impairment (NF) no longer than six months, treated initially with prednisone 1mg/kg/day for 4 weeks. If no improvement or worsening of NF is recorded, the case is randomized to a Clinical Group (continue prednisone) or a Surgical Group (continue prednisone plus surgical decompression). Nerve Function Assessment (NFA) was done within two to five years of intake, including sensory test, voluntary muscle test and neurophysiologic parameters (NP): compound motor action potential (CMAP) distal and proximal, distal latency (DL), conduction velocity across the entrapment sites and F wave and nerve conduction velocity. Nerves were graduated according to the severity based in the distal CMAP amplitudes**.** 221 patients were assessed for intake and 110 were excluded due to non-active neuropathy, lesion with more than six months, severe type 2 reaction, follow-up difficulties, age and associated disease. Among the 111 remaining patients, 48 (43%) showed response with steroid treatment and 63 (108 nerves) have not improved and fulfilled criteria for randomization. Along the trial, 13 patients (27 nerves) dropped out due to diabetes or difficulties to follow the treatment. Fifth patients (79 nerves) were randomized: 43 were at random allotted to surgical group and 36 to clinical group. The differences among each variable were compared in three moments: the pre-treatment exam (1st), from six months to one year (2nd) and 2 to 5 years (3rd).

Results: In NFA there was no statistical differences in both groups along the evaluations. However, comparing lesion severity, *moderate* and *mild* lesion versus *pronounced* and *complete* showed statistical significance for NFA in the former. For NP the 1st evaluation compared to the 3rd showed statistical differences favoring the Surgical group. There were no statistical significances in the NFA in isolated S-W monofilaments and VMT between both groups in the 1st and 3rd evaluation.

Conclusion: 80% of the nerves improved or maintained the NFA in the final evaluation. The distal CMAP amplitude, an indirect indicator of the motor function, improved in all nerve segments studied distal and proximally, and it was the most sensible NP to demonstrate nerve recovery. Nerve improvement can be observed after surgical decompression added to clinical treatment in leprosy neuropathy.

O-090

USING THE ENLIST ENL SEVERITY SCALE IN ALERT LEPROSY CLINIC IN ETHIOPIA AS A TOOL TO ASSESS PATIENT RESPONSE TO TREATMENT

Presenter: Saba Maria Lambert

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Objective: The ENLIST Severity scale is a scale that has been developed for assessing ENL severity. The scale was validated in several hospitals in leprosy endemic settings. At ALERT leprosy clinic we have started using the severity scale in routine practice as a clinical assessment tool.

Methods: The scale has been administered to patients with ENL to assess the severity of the reaction and to assess response to treatment. Patients attending this clinic are treated for severe ENL with steroids. The scale has 10 items that are marked for each patient on a score of 0-3 depending on severity with 0 being no symptoms for that item. The items assessed include a pain score, (VAS), fever, number of skin lesions, skin inflammation, and extent of skin lesions, peripheral oedema, and bone pain. Inflammation of joints, lymphadenopathy, nerve tenderness. The scores for each item are summated. Previous validation work has shown that a score of less than 8 occurs in mild ENL.

Results: The score was used in 12 patients with ENL over 6 months. All patients had lepromatous leprosy, and the ENL was treated with steroids. The ENL severity scores ranged from 0-18. We shall report the longitudinal data in these patients and the correlation with treatment. Further analysis will be presented on the contribution of the different items in the scale to routine management of ENL.

Conclusion: The ENLIST severity scale is a useful clinical tool that can be used to give reproducible assessments of patients ENL severity. It can be used to assess response to treatment. This tool should be used widely in Leprosy clinics where there are patients with ENL.

O-114

THALIDOMIDE A BOON IN MANAGEMENT OF ENL/TYPE II REACTIONS IN LEPROSY - - A DECADAL EXPERIENCE

Presenter: Vivek Pai

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Objective: It is well known that Thalidomide is highly beneficial in treatment of ENL and type II reactions in leprosy. Thalidomide belonging to thiomide group of drugs has proved to be life saving in many patients. We have reported our clinical observations on efficacy of thalidomide as primary drug earlier (Pai et al 2005, 2013, 2016). We share our larger experience spanning over a decade in patients treated with thalidomide in ENL/type II reactions in leprosy at our Referral Centre.

Methods: In this study patients with either chronic ENL reaction, severe ulcerative/necrotic ENL, steroid dependent and or with steroid adverse effects, steroid non responders referred to BLP Referral centre for management and/or specifically for Thalidomide were registered. During the period 2005 to 2018, 389 patients with ENL/type II were referred by local medical colleges, practicing dermatologists, Government district/civil hospitals to BLP Referral centre.

Of 389 patients with ENL reactions, 75 were females, 314 were males with age group ranging from 8 years to 71 years were administered thalidomide. All patients were assessed clinically, bacteriologically and investigated with hemogram, chest radiograph, blood sugar etc. Informed consent, undertaking and counselling of patients as per protocol was ensured. In some cases, ENLIST severity score ranged from minimum 8 to maximum 28 in severe cases. Thalidomide was administered in daily dose of 300mg per day in divided doses and tapered and maintained over a period of 12 to 18 months.

Results: ENL reactions subsided in a week's period with marked improvement in quality of life in most patients. No major adverse effects noticed except minor effects like oedema of feet in few cases, drowsiness at beginning of treatment being on higher dose. New sensory/motor neuropathy seen in 2 patients. Recurrence of ENL reactions observed in 86 patients either during course of thalidomide or on completion of treatment needing additional steroids or stepping up dose of thalidomide. Key feature seen was most of these patients had BI more than 3+. All steroid dependent patients could be weaned of from steroid dependency.

Conclusion: In our experience in this larger series of patients spanning over a decade, we find that thalidomide as immunosuppressive and anti-inflammatory drug proved to be a boon and excellent drug in controlling severe ENL/Type II reactions bringing in remarkable improvement in quality of life, amelioration of pain especially in those with steroid adverse effects and steroid dependency.

O-133

RETROSPETIVE STUDY OF ANALGAESIC PRESCRIBING PATTERN IN TREATED LEPROSY PATIENTS PRESENTING WITH PAIN AT ALERT LEPROSY CLINIC, ETHIOPIA

Presenter: Saba Maria Lambert

S. M. Lambert [1, 2], S. D. Nigusse [2], Free Nigusse [2], Addis Mengiste [2] , D. Lockwood [1]

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Objective: A large number of treated leprosy patents attending leprosy hospitals complain of recurrent pains. In our setting, frequent requests for prednisolone are made by patients to control the pain, even if there are no signs of active reactions. This retrospective study aims to analyze the symptoms reported by patients and the treatment choice made by health care staff, as well as response to treatment.

Methods: 500 medical files of treated leprosy patients, who have been diagnosed with any sort of pain will be examined. Patients with active leprosy reactions will be excluded. This study will look at patients presenting over a determined 6 months period at ALERT leprosy clinic.

Information collected is: description of pain, diagnosis and treatment prescribed.

Results: The results will give us an understanding on how treated leprosy patients presenting with pain symptoms are managed in an outpatient service.

Conclusion: This study reveals whether, the cause of pain symptoms are being correctly addressed, the types of pain being differentiated and if the management plan is adequate. We are especially interested in whether neuropathic pain is being correctly identified and treated. This will guide our future policy on how to manage treated leprosy patients presenting with pain symptoms.

O-139

ULTRASOUND MORPHOLOGY OF PERIPHERAL NERVES IN PATIENTS WITH LEPROSY AND CONTACTS.

Presenter: Glauber Voltan

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Objective: To evaluate the morphology of peripheral nerves by ultrasonography of prison contacts of prison leprosy patients and their serology (APGL-1).

Methods: We used a portable ultrasound-US, linear transducer, high frequency (5.0 to 16.0 MHz). We evaluated bilaterally the cross seccional areas (CSAs) of peripheral nerves of the upper limbs (median-M, ulnar tunnel-UT and pre-tunnel-UPT), and lower limbs (Common Fibular head fibula-FT and thigh-FPT, tibial-T) in the longitudinal and transversal view, as well as scanning them. After the index between the differences between left and right points (asymmetry-DIF), and to detect focal alterations for the ulnar and common fibular nerves the index of the difference between tunnel (T) and pre-tunnel (PT) CSA values were calculated as ΔUTPT for Ulnar and ΔFCTPT for Common Fibular nerves.

Results: Thirty-two prisoner contacts (PHC) and 40 leprosy patients (Lep) from low endemic Brazilian area (southeast-SD), randomly selected during training campaigns were evaluated through a partnership with the Leprosy Reference Center of FMRP/USP and Jardinópolis and Ribeirão Preto municipalities. Clinical evaluation was performed by dermatologists and leprologists physicians. Blood samples were also collected for the evaluation of anti-PGL1 (APGL1), besides the ultrasound (US) evaluation of the peripheral nerves performed by specialist physician of them. The absolute values of the CSAs of the peripheral nerves were similar among PHC and Lep groups in all points, except the common fibular nerve at fibula ´s head with bigger in Lep than in PHC group (p = 0,0011). Asymmetry did not differ among groups; although there was a tendency of higher values of the means UT, UPT and FCX differences in Lep group than in PHC. For the ΔUTPT and ΔFCTPT focal points there was no difference, while the same tendency was observed slightly in the Lep group. The APGL1 ELISA-index did not show differences (p = 0.68) among contacts (median 0.5) and patients (median 1.0).

Conclusion: Our results shows the quantitative CSAs data proves the existence of neuropathy in patients with leprosy diagnosed from active search campaign, standing out the common fibular nerve with significant enlargement in leprosy patients as compare to contacts; corroborating with previous studies although using advanced patients from reference health centers (late diagnosis). The asymmetry and focal nerve impairment, highlighted in the leprosy literature with ultrasonography, seems be probable late sign of neuropathy; while isolate enlargement of the common fibular nerve CSA highlighted as a probable early marker of leprosy neuropathy.

O-181

LEPROSY REACTION IN THE POST-MULTIDRUG THERAPY PERIOD IN THE STATE OF RONDÔNIA, BRAZILIAN AMAZON

Presenter: Carmelita Ribeiro Filha Coriolano

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Objective: To characterize the demographic and clinical profile of cases with leprosy reactions in the State of Rondônia, from 2012 to 2016.

Methods: A descriptive study of the demographic and clinical profile of cases with leprosy reactions in the post-MDT period, treated in the health care network of Rondônia, and reported in the information system (SISREACTION), from 2012-2016. The following variables were analyzed: age group, gender, current status, operational classification, degree of physical disability (DPD) at discharge, date of MDT discharge, date of initiation of the leprosy reaction treatment, type of reaction, and GIF in the reaction episode. The evolution of the cases was analyzed with the GIF comparison throughout the follow-up.

Results: Of the total of 540 cases analyzed, 321 (59.4%) were males, with a mean age of 44 years for both sexes. 501 (92.8%) cases were classified as multibacillary and 303 (56.1%) were evaluated for GIF. Of the evaluated, 164 (30.4%) were classified with DPD-0, 106 (19.6%) with DPD-1, and 33 (6.1%) with DPD-2. The most frequent types of reactions were: neuritis isolated in 233 (43.1%) cases, type 1 reaction with 135 (25.0%), and type 2 reaction with 127 (23.5%). 446 (82.5%) were in the treatment of the reaction, three (0.6%) were transferred, 26 (4.8%) were in defaulting, and 65 (12.0%) were on discharge from the reaction treatment. The analysis of the latter group identified 45 (69.2%) cases with adequate treatment for reactional episodes. Among those who ended the treatment for reaction, the time interval between the onset of MDT and the onset of the reaction was, on average, 10.4 months. In this group, 59 (90.9%) were evaluated for DPD at the end of the treatment of the reaction, and of those, 28 (43.1%) were evaluated on MDT discharge and at the end of the reactional treatment. The evolution of GIF in these cases had the following profile: 21 (75.0%) cases remained in the same DPD; five (17.9%) improved, and two (7.1%) worsened.

Conclusion: This unique experience in Brazil of leprosy reaction surveillance from Rondônia shows a great potential. However, there are critical issues that demand a strengthening of the management of reactions and actions to prevent disabilities. There is also a need to strengthen the permanent education, both in primary health care and in the referral network. The need to structure policies to approach people with leprosy at the time of post-discharge of MDT is highlighted.

O-199

CAN ANTI-HELMINTHIC TREATMENT IN CO-ENDEMIC CONTEXTS INITIATE IMMUNE RECONSTITUTION LEADING TO LEPROSY REACTION: WHAT WE CURRENTLY DO AND DO NOT KNOW

Presenter: Deanna A. Hagge

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Objective: Most (>94%) of global annual new leprosy cases are from populations co-endemic for soil-transmitted helminth infections (STH), which can impose systemic Th2 bias. Our studies have previously demonstrated that leprosy reactions are significantly and inversely associated with the presence of STH co-infections. Herein, our aim was to investigate meaningful relevance of anti-helminthic treatment to clinical leprosy outcomes and longitudinal influence across potential immuno-diagnostic tool targets.

Methods: The prospective cohort study included 225 new leprosy, 150 new reaction, and 200 household contact (HHC) patients. Water, Sanitation and Hygiene (WASH) training was provided at intake alongside albendazole and ivermectin treatment, which was repeated 6-monthly during participation. Stool and blood were collected quarterly for one year, then twice in the second year. HHC samples were collected similarly up to 9 months. Stool was analysed by 3 microscopy methods alongside multiplex qPCR for 5 endemic STH species of Nepal. Whole blood assay was performed for analyses by low-complexity lateral flow assays (UCP-LFA) assessing production of 7 biomarkers after overnight stimulation with and without *Mycobacterium leprae* antigens.

Results: 225 new leprosy, 79 new reaction (44 T1R, 14 ENL, 21 neuritis) and 89 HHC have been enrolled. While microscopy analyses are available, qPCR analyses remain ongoing. Preliminary results indicated that, in general, >50% participants hosted $\geq$1 STH species at intake. A higher proportion of new T1R patients reported taking previous anti-helminthic drugs 6-12 months before enrolment compared to new cases without reaction ($p<0.01$, 20.4 vs. 6.9%). Of 150 that have completed 12 months of follow-up, 31 (20%) developed a reaction after enrolment: neuritis (9), T1R (11), ENL (11). BL/LL patients in this cohort are significantly associated with STH positivity: 58% vs 31% in STH-negative cases at enrolment ($p=0.003$). TT/BT are also significantly associated with STH negativity ($p=0.01$). After initial anti-helminthic treatment, microscopy-reported STH-positive new cases decreased to 2.5% (n=201) by 6-month follow-up then 1.3% (n=154) by 1 year. New reaction cases reached and maintained zero levels by 6 months. UCP-LF tests were performed retrospectively for contacts and cases.

Conclusion: Results of our ongoing investigations continue to indicate STH co-infection is significantly and inversely associated with leprosy reactions at diagnosis in a co-endemic population. During this cohort study, UCP-LFA analysis has been performed, yielding >8,000 data points for longitudinal mapping of immune responses enabling relevant insight into development of clinical outcomes and leprosy immuno-diagnostics tool applications in co-endemic populations. Further analyses are in progress.

O-218

METHOTREXATE AND PREDNISOLONE STUDY IN ERYTHEMA NODOSUM LEPROSUM: A RANDOMIZED CLINICAL TRIAL PROTOCOL

Presenter: Barbara de Barros

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Background: Erythema Nodosum Leprosum (ENL) is a painful, debilitating complication of leprosy. Patients often require high doses of corticosteroids for prolonged periods. Thalidomide is expensive and not available in most countries. The use of corticosteroids for long periods is associated with adverse effects and mortality. It is a priority to identify alternative agents to treat ENL. Methotrexate (MTX) is a cheap, widely used medication which has been reported to be effective in ENL resistant to steroids and thalidomide.

Objective: Erythema Nodosum Leprosum (ENL) is a painful, debilitating complication of leprosy. Patients often require high doses of corticosteroids for prolonged periods. Thalidomide is expensive and not available in most countries. The use of corticosteroids for long periods is associated with adverse effects and mortality. It is a priority to identify alternative agents to treat ENL. Methotrexate (MTX) is a cheap, widely used medication which has been reported to be effective in ENL resistant to steroids and thalidomide.

The objective is to design a double blind randomized controlled trial (RCT) protocol to test the efficacy of MTX for managing ENL.

Method and Materials: An expert group was convened on three occasions. Patients diagnosed with moderate or severe ENL at ENLIST Group centres will be randomly allocated to receive a 15 or 20 mg of oral MTX each week for 48 weeks and prednisolone 40 mg per day reducing to zero over 20 weeks. The control group will receive an identical prednisolone scheme. The participants will be stratified into two groups, those with acute ENL, those with chronic/recurrent ENL. The interventions for both populations are the same, although analysed separately. Primary outcomes are proportion of individuals who have not required additional prednisolone during the first 24 weeks and 48 weeks. Improvement in the validated ENLIST ENL Severity Scale and quality of life instruments are secondary outcomes measured at weeks 24, 48 and 60. Adverse effects (AE) will be closely monitored clinically and using laboratory tests. Participants will receive folic acid, 5mg daily for 52 weeks except on the day of MTX to prevent AEs, and nausea will be managed with ondansetron.

Discussion: This will be the first RCT testing MTX as part of ENL treatment. We aim to recruit 150 participants with acute ENL and 400 with chronic/recurrent ENL. At the moment, patients with ENL have few options and what is available has severe side effects with may prevent people to complete treatment. MTX is a cheap save option, which can improve ENL management. This study is register at ClinicalTrials.gov (NCT03775460).

O-250

CLINICO PATHOLOGICAL CORRELATION OF LEPROSY REACTIONS

Presenter: Lakshmi Rajan

Rajan L[1], Ponnaiya J[1], Daniel S[1], Ebenezer M[1], Joshua J[1]
Affiliation 1: Schieffelin Institute of Health Research & Leprosy Centre (SIH R & LC), Karigiri, Vellore, Tamil Nadu 632106; India

Objective: To study the clinical manifestations of reactions and to compare with Histopathology of skin biopsy during reactions.

Methods: During 2018, 26 leprosy patients, with reactions (16 T1R ,10 ENL) 5 patients with subclinical reactions in skin biopsy without clinical presentation are studied. Out of 26 reaction cases 16 are borderline (9BT, 1BB, and 6BL), 10 are Lepromatous group. (BL – 7 and LL – 3) 6 reaction cases are associated with neuritis.

Clinical diagnosis of T1R and ENL reactions
Oedematous, raised, erythematous patches with mild pain / tenderness, associated with or without neuritis and eruption of crops of erythematous, painful and tender nodules of short duration with constitutional symptoms.

Histopathological findings in skin biopsy
T1R :
1 Intercellular and intra granuloma oedema,
2 Disorganised granulomas due to oedema,
3 Dilated and congested blood vessels in the dermis

ENL Reaction :
Intercellular oedema,
1. Dilated and congested blood vessels and vasculitis.
2. Localised collections of neutrophils in macrophage granulomas with M.leprae

Results: Out of 16 clinical T1R cases only – 6 reaction cases showed T1R Pathology in skin biopsy.
ENL reaction pathology in 7 out of 10 cases in the background of BL / LL granulomas with M.leprae. 4 T1R and 1ENL subclinical reaction is noticed in without clinical diagnosis

Clinico pathological correlation of T1R is 37.5% and ENL reaction is 70%

Conclusions:
1. T1R **:** Oedema and erythema are the important features of reactions clinically and Histopathologically also, which are variable. This may be the reason for only 37.5% concordance in this study. There is no specific Histological feature.

2. ENL **:** Is a localized lesion with neutrophils and vasculitis which are significant. ENL reaction is a continuous process in an episode having different stages of ENLs with varying levels of severity. It is difficult to differentiate early, mild, sub clinical and resolving stages of ENL even with Histopathology – which shows scattered neutrophils in a BL / LL macrophage granuloma. Even with very few small granular forms of M.leprae severe ENL reaction pathology is noticed in some cases. Histopathology helps to differentiate ENL lesion, from LL nodules and Histoid nodules. Clinical and histological findings together helps to diagnose reactions, and also sub clinical reactions.

There is need for further studies with more number of reaction cases to understand better clinical pathological correlation of reactions in leprosy.

O-256

TREATMENT OF ERYTHEMA NODOSUM LEPROSUM (ENL) WITH THALIDOMIDE IN AN OUT-PATIENT SETUP - EXPERIENCES FROM A SEMI-URBAN LEPROSY REFERRAL CENTRE IN INDIA

Presenter: Upputuri Brahmaiah

U.Brahmaiah, P.M. Sukumar, J. Zakaraiah, N. Manasa, S. Aparna
Institutional Affiliation: LEPRA Society-Blue Peter Public Health and Research Centre (BPHRC), Hyderabad.

Objective: To study the feasibility of administration of Thalidomide to people affected by leprosy with ENL in an outpatient clinic.

Methods: We studied the profile of 101 ENL patients registered during 2010-2015 with the out-patient department of LEPRA society BPHRC, Hyderabad, for treatment with Thalidomide. Patient records were reviewed for treatment protocol, demographic details, disease specific parameters, clinical course, treatment compliance, adverse events, and treatment outcome. Patients were started on Thalidomide after getting Informed consent and counselling by following Risk Evaluation and mitigation strategy (REMS) protocol. Women in the reproductive age group were tested for pregnancy and counselled to adopt contraceptive methods.

The dosage followed is 300mg h/s od for 1 month, 200mg h/s od for 1 month, 100mg h/s od for 1 month and the dosage tapered depending on the response. The patients are encouraged to take the drug in the night as it causes sedation. The patients return every month for review clinically examined, counselled and monitored for adverse events, if any.

Results: This study includes 31(30.6 %) males and 70(70.2 %) females; age group ranging from 16 to 70 years, 18 patients had showed acute episodes of ENL followed by chronic and recurrent ENL in 55 and 28 patients respectively. Duration of ENL ranged from one month to 3.75 years. Steroid dependency was the commonest indication and was observed in 90 (89.10 %) patients followed by steroid toxicity in 8 (7.92 %) and contraindication for steroids in 3 (2.97 %) patients. Duration of Thalidomide therapy ranged from one month to 10 months with majority treated for 5 months.

Among 101 patients, 68 (67.32 %) were treatment compliant as per the required schedule, (57 had complete recovery, post Thalidomide ENL recurrence was seen in 11 patients) and 33 (32.67 %) were irregular for treatment.

Adverse effects observed were pedal oedema in 47 (46.53 %), giddiness in 15 (14.85 %), and constipation in 15 (14.85 %) patients.

Conclusion: The study showed that there is feasibility of Thalidomide administration in ENL in outpatient clinic. Early institution of thalidomide induces faster remission and prevents ENL and minimises steroid dependency and toxicity.

O-305

ACUTE NEURITIS – ARE CORTICOSTEROIDS GOOD ENOUGH

Presenter: Abhishek Reddy

K Abhishek Reddy, Anitha R,
The Leprosy Mission Purulia, West Bengal.

Objective: The complex immune response which causes inflammation of nerves and nerve function impairment is the most dreaded complication of leprosy, is noticed in around 30% patients of leprosy. Corticosteroids is the

main treatment option available for neuritis treatment. There are no clear guidelines regarding the duration of corticosteroids. To understand the efficiency of routinely followed tapering prednisolone dosing for neuritis this study was conducted.

Methods: All consenting patients who presented with acute nerve function impairment (less than 6 months duration) between January 2018 to July 2018 were included. Voluntary muscles testing (VMT) and sensory testing (ST) was done when patient presented with acute neuritis. Patients were usually admitted for 5 days to 7 days for education in our hospital before starting steroids for neuritis. They are given appropriate splints and taught exercises. Steroids were tapered over 20 weeks instead of usual 12 weeks regimen. All the patients had monthly VMT/ST. 10 key motor muscles functions were assessed by experienced physio technicians. Ten points palm and sole sensory testing was done by Semmes Weinstein monofilament (2 gm for hand and 10 gm for soles).

Results: Total 83 patients were included in the study. 65 were males and 18 were females. 59% neuritis were picked up within 1 month of its onset. After 20 weeks of steroid therapy 1.2% of patients restored their nerve function completely, 42.16% showed improvement, 50.60% had no change in their nerve function impairment. 6.02% of patients required additional doses of prednisolone as they developed further worsening of other nerves while on treatment. 24.09% of patient were smear positive. 36% of patients presented with neuritis as their presenting feature of illness when they were diagnosed to have leprosy. 13.25% of patients developed acute nerve function impairment after release from treatment.

Conclusion: Oral corticosteroids are in use for neuritis for more than 50 years. This study was done in an endemic area to look for efficacy of corticosteroid in neuritis. We realized improvement of neuritis after corticosteroids remained less than half of the cases. Despite usage of splints, monthly VMT/ST, regular corticosteroids and rest to the impaired nerve. Thus further research needs to be done to find newer methods for managing neuritis efficiently to avoid deformities and disabilities

ILC-1: CLINICAL SCIENCE:

1.4 Dermatology (Leprosy and Its Differentials)

O-020

ARE WE CLINICALLY MISSING LEPROSY IN ERA OF ELIMINATION

Presenter: Neena Khanna

Neena Khanna
Department of Dermatology and Venereology, All India Institute Of Medical Sciences, India

With the elimination of leprosy from most parts of the World including India, diagnosis of leprosy is becoming more and more challenging.

Objective: To determine the number of leprosy patients attending a specialty clinic in a tertiary care center in India who were misdiagnosed at presentation.

Methods: We retrospectively reviewed case files of 1543 patients registered during 2009-2015 in the leprosy clinic of All India Institute of Medical Sciences, New Delhi, India to determine the number of patients in whom the diagnosis of leprosy had initially been missed and there had been delay in starting antileprosy treatment (ALT). We also identified the spectrum of diseases which were diagnosed in these patients.

Results: Of the 1543 files reviewed, we observed that 156 (1.01%) patients had been misdiagnosed at presentation to the doctor and institution of ALT had been delayed for periods varying from 1- 36 months. In 27 (17.3%) of these patients the diagnosis of leprosy was missed at the primary health center, in 46 (29.5%) by the general practitioner, in 34 (21.8%) by practitioners of alternate systems of medicine, in 39 (25%) by a dermatologist, in 9 (6.4%) by an internist and in 1 (0.6%) by a surgeon. In 92 (59.0%) patients, the delay in the diagnosis had led to development of disability (grade I: 60; grade II: 32). In 110 (70.5%) patients, the patient's prescription did not have any diagnoses and the patient had been treated variously with topical steroids, vitamin supplements and antihistamines. Of the 36 patients in whom a diagnoses of dermatological conditions was made, 22 (14.1%) were diagnosed to have a fungal infection and in other 14 (9.0%) a spectrum of dermatological diseases were diagnosed including orofacial granulomatosis (2 patients), post kala azar dermal leshmaniasis (3), granuloma annulare (2), erythema annulare centrifugum (1) and sarcoidosis (2). One patient each with erythema nodosum leprosum (ENL) was misdiagnosed as erythema nodusum and Sweet's syndrome. Nine (5.8%) patients with ENL presented to the internist due to the presence of conspicuous constitutional symptoms. Three of these were misdiagnosed as lymphoma, and 6 as different connective tissue disorders. The patient who presented to the surgeon was misdiagnosed as neurosarcoma.

Conclusion: Leprosy remains a great mimicker and clinicians really need to think of leprosy, even in era of elimination.

O-122

CLINICAL PROFILE OF RELAPSE IN LEPROSY AND LABORATORY CORRELATION INCLUDING MOUSE FOOTPAD INOCULATION AND MOLECULAR BIOLOGY IN TERTIARY LEPROSY INSTITUTION

Presenter: Lakshmi Rajan

Rajan L[1], Ponnaiya J[1], Das M[1], Arumugam S[1], Ebenezer M[1], Joshua J[1]
[1]Schieffelin Institute of Health Research & Leprosy Centre (SIH R & LC), Karigiri, Vellore, Tamil Nadu 632106; India

Objective: To further refine the clinical presentation criteria of relapse in leprosy so that the clinicians / field workers and even the persons affected by leprosy are aware of the signs of relapse in leprosy.

Methods: Relapse is defined as occurrence of disease after complete course of Multidrug therapy, either by appearance of new lesions or an increase in the previous skin smear status of >2+ Bacteriological index. Since the cessation of skin smears in the leprosy control programmes globally the diagnosis of relapse is based on clinical examination and depends on history from the patient. During 2009–2016, thirty relapse patients were seen at SIHR&LC, Karigiri, a tertiary leprosy referral centre located in South India. The relapse patients in this study presented with new patches/ nodules/ reactions/ new nerve involvement/ increase in size of old patches or increasing in Bacteriological index.

In this study, the patterns of clinical presentation of relapse in leprosy, their correlation with the laboratory tools – Slit skin smear, Histopathology, Mouse footpad inoculation study to demonstrate viable *M.leprae* and Molecular biology study for drug resistance were studied in these thirty relapse cases.

Results: All the 30 relapse patients belonged to lepromatous pole of disease and initially were diagnosed as having lepromatous leprosy or borderline lepromatous leprosy. Out of the 30 relapse cases, seven patients had DDS monotherapy previously, two patients had both DDS monotherapy+ MB MDT and twenty one patients had only MB MDT.

In this study, the clinical diagnosis of relapse and skin smear correlation is 96.6%, Histopathology correlation is 83.3%; and Mouse foot pad inoculation study correlation is 68%. Drug resistance study with Molecular biology method revealed Rifampicin resistance in one relapse case and DDS resistance in four relapse cases. The remaining relapse cases were all sensitive to both DDS and Rifampicin.

Conclusion: This study indicated that among the thirty cases diagnosed as relapse clinically that is occurrence of new skin lesions after completion of scheduled course of MDT has significant correlation with laboratory diagnosis. It shows that in the absence of laboratory facilities to confirm diagnosis of relapse in the field situation, clinical signs and symptoms appears to be acceptable.

The health professionals working in the primary health care centres could be sensitized towards a high degree of suspicion for relapse on the basis of clinical signs and symptoms that is occurrence of new skin lesions after completion of scheduled course of MDT.

O-125

DIFFUSE LEPROMATOUS LEPROSY CAUSED BY DUAL INFECTION OF MYCOBACTERIUM LEPRAE AND MYCOBACTERIUM LEPROMATOSIS

Presenter: Linda Astari

L. Astari[1], R.R Widiatma[1]

[1]Department of Dermatology and Venereology, Faculty of Medicine UNAIR/ Dr. Soetomo Hospital, Surabaya Indonesia

Objective: *Mycobacterium lepromatosis* (*M. lepromatosis)* is the dominant cause of leprosy in Mexico. *M. lepromatosis* co-exists with *M. leprae* in endemic areas as the second cause of leprosy. Although this new bacteria has similarity with *M. leprae*, it still has biomolecular difference. Both organisms may cause dual infections in a patient. This case to present *M. lepromatosis* as the causative agent of leprosy.

Methods: Complete history, physical examination and several supporting test was performed to establish the diagnosis of the diffuse lepromatous leprosy (DLL).

Results: Case Report: A forty-one-year-old Madurese woman presented with multiple ulcers on her legs, hands and buttock that had been recurring over the past years. The ulcers were described as wide and deep, covered with blackish crusts and some exudative area with irregular edges. There was rapid development of new ulcers on her legs and hands in the three weeks prior to hospitalization. On her face, there was diffuse infiltration, madarosis and saddle nose. From BTA examination, BI was 4+ and MI showed 2%. Histopathology showed thinning of epidermis with a lot of foam cells containing BTA, including endotel and perivascular tissues. Nested PCR examination with LERF2-MLER4 primers for detecting *M. leprae* showed a positive result. Advanced PCR examination using LPMF2-MLER4 primers for detecting *M. lepromatosis* also showed a positive result. The result of DNA sequencing turned out to be consistent with the order of nucleotide of *M. lepromatosis*. The patient improved and was discharged after four weeks of admission. The ulcers healed slowly after the wound care. The treatment resulted in cicatrization.

Conclusion: The diagnosis of DLL was based on the clinical manifestations, histopathology, PCR and DNA sequencing examination. The PCR and sequencing examination showed the double infection of *M. leprae* and *M. lepromatosis*.

O-169

TUBERCULOSIS PRECEDING LEPROSY: CASE SERIES. IS SINGLE DOSE RIFAMPICIN (SDR) AS CHEMOPROPHYLAXIS FOR LEPROSY ENOUGH?

Presenter: Santoshdev Rathod

Santoshdev Rathod[1], Raju Chaudhary[1], Neela Patel[2], Akshay Ambasana[1], Aniket Panchal[2]

[1]Smt NHL Municipality Medical College, Ahmedabad, India [2]Ahmedabad Municipal Corporation Medical Education Trust medical college, Ahmedabad, India

Objectives: Both leprosy and tuberculosis (TB) are known to have similar geographic endemicity. In the largest review of Tuberculosis with Leprosy co-infection by Magnum et al[1] described 10 such reported cases in the published literature in last five years; in which 7 patients had leprosy as first infection and 3 had co-infection at time of diagnosis. In this paper, we are reporting 5 cases in which diagnosis of Tuberculosis preceded that of leprosy. The aim of these case reports is to investigate effect of prior anti-tubercular therapy (ATT) on clinical leprosy.

Methods: It is a simple descriptive case series of patients who had prior history of taking treatment for tuberculosis (Duration > 1 month) and later on developed clinical leprosy. The study duration was of 6 months. Inclusion criteria: Diagnosis of first infection with tuberculosis and/or history of treatment with rifampicin based anti-tubercular treatment for more than 1-month duration.

Results: We describe 5 such cases. Case 1, A 42-year old patient was receiving 3-drug ATT for lymph node tuberculosis for 5 months presented as erythema nodosum leprosum with lepromatous leprosy. Case 2, A 26-year old Patient was receiving 3-drug anti-ATT for lymph node tuberculosis for 2 months who then presented as lepromatous leprosy. Diagnosis of lymph node tuberculosis was confirmed by FNAC in all three cases. Case 3, A 17-year old patient with cervical lymph node tuberculosis and while on ATT for 2 months manifested lepromatous leprosy with type 2 lepra reaction. Case 4, A 48-year old patient with sputum positive pulmonary tuberculosis on 3-drug ATT for 1.5 months presented as lepromatous leprosy. Case 5, A 36-year-old patient with sputum positive pulmonary tuberculosis on 3-drug ATT for 2 months and subsequently manifested tuberculoid leprosy.

Conclusion: Occurrence of tuberculosis & Leprosy co-infection is not uncommon and in 4 out of 5 cases, Lepra reactions were precipitated by prior anti-tubercular therapy. We conclude that prior anti-tubercular therapy may unmask clinical leprosy in form of lepra reaction as seen in our study. Also, while globally some countries are in the process of implementation of single dose rifampicin (SDR) as chemoprophylaxis of leprosy, this case series highlights inefficacy of even more than 1 month duration 3-drug ATT in prevention of leprosy.

O-269

MOLECULAR ANALYSES OF EXOSOMES IN LEPROSY SERA FOR IDENTIFYING BIOMARKERS OF LEPROSY

Presenter: Wei Gao

Wei Gao[1], Haiqin Jiang[1], Hongsheng Wang[1], Yumi Maeda[2]

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Objective: To characterize the different categories of leprosy by analyzing the miRNA profiles and proteomics of serum exosome in leprosy patients.

Methods: Serum exosome from 3 new leprosy patients classified as either T-Lep (tuberculoid or borderline tuberculoid) as well as 3 classified as L-lep (lepromatous or borderline lepromatous) and 3 healthy individuals were collected and miRNA profiles were analyzed by Agilent Human miRNA (8*60k) array (Shanghai Biotechnology Corporation) . In addition, serum exosome from 7 new T-lep leprosy patients as well as 7 classified as L-lep and 7 individuals were isolated and proteomics profiles were analyzed by LC-MS (Beijing BiotechPack Scientific Company). The different expressions of protein molecules in the three groups were identified.

Results: After validation of samples, miR320e and miR4703-5p showed highest in T-lep and L-lep respectively compared to normal individuals. When leprosy patients were considered as one group, miR4485-3p displayed the most significant difference. MiR4485-3p played important role in the lysosome pathway by down-regulating the gene solute carrier family 1 member 1(SLC11A1). Further study is needed to confirm whether miR4485 maintains the cellular homeostasis in leprosy patients.

When proteomic analyses of the exosomes were conducted, there were 151 differentially expressed protein molecules in T-lep patients compared to normal individuals, including 86 up-regulating and 65 down-regulating. 142 molecules in L-lep patients differed from normal individuals, involving 83 up-regulated, and 59 down-regulated. Proteomic profiles and validation tests showed that HBB and CD5L were highly expressed in patients. The results

may indicate that HBB and CD5L may be able to distinguish leprosy patients, although further confirmation of the study is needed.

Conclusion: We found microRNAs and proteins from serum exosome that has considerable clinical value in diagnosing leprosy and different types of leprosy.

O-289

A CASE REPORT ON LEPROMATOUS LEPROSY WITH LARYNGEAL INVOLVEMENT

Presenter: Christine de Guia

C.E. de Guia[1], A. Venida-Tablizo[2], D.D. Mejia[1]

[1] Resident, Department of Dermatology, Rizal Medical Center, Pasig City, Philippines [2] Consultant, Department of Dermatology, Rizal Medical Center, Pasig City, Philippines

Objective: Leprosy is a disease caused by Mycobacterium leprae. It classically presents with cutaneous and nerve involvement. Uncommonly, leprosy can present with other systemic manifestations, including involvement of the larynx. Leprosy of the larynx can be seen in lepromatous leprosy and can present with various manifestations, such as cough, hoarseness, and difficulty breathing, with rare cases resulting in life-threatening airway obstruction. We report a case of a 48-year-old male who presented with long-standing lepromatous skin lesions and complaints of hoarseness and difficulty breathing.

Methods & Results:

Case Summary:
A 48-year-old male presented with a 5-year history of skin changes on the face, including gradual collapse of nasal bridge, as well as progressive hoarseness, change in quality of voice, and eventual difficulty of breathing. Cutaneous examination revealed leonine facies, madarosis, saddle nose deformity, skin-colored to hyperpigmented nodules and plaques on the back and all extremities, shortening of the digits of bilateral feet, and complete loss of sensation over the first and fifth digits of the right foot. Direct laryngoscopy revealed a firm, irregularly shaped, fungating mass on the epiglottis, a friable fungating mass on the false and true vocal cords, and friable mucosa of the larynx. Skin biopsy of right cheek showed a flattened epidermis, dense lymphocytic infiltrates in the dermis, Grenz zone, and foamy histiocytes, consistent with the diagnosis of lepromatous leprosy. Histopathology of the larynx with Fite-Faraco stain showed diffuse dermatitis with infiltrates of foamy histiocytes and positive with numerous acid fast bacilli supporting the diagnosis of lepromatous leprosy with laryngeal involvement. The patient underwent emergency tracheostomy and was immediately started on multidrug therapy for multibacillary leprosy. Contact tracing was advocated and close follow up of improvement was warranted.

Conclusion: Leprosy may be a neglected infectious tropical disease but it is completely curable. This rare case of laryngeal involvement sheds light on the importance of the complete assessment of a patient afflicted with leprosy. It highlights the importance of evaluating all the possible systemic manifestations. The larynx in particular must be assessed in patients with lepromatous leprosy to prevent potential life-threatening complications such as laryngeal stenosis and airway obstruction.

O-309

LUCIO'S PHENOMENON: AN UNCOMMON CLINICAL VARIANT AMONG LEPROSY IN INDONESIA

Presenter: Amanda Gracia Manuputty

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Objective: Lucio phenomenon (LP) is a rare type of reaction pattern, which manifested as ulcerative type of skin lesions occurring in patients with Diffuse Lepramatous Leprosy (DLL). LP cases are mostly reported in Mexico and Costa Rica and rarely occurr on leprosy patient in Indonesia. The description of the second case of LP with uncommon clinical variant in Indonesia is reported.

Methods: The patient was observed at Dermatovenerology ward, dr. Soetomo Hospital, Surabaya Indonesia for 8 weeks, complete history, physical examination and supporting test was performed to establish the diagnosis.

Results: A 34-years-old Manadonese man was presenting with multiple ulceration involving both of his legs and hands, which had appeared in the past 2 years. Initially there was blisters haemorrhagic later popped to became ulcer. The complaints were arthralgia, myalgia and fever. Physical examination showed smooth and shiny skin, with diffuse infiltration on her face and earlobes, bilateral madarosis and saddle nose. Wide necrotic-haemorrhagic, dark, irregular-shaped lesions were also seen over the upper and lower extremities. Some of the lesions were bullous, coalescent and deeply ulcerated. Slit skin smear revealed the presence of globi form of acid fast bacilli (AFB) with bacteriological index was 4+ and morphological index showed 7%. Laboratory findings showed anemia (7,2 g/dL), leukocytosis (21.910/uL), hipoalbunemia (serum albumin 1,7 g/dL), antibody Ig-M Anti *Phenolic Glicolipid* – 1 (PGL-1) showed 18.330 u/ml and antibody Ig-G Anti *Phenolic Glicolipid* – 1 (PGL-1) showed 63.856 u/ml. The histopathologic result revealed atrophy of epidermis, foamy macrophages in dermis to subcutaneous tissue, and Fite Farco stained revealed clusters of AFB within perivascular and endothelial cells. Both nested polymerase chain reactions (PCR) examination with LERF2-MLER4 primers for detecting *M. leprae* and LPMF2-MLER4 primers for detecting *M. lepromatosis* showed positive result. This result was supported by direct sequencing analysis. The patient was treated with combination of rifampicin (1x600 mg/day), ofloxacin (1x400 mg/day), multi drug therapy, prednisone 60 mg daily and intravenous antibiotic therapy, wound care and debridement were also administered while supportive measures were taken. After 6 weeks of admission the patient showed clinical improvement and the ulcers healed slowly with hypochromic scars and hypochromic borders.

Conclusion: Early diagnosis and prompt institution of multi-drug therapy, prednisolone, wound care and debridement, supportive measures together with antibiotic therapy, may improve the prognosis and outcome of Lucio's phenomenon.

O-311

HANSEN'S DISEASE MIMICKING THROMBANGEITIS OBLITERANS: CASE REPORT AND LITERATURE REVIEW

Presenter: Isabela Maria B Goulart

B.C. Dornelas[1], I. Candeloro[1], R.K. Tannús[2], J.S. Marra[3], M.C. Freitas[3], T.G.S. Souza[3], D.F. Santos[4], I.M.B. Goulart[4].

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Objective: To report a rare case of Hansen's disease mimicking Buerger's disease and to emphasize the importance to consider leprosy in the differential diagnosis of systemic vasculitis in endemic regions.
Methods: Patient's medical records and pathology archives were reviewed. Literature search based on "Hansen's disease", "Buerger's disease", and "vasculitis" using Medline and PubMed was performed.

Results: An 88-year-old woman presented with skin ulcers and linear scars on lower limbs for five years. A couple months ago, she was noted to have necrosis on three toes. The patient was suspected to have thromboangiitis obliterans and referred to skin biopsy. Histological sections revealed atrophy of the epidermis and edema and moderate, deep interstitial, perivascular and perineural lymphohistiocytic infiltrate in the dermis. No hair follicles, eccrine glands and piloerector muscle were observed. Since aggregates of foamy macrophages were seen, microorganisms were investigated. Faraco-Fite technique stained acid-fast bacilli in macrophages, endothelial cells and nervous fillets (bacillary index: 5). Therefore, the diagnosis of leprosy toward the Virchowian pole was made.

Conclusion: Hansen's disease is a granulomatous infection caused by *Mycobacterium leprae* and is endemic in the tropics. It affects skin and peripheral nerves. Vasculitis-like manifestations and skin ulcers occur rarely. Such atypical manifestations are the result of immunological response to *M. leprae* which may compromise untreated patients. In these cases, the differential diagnosis between leprosy and thromboangiitis obliterans can be challenging, since both disorders may present with ischemia and necrosis on lower limbs. Tissue samples are necessary to stablish an appropriate diagnosis approach. There are few reported cases on Hansen's disease mimicking vasculitis in literature. This paper presents our experience of a rare cutaneous manifestation of leprosy that mimics necrotizing vasculitis in an elderly patient. This is to exemplify the broad spectrum of leprosy's clinical presentations. It is important to consider Hansen's disease in the differential diagnosis of systemic vasculitis in endemic regions. A correct diagnosis is imperative since leprosy is highly curable.

O-312

MYCOSIS FUNGOIDES IN A SETTING OF PREVIOUS HANSEN'S DISEASE

Presenter: Ma. Teresita Gabriel

Ma. Teresita G. Gabriel, MD, FPDS[1] and Julius G. Gatmaitan, MD[2]
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Objective: To present a rare case of Hansen's disease and Mycosis fungoides in a 80 year old male.

Methods: Complete history and physical examination was taken and course of the disease was discussed. Biopsy and AFS done.

Results: Case Report

80 year old , Male, with 2 month history of increasing number of plaques and nodules involving the trunk, back, upper and lower extremities. This was associated with numbness. Physical examination showed multiple

erythematous papules, plaques and nodules on the trunk, back, upper and lower extremities. There was a 20% decrease in pinprick sensation. Temperature and light touch was 100%. Bacillary Index taken was 4.16. Histopathology shows subepidermal grenz zone, nodular granulomatous infiltrates of foamy and epitheloid histiocytes in the dermis with infiltrates surrounding the nerves and periadnexal structures extending to the subcutaneous tissue. This was consistent with *Hansen's disease, LL*. Modified acid fast stain was positive. Patient was started on MB-MDT but due to the expected bronze discoloration which patient doesn't want, Clarithromycin was given in lieu of Clofazimine. Patient was given Rifampicin 600mg once a month , Dapsone 100mg daily and Clarithromycin 500mg daily for 12 months. Prednisone was given to treat his Lepra reactions. Bacillary Index (AFS) taken after a year was negative. Patient was released from treatment. At this time, still with mild lepra reaction, patient was advised Prednisone 5 mg every other day until a month when all his lesions has flattened. Patient followed up after 2 years and repeat Bacillary Index was still negative. During the succeeding months, patient developed new plaques and nodules, this time associated with moderate to severe pruritus. Patient self medicated with on and off Prednisone. On his 3rd year of follow up, Bacillary Index taken was negative. Patient was advised Repeat Biopsy with an Impression of Mycosis Fungoides. Biopsy showed presence of Pautrier's microabscesses and dermis had fibrosis, pigment-laden macrophages and mild perivascular infiltrate of lymphocytes. CD3 stains the medium-sized to large atypical lymphocytes in the epidermis and dermis. Histopathologic diagnosis was consistent with Cutaneous T-cell Lymphoma (Mycosis Fungoides). Patient underwent 40 sessions of NVUVB Phototherapy with resolution of all lesions. Repeat biopsy showed Mycosis Fungoides, In Remission.

Conclusion: We present an unusual case of Mycosis fungoides and Hansen's disease in an 80 year old male.

O-313

UNUSUAL AND DIFFICULT TO DIAGNOSE CLINICAL PRESENTATION IN LEPROSY-OBSERVATIONA AT REFERRAL CENTRE

Presenter: Vivek Pai

Pai V V, Ashish Khodke,
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Objective: It is well known that leprosy is a great mimicker of several clinical conditions and presents under various guises and mimics a variety of entirely unrelated diseases. Although leprosy is readily recognizable in the progressed stages diagnostic difficulties may arise in early stages and in unusual presentations when clinical manifestations are developing. In Indian scenario pure neuritic leprosy is seen to extent of 8 to 10% of new cases and difficult to diagnose in absence of familiar cutaneous manifestations. Since Referral centre of Bombay Leprosy Project is well known in the western part of India, we often get referrals of patients with difficult to diagnose clinical presentations. We present below our experience on such presentations.

Methods: 16 suspected patients with neurological presentations and no visible skin lesions referred during year 2016 to 2018 were studied. Of 16 patients, 6 were female and 10 male in age group of 16 to 82 years of age. 5 patients presented with painless blisters developing into ulcer as first symptom, 6 with claw hand with muscle atrophy, 2 patients with foot drop, 1 with claw toes and one with abduction deformity while one with tingling numbness in extremities.

Results: None of these had any skin lesions suspected of leprosy. Of 16 patients, 10 had clinical nerve thickening of nerve trunks, 6 patients with clinically normal nerves, 13 patients with sensory loss and 3 with no sensory loss. Slit Skin Smear examination were negative in all patients except one whose smear was positive. 12 patients were investigated with ultra-sonography of the affected nerves and nerve conduction study. In 2 patients only USG was done and 1 was diagnosed with help of nerve biopsy while diagnosis was done clinically in one individual.

In 12 patients investigated with USG and NCV, 9 showed mononeuritis multiplex suggestive of infective etiology, 1 with Hirayama disease,1 with congenital neuropathy and one with Sciatic neuropathy with severe axonal degeneration. USG of peripheral nerves showed increase in cross sectional area and enlargement and anechoic in the texture of affected nerves.

Patients with findings correlating with leprosy were initiated MDT while others were referred to neuro-physician for evaluation.

Conclusion: In absence of clear cardinal signs and in unusual presentations which can be atypical and difficult to diagnose these could be missed Nerve Conduction Study/Electromyography (NCS/EMG) and Ultra-Sonography of the nerves can be a good augmentary tool to support the diagnosis as well as differentiate the neuropathy due to leprosy and other neurological diseases subject to good clinical correlation.

O-328

30-YEAR-OLD FILIPINO MALE WITH LUCIO'S PHENOMENON

Presenter: Karen Go

Dr. Karen Go[1] and Dr. Grace Dandan[1]
[1]Maria Reyna-Xavier University Hospital, Cagayan de Oro, Philippines

Objectives:
To present an undiagnosed case of leprosy who presented with extensive non-palpable purpura and necrotic ulcerations.
To discuss the uncommon features of leprosy reactions and how it should be managed.

Methods: This is a case of a 30-year-old Filipino male who came in due to a 2-day history of progressive non-palpable purpura involving the extremities, trunk and earlobes with associated intermittent fever.

On cutaneous examination, there was a stellate non-palpable purpuric rash at both earlobes, elbows, hands, lower extremities and infra-umbilical area and a Grade 3 ulcer at his right foot. He was noted to have a diffuse skin infiltration of his face with associated madarosis, a thin mustache, loss of underarm hair and thinning of genital pubic hair. Neurologic examination revealed claw hand deformity with thenar and hypothenar atrophy; and a glove and stocking type peripheral sensory neuropathy.

With the above findings of leonine facies, madarosis, thinning of hair with extensive non-palpable purpura and peripheral neuropathy, an initial diagnosis of Mononeuritis multiplex secondary to lepromatous leprosy was considered, keeping necrotic erythema nodosum and medium to small vessel vasculitis as the differential diagnosis.

Selected laboratory tests for vasculitic syndromes were unremarkable. Skin punch biopsy and slit skin smear showed acid fast bacilli which confirmed a diagnosis of lepromatous leprosy.
He was given broad spectrum antibiotics for the infected wound and was referred to a government facility for multibacillary treatment. On follow up at the out- patient department, previous purpuric patches progressed to bridging necrotic ulcerations which was more marked in the lower extremities. Multibacillary treatment was not yet started due to unavailable G6PD test. Debridement of the necrotic ulcerations was periodically done by the surgery department. Lepromatous Leprosy with Lucio's Phenomenon was considered. Eventually, multibacillary therapy with Rifampicin, dapsone and Ofloxacin was started. Clofazimine was not used due to evidence of hepatic impairment. On subsequent follow-up, he developed severe anemia with a hemoglobin of 4.32g/dl and improving

liver transaminases. He underwent blood transfusions for his anemia. Dapsone-induced hemolytic anemia was considered hence, dapsone was removed from his regimen.

Results: Treatment with multidrug therapy and prednisone produced marked improvement of necrotic ulceration with healing by re-epithelialization. He developed severe anemia secondary to dapsone induced hemolytic anemia and received a modified anti-leprosy regimen.

Conclusion: Though leprosy is not uncommon, its rare manifestations are not easily recognized. Early recognition of atypical manifestations of the disease is important to facilitate prompt treatment and prevent life threatening complications.

ILC-1: CLINICAL SCIENCE:

1.5 Ophthalmology

O-054

COMPARISON OF SCHIRMER'S I & II, T-BUT AND BLINK RATE BETWEEN LEPROSY AND NON-LEPROSY

Presenter: Shirley Chacko

Shirley Chacko[1], Priya Thomas[1], Minu Susan Prakash[1], Pachaiyappan. V[1], Mugilan.S[1]
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Objective: The precorneal tear film is essential for the maintenance of a healthy cornea as well as clear vision, in the defence mechanism of the eye. There are several factors that decide the production and distribution of the tear film. Leprosy is known to affect the lacrimal gland and cause dry eye. Previous studies done on this aspect are more than a decade old. With the advances in the treatment and management of dry eye, a fresh study was warranted in the institute. The objective of the study was to compare the Schirmer's 1 and 2, Tear break up time and blink rate between Leprosy patients and Non Leprosy patients.

Methods: This is a prospective study conducted in the Ophthalmology Unit of Schieffelin Institute of Health, Research Training Centre (SIH-R&TC) Karigiri. Eyes of all the the patients enrolled in the study were carefully examined for Ocular or general history,Visual acuity, External examination, Corneal sensation (using the cotton wisp), Schirmer's test 1&2 (with and without anesthesia), Slit-lamp examination, Tear film Break up time and compared for statistical significance

Results: The eyes of 43 leprosy patients were compared with their non leprosy age matched normal patients. The preliminary results through the schirmer's -1 test showed that the two groups, general and leprosy patients did not differ significantly. The tear break up time proportion which is normal was decreased in the leprosy patients (16.3%) than with normal population (67.4%). The proportion of patients with normal blink rate was less in leprosy (16.3%) than normal population (53.5%). The tear break up time proportion which is normal was decreased in the leprosy patients (16.3%) than with normal population (67.4%).

Conclusion: It was seen that the blink rate and TBUT was significantly reduced in the leprosy group whereas, the schirmer's test was normal. A larger study is needed to evaluate the cause behind the results found here.

O-279

UVEAL INVOLVEMENT IN MULTI-BACILLARY LEPROSY: LONGITUDINAL STUDY OF OCULAR LEPROSY (LOSOL)

Presenter: Ebenezer Daniel

Ebenezer Daniel[1,2], Shirley Chacko[1], Priya Mathew[1], Kirsteen J Thompson[3,4], Sundar Rao P S S[1,5], John H Kempen[6,7], Timothy J ffytche[8], Paul Courtright[9]

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7. MyungSung Christian Medical Center (MCM) Eye Unit, MCM General Hospital and MyungSung Medical College, Addis Ababa, Ethiopia
8. Department of Ophthalmology, The Hospital for Tropical Diseases, London, UK
9. Kilimanjaro Center for Community Ophthalmology, Moshi, Tanzania

Objective: To describe the prevalence and incidence of uveal involvement (UI) and their associated risk factors in a cohort of newly diagnosed multi-bacillary leprosy patients followed up during 2 years of multi-drug therapy and 3 years thereafter.

Methods: We defined (UI) as one or more of the following: keratic precipitates, flare and cells, iris atrophy and posterior synechiae. We conducted ocular examinations at intervals of 6 months at the well-equipped ophthalmology clinic of the Schieffelin Leprosy Research and Training Center, India. We assessed demographic, ocular and leprosy characteristics associations using Odds Ratios (OR) in prevalent analysis and Relative Risk and Hazard Risk (HR) in incident analysis generating 95% confidence intervals for dichotomous variables and Students' test for continuous variables. We used Cox multivariate analysis (stepwise) to assess the independent contributions of relevant demographic and clinical characteristics.

Results: At enrolment, 18 (6.0%) of the newly diagnosed MB patients (n=301) had uveal involvement which was associated with age (per decade) (adjusted OR 1.7, 95% CI 1.2-2.6), history of face patch (aOR 4.8, 95% CI 1.5-14.7) and deformity in all limbs (aOR 2.7, 95% CI 1.2-6.0). While under MDT, in 292 patients with one or more visits, we observed UI in 21 patients (aHR 5.1%/patient year, 95% CI 3.3-7.8% that was significantly associated with cataract (aHR 4.1, 95% CI 1.8-,9.3) and with grade 2 deformity (aHR 5.5, 95% CI 1.2- 25.7). Among 278 patients having one or more follow up visits after completion of multi-drug therapy, we observed UI in 3.4%/patient year, 95% CI 3.0 - 4.8%. We observed a higher risk of UI uveal involvement with increasing age (aHR (each decade)1.6, 95% CI 1.3-1.9) and grade 2 deformity (aHR 3.0, 95% CI 1.1-8.5). Smear positivity at enrolment had a marginal association (aHR 2.3, 95% CI 0.99-5.4). At no point in time did we see any florid uveitis with hypopyon.

Conclusion: The prevalence of uveal involvement in LOSOL multi-bacillary leprosy patients was relatively small, similar to its incidence during the 2-year multidrug therapy. However, uveal involvement occurs even after bacteriological cure from multi-drug therapy, warranting regular eye care in these patients even after completion of the prescribed multi-drug therapy. We did not observe any florid uveitis with hypopyon among these patients.

O-293

OCULAR ALTERATIONS IN LEPROSY PATIENTS AT A NATIONAL REFERENCE CENTER OF LEPROSY IN BRAZIL

Presenter: Diogo Fernandes dos Santos

O. A. L. Santos[1], D. E. Antunes[1,2], D. F. Santos[1,2], L. R. Goulart[1,2,3], I. M. B. Goulart[1,2]

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Objective: Leprosy is an infectious disease in which eye impairment is frequent. Recent decades have provided few studies on eye damage in leprosy. This study aimed to evaluate the ocular alterations in leprosy patients.

Methods: These patients were diagnosed according to the clinical forms: indeterminate (I), tuberculoid (T), borderline-tuberculoid (BT), borderline-borderline (BB), borderline-lepromatous (BL) and lepromatous (L); for treatment purposes in paucibacillary (PB) and multibacillary (MB). They were evaluated by a multidisciplinary team to determine the World Health Organization (WHO) disability grade (DG) in eyes, hands and feet, using disability grading scale: DG=0 had no impairment due to leprosy; DG=1 presented mild sensory and/or motor changes in the hands, feet and/or eyes; DG=2 had visible deficiencies/disability. The patients were then evaluated by the ophthalmologist, who completed a clinical protocol for ocular evaluation, according to the guidelines of the International Council of Ophthalmology. This evaluation occurred at diagnosis (197 patients) and after discharge (52 patients).

Results: Of 249 patients, the mean age was 50.2 (SD 16.5) years; 52.2% (130/249) were women; 79.9% (199/249) MB. The prevalence of clinical forms was: BT 67.0% (167/249), LL 12.4% (31/249), BL 9.6% (24/249), BB 7.6% (19/249), TT 2.0% (5/249) and I 1.2% (3/249). A majority of 63.5% (158/249) presented DG=0, 16.4% (41/249) DG=1 and 20.1% (50/249) DG=2. The most affected disability sites were the feet, followed by hands and eyes. The disability degree in eyes was 87.2% (217/249) DG=0; 4.4% (11/249) DG=1 and 8.4% (21/249) with DG=2. The ocular involvement occurred in 49.4% (123/249) of the patients; there was 207 alterations, a mean of 0.83 per patient. The most frequent alterations were found on the eye surface (39.1%; 85/249), predominately the pterygium (12.9%; 32/249), and dry eye (11.2%; 28/249). Palpebral alterations were present in 19.7% (49/249) of the patients, above all dermatochalasis (9.2%; 23/249) and madarosis (4.4%; 11/249). Also noteworthy are the frequency of the other abnormalities: lagophthalmos (2.4%; 6/249), iridocyclitis (2.0%; 5/249), trichiasis (1.2%; 3/249), corneal opacity (1.2%; 3/249), diminution of corneal sensitivity (0.8%; 2/249) and scleritis (0.4%; 1/249).

Conclusion: Leprosy patients have more disabilities in their feet and hands, and require a specialized ophthalmological assessment of ocular damage, which still prevails in almost 50% of leprosy patients, regardless of presenting leprosy lesions or not. Maintaining vision is not only a protective factor against new impairments in these patients but also a right that must be ensured in caring for people affected by leprosy.

O-303

OCCULAR LEPROSY AND UNDER STUDIED CLINICAL PROBLEMS

Presenter: Vivek Pai

Aishwarya Joshi[2], V.V.Pai[1], Ashish Khodke[1], Minu Ramkrishnan[2]

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2. Opthalmology Department K.J. Somaiyya Hospital Chunabhatti Sion Mumbai-400022

Objective: Leprosy is a chronic systemic disease caused by Mycobacterium leprae. Leprosy impairs the physical social and economic well being of affected people in leprosy endemic countries, in view of under developed health care provisions. It is one of the complex disease which shows deterioration of the eye and its adnexa, mainly through tissue infiltration and neuropathies.

Methods: Out of a total of 37 patients 28 males and 9 females in the age group of 15 to 56 years under treatment for leprosy and its complicationsfor ocular leprosy at the bLP referral centre. Amongst 37 patients 6 were Lepromatous Leprosy(LL) type, 19 were Borderline Lepromatous(BL) and 12 patients were of Borderline Tuberculoid (BT) type. 10 patients were in Type 1 reaction, 14 were in type 2 reaction 13 patients were without any complications.

Among 37 patients 18 patients were on steroid and 6 were on thalidomide for reactions and 13 were on multi-drug therapy.

Results: Ocular complaints among those screened were mainly comprising of redness, burning, dryness, flaking, diminished of vision, straining and photo-phobia. Among 37 screened patients 8 patients had erythematous nodular changes in the surrounding skin, 2 patients were with conjunctival xerosis, 2 were immature senile cataract and one patient with lagopthalmos. In the anterior segment 3 patients had muddy sclera, one with alternating exotropion, one with esotropion and one patient with nodular episcleritis. In the posterior segment there was no abnormality detected.

Conclusion: In view of the above we consider that screening for ocular leprosy at referral centre is required to identify ocular morbidity early enough and provide necessary intervention including referral to the medical college or the tertiary centre for further management.

ILC-2: SOCIAL SCIENCE:

2.1 History

O-043

THE PATIENT AS HISTORICAL AGENT IN LEPROSY RESEARCH – A VISION FROM MID-TWENTIETH CENTURY UZUAKOLI, NIGERIA

Presenter: John Manton

J. Manton[1]
[1]London School of Hygiene and Tropical Medicine, UK

Objective: This paper interprets the history of experimental research carried out at the Leprosy Research Centre, Uzuakoli, Nigeria from 1948 to 1967, with the intention of placing the person and the body of the leprosy patient at the heart of our account of how leprosy came to be curable.

Methods: The research for this paper uses archival and oral historical methods, ethnographic observation, and dialogue with partners engaged in commemoration of the history of leprosy control in Uzuakoli and at other sites in Nigeria. It was carried out in 2006, 2015, and 2018.

Results: The paper presents the ways in which a variety of social forces and interactions – which have been specific to times and places largely defined by shared colonial and imperial histories – made it possible to 'isolate' and examine the dynamics of leprosy by the middle of the twentieth century. It examines the intersecting lives of patients, host communities, clinicians, laboratory scientists, and administrators, as coalitions of interest formed around the metabolism of groups of chemical compounds with an arresting effect on infection with M. leprae. It uses the Nigerian example to exemplify the interplay of social forces, and the new ways we can conceptualise these to enhance our understanding of the role of the patient in making leprosy curable, using historical methods and theories.

Conclusion: Treatment of leprosy, and of human disease in general, has come to recognise the voice, needs and demands of patients and advocacy groups to a greater degree than ever before. This has not always been the case in the modern history of leprosy, its treatment, and control. The experiences of many individuals – leprosy patients – whose contribution to experimental treatment regimens gave rise to current techniques for the control of leprosy are lost to the historical record. This paper seeks to reinterpret – and perhaps to reopen – a dialogue among all parties to scientific and clinical research and its legacy.

O-044

THE MEDIEVAL LEPROSY AND THE MODERN WORLD: HISTORIOGRAPHY, REALITY, AND POPULAR CULTURE

Presenter: Anna M. Peterson

Dr. Anna M. Peterson, Courtney Krolikoski
[1]Pontifical Institute of Mediaeval Studies, [2] McGill University

Objective: This paper will discuss and deconstruct the perception of medieval people affected by leprosy in modern discourse as well as attitudes towards them in their own period. Specifically, it will address the origins myth of these individuals as a social outcasts, the context for its development, and the reality for those diagnosed with leprosy in the Middle Ages. This misinformation has been repeated in both academic, including medical studies,

and popular works, even to this day, much to the dismay of medievalists. It will also proposal some solutions for dismantling this harmful narrative which has unfortunately informed policy and discourse for hundreds of years.

Methods: This presentation will examine, not only the current historiographical trends in medieval leprosy studies, but also the representation of people affected by leprosy throughout history in a variety of mediums, i.e. manuscripts, literature, paintings, and film.

Results: Medieval people affected by leprosy were not excluded but embraced by their communities and played a crucial role in the religious and social aspects of society. Contemporaries, ranging from the Church to local urban governments, viewed it as a moral and civic duty to care for them, even indirectly. However, attitudes began to change, from both a medical and social perspective, once the Black Death of 1348 decimated the population of Europe. Fear of contagion took hold of Late Medieval and Early Modern authors, resulting in a negative view of those who contracted leprosy. Since their illness was so visual reminiscent of plague symptoms, they came under suspicion for spreading contagion. Ironically, by the fifteenth century, leprosy had largely disappeared from Western Europe. Nonetheless, the stigma had taken root and became the basis for how colonial authorities understood and dealt with leprosy suffers once they introduced their medical practices and missionaries to newly-conquered territories. Leprosarium, which were once havens for the sick, became prisons wherein the patients were locked away from their families and their communities.

Conclusion: The foundation of most discriminatory policies towards people affected by leprosy stems from a misinterpretation of medieval leprosy and the Book of Leviticus. In the Middle Ages, these individuals were not forcibly ostracised but cared for and treasured by their communities. By discussing the reality of medieval leprosy, we can continue to dismantle the discriminatory language and policies that continue to affect the lives of Hansen's Disease patients.

O-045

HANSEN'S DISEASE IN THE PHILIPPINES DURING THE JAPANESE OCCUPATION, 1942-1945: NARRATIVES OF TRAGEDY AND COURAGE

Presenter: Ricardo Jose

Ricardo Jose
University of the Philippines

Objective: To provide a concise narrative of the severe experiences of those afflicted with Hansen's Disease in the Philippines during the Japanese Occupation, 1942-1945, policies of the Japanese Military Administration that resulted in neglect towards the leprosaria, as well as the attempts of the doctors and hospital staff to alleviate their plight.

Methods: Library and archival research using published and unpublished written sources. Some of these are official communications, other personal narratives. The paper will focus on Culion Island, where the main leper colony was established, but will also mention experiences in other leprosaria in the Philippines.

Results: During the Japanese occupation of the Philippines, patients with Hansen's Disease suffered immensely due to the fact that first, normal means of transportation were disrupted by the war, and thus did not allow for the delivery of food and basic commodities to the leprosaria in the Philippines. Secondly, the Japanese Military Administration - and Japanese soldiers individually - avoided any contact with patients of Hansen's Disease and thus did not have a serious policy of supplying Culion and the leper colonies. This resulted in severe shortages that resulted in near-starvation conditions early on. Aside from a shortage of food, similar shortages in medicine, and

fuel were felt. Doctors and hospital staff attempted heroically to bring in assistance, but in the end had to take radical measures to alleviate the life-threatening conditions in the leprosaria, including allowing some patients to leave and find their own food.

Conclusion: War and hostile take overs always wreak havoc on the sick and health workers, when abnormal conditions are thrust into the hospitals. Normal transportation and sources of supply are disrupted. Several thousand patients of Hansen's Disease perished in the Philippines due to the severe shortages in the various leprosaria, attempts by patients to leave the hospitals and source their own food. The severe shortages and general neglect of Hansen's Disease hospitals was the result in particular of the lack of a coherent policy by the Japanese Military Administration, which preferred to distance itself from the plight of the patients. Despite the hardships endured, cases of heroism and courage also arose, particularly among the doctors and administrators, who struggled against to find solutions to the wartime crisis.

O-055

SOCIAL CHANGE AS REFLECTED IN LEPROSY CEMETERIES AND MEMORIALS IN AUSTRALIA, CANADA, COLOMBIA, GREECE, JAPAN, NEW ZEALAND, ROMANIA, SOUTH AFRICA, SOUTH KOREA AND THE UNITED STATES

Presenter: Anwei Skinsnes Law

A. Skinsnes Law, M.P.H[1], M.S. O'Friel[1], V. Monson[2], C. Kahilihiwa[2]
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Objective: While stigma and discrimination are words historically associated with leprosy, in-depth study of the history of leprosy and the people affected by it often reveals great affection and pride, both amongst individuals who have had the disease and their family members. The current study looks at cemeteries and memorials in leprosy heritage sites around the world as indicators of social change.

Methods: Leprosy Heritage Sites in twenty countries have been researched and visited over the course of forty years. Individuals still living in these places have been interviewed; many graves have been identified, researched and photographed. Research has also been conducted on sites not visited. The current study focuses on cemeteries and memorials in Australia (Bungarun), Canada (Tracadie), Colombia (Agua de Dios), Greece (Spinalonga), Japan (Tama Zenshoen, Suruga, Nagashima), New Zealand (Quail Island), Romania (Tichilesti), South Africa (Robben Island), South Korea (Sorok Do and Wilson) and the United States (Kalaupapa and Carville).

Results: As the importance of leprosy heritage sites to their countries and the world increases, interest in the people who lived in these places also increases. Cemeteries once abandoned are increasingly being preserved. Memorials are being created with names of individuals for whom graves cannot be identified. Descendants are increasingly seeking information on their relatives who were separated from their families. Family members are replacing anonymous markers with full names and expressions of affection and belonging. Concerted efforts have been made in many countries to replace anonymity with identity and pride. Even in sites where mass unmarked graves exist, individuals are being identified and their histories are being told as an important part of the history of the world.

Conclusion: Throughout the world leprosy heritage sites are places of both exclusion and resistance. Cemeteries, mausoleums and memorials located in these sites also reflect both exclusion and resistance. Individual graves reveal a great deal about identity and pride and also raise questions about the evolution of anonymity and stigma. Consequently, these cemeteries and memorials are not only historic sites but also powerful indicators of social change.

O-091

LEPROSY AND CANCER: TIMELESS LESSONS FROM A DEAD-END RESEARCH PROJECT, 1910-1913

Presenter: Magnus Vollset

Magnus Vollset
Department of Global Public Health and Primary Care, University of Bergen, Norway

Objective: Does having leprosy protect against cancer? This question was the basis for a research project started by the Norwegian district physician Peter Munch Søegaard in 1910. Over the following years, the project grew from local curiosity based on recorded deaths at Norwegian leprosy institutions, to an effort that involved institutions in several countries. It ended with Søegaard vowing never to return to leprosy research. How did this research project garner widespread attention, why did it fail, and what lessons learned are still relevant today?

Methods: Document analysis and close reading of mainly published medical journals in Norwegian, English and German, using a transnational history framework.

Results: The case shows how the transnational circulation of medical knowledge regarding leprosy was organized before the First World War, and how the interplay between local associations, journals, conferences and international organizations made it possible for a district physician to do cutting-edge research without meeting a single patient.

The records on causes of death showed that cancer-prevalence in leprosy sufferers was only a third of that in the general population. Initially, Søegaard had support from the research community in Bergen that in 1909 had arranged the Second International Leprosy Congress. However, they soon became his main critics. One disagreement regarded the status and reliability of past medical knowledge, another on the type of expertise that was relevant for doing research based on past medical records.

Conclusion: Diagnosis change over time, and this was especially true for leprosy during the second half of the 19th century. This means special expertise is necessary when making arguments based on medical records from this period. While the leprosy network made it possible for a peripheral figure, a district physician in a small village, to garner international attention for his research, his internationally acknowledged colleagues in Bergen had the power to define what type of “special expertise” was relevant.

O-115

THE STORY THAT NO ONE ELSE COULD TELL: THE MEMOIRS OF AMBROSE KANEWALII HUTCHISON -- RECOLLECTIONS OF A LIFETIME AT KALAUPAPA

Presenter: Anwei Skinsnes Law

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Objective: Ambrose Kanewalii Hutchison worked closely with, and outlived, most of the major figures in the early history of leprosy in Hawaii, including Father Damien De Veuster, Mother Marianne Cope, Rudolph Meyer, Queen Kapiolani. Queen Liliuokalani, and Joseph Dutton. Sent to Kalaupapa in 1879 at the age of 22, he lived until 1932. Despite the significant role he played during his more than 50 years at Kalaupapa, he has largely been left out of this history until recently. In addition, no photograph of him had been identified. The objective of the current project was to extensively study and compile the writings of Ambrose Hutchison in order that he might assume his rightful place in his own history.

Methods: The diverse writings of Ambrose K. Hutchison, including more than 200 pages of handwritten memoirs, letters to members of Hawaii's Board of Health, letters to the newspaper and other correspondence have been compiled and researched at archives in Belgium, Hawaii and New York. Interviews were conducted with his oldest living relative (his grandniece) and other family members.

Results: Ambrose Hutchison's life powerfully symbolizes the clash between cultures over how to treat people who had leprosy. Ambrose was forcibly isolated on the Kalaupapa peninsula, island of Molokai, the place selected by the Board of Health, led by his Caucasian father, Dr. Ferdinand Hutchison. Throughout his life he was loved and cared for by a Hawaiian woman, Mary Kaiakonui, who saw the man, not the disease, and who embodied the Hawaiian belief that great love was always more important than fear. What emerged from the confluence in one person of these two different cultural responses was an exceptional human being who continually fought against injustice and insisted on dignity for all. Determined to ensure his place in his own history, Ambrose Hutchison wrote his memoirs when he was in his 70s and left behind the story that no one else could tell. Three photographs believed to be Ambrose Hutchison were identified as part of this research.

Conclusion: Inclusive history not only ensures the rights of individuals be a part of their own history, it adds new depth and meaning as well as new information not found in other sources. Ambrose Hutchison, the recipient of Father Damien's last known written communication, not only provides new insights into Father Damien but important insights into the whole history of leprosy in Hawaii. His voice, neglected for so long, helps to make this history complete.

O-120

'WHY A KNOWLEDGE OF HISTORY IS CRITICAL IN AIDING CURRENT ELIMINATION STRATEGIES IN A LOW INCIDENCE SETTING - PRELIMINARY RESULTS FROM A PHD PROJECT IN REMOTE NORTH WESTERN AUSTRALIA'.

Presenter: Stefanie Jane Oliver

S.J.Oliver[1]
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Objective: Preliminary results will be presented from part of a PhD project conducted in the Kimberley region, north Western Australia, examining the treatment model for leprosy in local Aboriginal peoples utilising a person/people centred and cultural security framework. This presentation focusses on the importance of the historical context for current care models.

Methods: This project required a culturally sensitive and respectful approach and worked in partnership with the community, as well as engaging an Aboriginal advisory group.

The project had two parts. Methodology used for the first part was qualitative in-depth interviews exploring the lived experience of Kimberley peoples involved in the treatment of leprosy. The second part was an examination of historical treatment and guidelines through careful examination of archival records, library databases, history documentation and grey literature. This presentation utilises results from both these parts.

Results: Leprosy had a significant social impact on the Aboriginal peoples of the Kimberley region in the twentieth century. Forced isolation was by way of police 'round-ups', and the Derby leprosarium 'Bungarun', Australia's largest leprosarium, was in operation from 1936-1986. There was much fear of contagion from white settlers during this time and policies included preventing Aboriginal peoples from travelling south of the twentieth parallel (the 'leper line') between the period 1941-1963.

Bungarun was the last leprosarium in Australia to close its doors, largely due to administrative reasons and a decreasing number of cases since the introduction of Multi Drug Therapy. After closure community leprosy services over the following decade eventually diminished and it was not until only in recent years, when advanced cases of leprosy were diagnosed, that services were again restored. This gap in services combined with the thinking that leprosy was a thing of the past, contributed to a loss of knowledge of both family history and leprosy prevalence, complicating timely diagnosis and treatment. New diagnoses of leprosy have been met with shock from affected individuals and their families.

Conclusion: Leprosy leaves a legacy that continues to impact on newer generations of Kimberley Aboriginal families. A knowledge of history in this now low incidence region is critical to aid the efforts of health staff and the community to reduce transmission and achieve successful treatment outcomes. A second phase of the project is now proposed for development with local community organisations in order to identify pathways of recovering and maintaining this knowledge, as part of the long-term goal of zero leprosy.

O-140

THE HISTORY OF LEPROSY SEGREGATION POLICIES IN BRITISH MALAYA, 1867-1909

Presenter: Lim Yong Long

Lim Yong Long
The Department of Architecture, Faculty of Built Environment and Surveying, Universiti Teknologi Malaysia

Objective: The formatting years of leprosy segregation policies in British Malaya were critical after 1867, when the Straits Settlements gained its semi-autonomy status as a Crown Colony from the British India. These changes allowed the Straits Settlement legitimized its own laws rather than went through the Colonial Office's red tapes. However, the intervention of Colonial Office and the uncertainty discourses of whether leprosy was contagious somehow have impeded the Straits government to implement the leprosy segregation laws and to confine leprosy patients legally. The intention of this article is to explain how the Straits Government deployed existing laws dealing with leprosy patients before the first proper leprosy segregation law was enacted in 1897. Scholars tend to simplify the birth of the first leprosy ordinance in the Straits Settlements in 1897 with the popular discourse of the 1st international leprosy Congress in Berlin in 1897, which this research found those claims were chronologically inaccurate. In short, the main intention of this chapter is to disclose the causes that construct the history of leprosy segregation policies in the Strait Settlements which later has influenced and determined leprosy segregation policies in British Malaya.

Methods: The historical descriptive research method is used for this research. The research is based on archival records such as official correspondences, governmental annual reports, census materials, and etc.

Results: The arguments of the article are two-pronged. First is to unveil the capacity of the local government to direct its own affairs amid the directives from its metropole. Second is to expose the racialized nature of discourse about the disease as expressed in the fear of Chinese immigrants and the view of these immigrants as vulgar and uneducated.

Conclusion: The leprosy segregations in the Straits Settlement had never been legalized before the first proper leprosy ordinance was enacted in 1897. Although the British India and later Colonial Office from time to time have instructed the Straits Settlements not to segregate leprosy patients unlawfully, however, these instructions have not been stopping British Malaya from playing around with indirect laws such as vagrancy acts and disease prevention laws to retain leprosy patients in leprosy institutions. The enactment of the first proper leprosy law, the Leper Ordinance 1897, was against the resolution of Indian Leprosy Commission's report in 1893 and far deviated from the original bill to provide refuge for vagrant leprosy patients.

O-196

POST-HISTORIES OF LEPROSY IN SINGAPORE

Presenter: Kah Seng Loh

Kah Seng Loh
University of Western Australia, Australia

Objective: As leprosy disappears as a public health issue, it is germane to consider the sort of historical narratives to be written about the disease. In this paper, I propose the idea of 'post-histories' – being those stories of vanishing or vanquished diseases like leprosy which speak to the wider community on the difficult and continuing legacies bequeathed to the survivors. Post-histories deal, appropriately enough, with post-medical subjects. While the legacies affect individuals, post-histories grapple with common issues and are consequently transnational, regional and global. The post-history of leprosy in Singapore arguably speaks to broader narratives in Southeast Asia, and likely beyond the region, especially in urban contexts.

Methods & Results: Three points from Singapore may be of note for the social agenda of post-historical leprosy generally. First, there is cause for hope: despite their weak status and low pay in the political economy of the leprosarium, ex-workers ascribed deep meanings to their otherwise menial jobs, and their art. These senses of selfhood must form the basis of any social advocacy involving leprosy survivors. Second and in contrast, survivors' identity, self-confidence and optimism are fragile things, easily punctuated by new events and externalities. The views and needs of post-medical leprosy subjects are diverse, and they change over time as people age and their bodies weaken.

Third, the leprosarium came across strongly in the oral histories as a home, sanctuary and community to its ageing residents. The hospital/home was neither a total institution nor a 'living hell'. The meaningful role of the hospital/home underlines the need for the state and medical establishment to be mindful about the effects of demolishing leprosy shelters or converting them to new uses.

Conclusion: It is timely to devote more, rather than less, attention, resources and care to the survivors, particularly in preserving their homes and communities. To do so requires dialogue and collaboration across a range of interested audiences and parties

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O-221

SOCIAL MEMORIES OF FORMER THAI LEPROSY PATIENTS

Presenter: Luechai Sringernyuang

Luechai Sringernyuang
Faculty of Social Science and Humanities Mahidol University Salaya Puttamothon Nakornprathom 73170 , Thailand

Objective: This paper aims to bring in details account of life story of former and current leprosy patients including illness experiences, access to care and confrontation with stigma and discrimination.

Methods: Qualitative methods including life history, non-participant observation and focus group discussion with patients and family as well as local health workers were used.

Results: Life of leprosy patients in the northeastern provinces of Thailand were recorded through oral history. Illness experiences, health services access and stigma and discrimination of the patients through lenses of patients as well as health care workers, local leaders and neighbours were presented. Highlights of the paper are, in addition to life experiences of the former patients, also on how the newly found cases were the victims of the fatigue of the leprosy surveillance and treatment system.

Conclusion: The paper concludes that life hardship of the leprosy patients both in the past and presently is still rooted in social stigma and discrimination rooted in the popular negative image of leprosy of Thai society. Yet, the change of the surveillance and treatment system to be more vertical and centralised starting a decade ago, has not only caused the patients difficulty to timely access to service, but also made the system less sensitive to the problem- staff at the periphery level including young doctors, have problems in recognizing the disease and providing appropriate early treatment which results to the reemergence and more sufferings of new cases in the community.

ILC-2: SOCIAL SCIENCE:

2.2 Human Rights and Discrimination

O-070

SELF-IDENTITY RECOGNITION OF PEOPLE AFFECTED BY LEPROSY THROUGH ORAL HISTORY

Presenter: Michael Zhiqiang Chen

June J.Z. Feng[1], Michael. Z. Q. Chen[1], S.X.L. Qi[1]
[1]HANDA Rehabilitation & Welfare Association

Objective: Social stigma and discrimination is always an important issue connected with leprosy. Although discrimination is usually regard as the main forms of stigma, “Anticipated Stigma” and “Self-stigma” are important from of stigma which bring great impact to people’s life. Oral History has become an important method in collecting historical information and historical research. It has been used as an important tool in leprosy history reservation. However, there is hardly research carried out on the impact oral history in self-identity recognition or reducing self-stigma.

This research is from the aspect of people affected by leprosy to understand how the disease affects their personal identity and if the oral history would help to improve their self-identity recognition and reduce self-stigma.

Methods: The research is based on oral history of 53 people affected by leprosy from 17 leprosy villages in Guangdong province. Digital audio and video recorder was used to collect oral history. The research applies qualitative research method, using questionnaire interview, observation to collect relevant information and carry out case study. Quantitative and qualitative analysis were used to study the self-recognition through the impact of the oral history.

Results: Totally 70 oral history were collected, including 53 people affected by leprosy, 15 their family members and 2 medical professionals in leprosy field. This research focuses on the oral history of 53 people affected by leprosy. Among them, except of one person have only 23 years history of the disease, all the others have over 40 years experiences after diagnosis of the disease.

All these 53 people have experienced social stigma with different degree of self-stigma. Even though self-identity recognition has connection with their physical situation, education and family background, it is greatly affected by the policies, social attitude and social connection. Negative attitude from their family and communities and isolation policy are the most important causes of self-stigma. Through oral history, the self-identity recognition was greatly improved, which contributed to reduce the self-stigma as well.

Conclusion: Self-stigma is one of important form of stigma. It is connected with people’s physical situation and their education and family background, but the leprosy control policies, social attitude and social connection have much more impact on this issue. Oral history is one of the important approaches to collect and preserve leprosy history, but it is also an effective approach to help the people to improve their self-identity recognition and reduce their self-stigma.

O-109

STIGMA AND DISCRIMINATION: LEVEL OF UNDERSTANDING AMONG PEOPLE AFFECTED BY LEPROSY

Presenter: Sarah Nikita

N. Sarah[1], C. Verma[2]
[1]Head, Advocacy and Communications Domain [2] Technical Staff, Advocacy and Communication

Objective: Many people affected by leprosy are multiply challenged. On one hand, they struggle with the disabilities that result from leprosy, on the other, they are challenged by the stereotypes, prejudice and injustice that result from misconceptions about leprosy as a disease. Both the disease and the stigma surrounding it leads them into mental depression. Although, research has gone far to understand the impact of the disease, and the stigma associated with it, people affected by leprosy do not have a wide understanding of how to identify discrimination and seek redressal. In many instances, people affected by leprosy accept discrimination as a way of life or retribution for sin committed in their past life. As a result of this, people affected by leprosy are deprived of the opportunities that define a quality life, a good family life, and being mainstreamed in the general community.

With in mind, a research is proposed to:

1) Create a better understanding of stigma and discrimination faced by people affected by leprosy.
2) Analyse the reasons behind self-stigma.
3) Understand the barriers for people affected by leprosy to take action against discrimination.
4) Understand the ways to empower them to take action against discrimination.

Methods: A multi-centric exploratory study will be conducted among people affected by leprosy living among the general community, factoring in their gender, disability, educational level, and socio-economic status. This will be carried out in four endemic states of India, namely, Chhattisgarh, Maharashtra, Uttar Pradesh, and West Bengal. The data from the study will be translated into English, transcribed, extracted, and coded, using a standard coding sheet and analysed using thematic content analysis and entered in SPSS statistical package. The steps will consist of open coding using the participants'/respondent's own words and phrases and categorising the information from all the interviews. Theoretical coding will be compared to generate an analysis plan and findings will be interpreted.

Results: Results will be presented at the International Leprosy Conference.

Conclusion: Discrimination is a complex phenomenon, with multiple facets and systemic forms. We have found in our interaction with people affected by leprosy that they have varied understanding of what constitutes stigma and discrimination. It is important that we analyse their understanding of the concept of stigma and discrimination and internalised discrimination to develop a needs-based intervention to address the issue more holistically.

O-110

CHAMPIONING ONE'S OWN CAUSE: CHAMPIONS FOR ZERO LEPROSY

Presenter: Nikita Sarah

N. Sarah[1], J. Oommen[2]
[1]Head- Advocacy and Communication Domain, TLMTI, [2] Team Leader-Communication, TLMTI

Objective: For ages, people affected by leprosy and their family members are at the receiving end of social callousness. Ostracised by their communities because of the age-old stigma associated with leprosy, they have almost lost their identity as human beings. The good samaritans in mainstream society pity them and take care of

their perceived needs. This pushes them to a life without dignity. Even though the Constitution of India guarantees them fundamental rights, they neither have knowledge about their rights nor capacity for claiming them. It is known that to bring about a change in the lives of victims of any situation, they themselves should advocate and champion the change. Thus TLMTI decided to develop Champions – Champions for Zero Leprosy - from people affected with leprosy to bring about a change in their lives.

Methods: With this in mind, TLMTI identified persons affected by leprosy who have the potential to lead social change in their communities. Also, the organisation built their leadership capacity to become frontline advocates. They have been given the tools to identify issues that affect them, such as discrimination, and to advocate for change.

As of now, TLMTI has developed over 290 champions in the nine states where the organisation has its presence. They function as change agents in their own communities.

Results: The Champions independently and collectively engage in catalytic movement-building activities and take their communities along with them and claim their rights and entitlements collectively. They organise, mobilise, and engage with other rights groups with active facilitation by TLMTI, wherever needed. Through this dynamic community engagement process, change has started coming in the lives of people affected by leprosy.

Awareness about leprosy is abysmally low in the community. Leprosy is riddled with many myths and misconceptions. It's a big challenge to make the realities of leprosy understood by the community so that the stigma surrounding the disease is lifted. These champions are at the forefront for spreading awareness about leprosy.

Conclusion: Engaging and investing in people affected by leprosy to enable them to take up their own issues are the best ways to spread awareness about the disease, tackle discrimination, and create an inclusive society in which people affected by leprosy can live as equal citizens. Champions are best suited for this - because they have experienced the trauma of leprosy and are passionate about seeing a leprosy-free India.

O-135

INCLUSION IS OUR LANGUAGE: THE RETURN OF PEOPLE WHO HAD BEEN SEPARATED IN A LEPROSY VILLAGE IN GHANA FOR DECADES TO THEIR HOMES AND FAMILIES IN TOGO

Presenter: J. Kofi Nyarko

K. NYARKO[1], P.K. NYARKO[1], A. SKINSNES LAW[2], B. CAMPBELL[3], M. MORIMOTO[4]

[1] IDEA Ghana [2] International Association for Integration, Dignity & Economic Advancement (IDEA) [3] Damien Dutton Society for Leprosy Aid [4]IDEA Japan

Objective: Eleven people from Togo ranging in age from 43 to 61, who were living in Ankaful Leprosy Village, had been sent to Ghana as young people due to prejudice and discrimination. The oldest, Dada Theako, was 20 when she was sent to Ghana 41 years ago. The youngest, Kwame Efo, was 12 when he was sent to Ghana 31 years ago. After seeing IDEA Ghana assist more than 300 individuals return to their homes and communities in Ghana, the 11 individuals from Togo started re-thinking their future. Initially resigned to the fact that they would die in Ghana, they started dreaming of returning to their homeland. The objective of the current project was to determine if it would be possible to reunite 11 individuals living at the Ankaful Leprosy Village in Ghana with their families in Togo.

Methods: Two representatives from IDEA Ghana traveled to Togo to hold preliminary discussions/education sessions with family members to address any prevailing stigma and discrimination prior to bringing their relatives

back home. One of the representatives from Ghana had been separated from his family when diagnosed with leprosy as a child. He now has four children, serves as the headmaster of a school for students with special needs, and travels internationally as an advocate for the human rights of individuals who have experienced leprosy. He was accompanied by his son. It was important for families in Togo to see the example and hear the experience of these two representatives from IDEA Ghana who had dealt with the challenges of leprosy in their own family and assisted more than 300 individuals to return home in Ghana. Following the education/discussion sessions, plans were made to take the 11 individuals back home to Togo.

Results: Each person was from a different region in Togo, including Niamtougou, Bassar, Mewindo, Oudiran, Doufelgou, and the Northeast of Togo. Due to the distance between these regions, 11 separate trips had to be made. Kofi Nyarko accompanied each person. They traveled by bus and taxi, sometimes needing to use 17 different vehicles to return a person home. Within the span of four months, all 11 individuals were returned home and welcomed by their families and communities.

Conclusion: With education, example and perseverance, individuals who have been separated from their families for decades can be returned to live out their lives with their families in their homes, communities and countries.

O-182

THE EXPERIENCES OF THE HANSEN'S DISEASE MUSEUM IN JAPAN

Presenter: Tetsuya Kimura

Tetsuya Kimura, Minoru Narita, Naoko Nishiura, Nao Hoshimo
The National Hansen's Disease Museum

Objective: The objective of this report is to explain the historical significance of the Hansen's Disease Museum and its 25-year-long experiences that have made it what it is today.

Methods: Analysis of relevant documents, photos, testimonials and other available data

Results: The significance of the Hansen's Disease Museum in Japan lies in its origin. The museum was founded in 1993 by the people affected the disease themselves. At the time, the nation still had an isolation policy in place, which had been implemented in 1907 and lasted until 1996. The museum played a pivotal role in the movement to fight discrimination against people affected by Hansen's disease. They strove to regain their human dignity through self-advocacy campaigns, including the collecting and exhibiting of materials at the museum, as well as giving public talks to museum visitors and communities. Their efforts had a remarkable impact on social perception, regarding the responsibility of the state's isolation policy as well as the dignity of the people who struggled to improve their plight. The people affected filed a lawsuit against the state in 1998, wherein the Kumamoto district court ruled that the segregation policy had been unconstitutional; the Japanese government accepted this judgment. As part of the ruling, in 2007 the museum was officially elevated to a national museum, to restore the dignity of both the people affected and their family members.

Today, it has become clear that the museum is facing a number of critical issues. In the 25 years since the opening of the Hansen's Disease Museum, the residents of the sanatoria have aged and are rapidly decreasing in number. The question is how their fellow citizens can be encouraged to effectively participate in carrying on the legacy of those affected by the disease. It also remains important to eliminate the lingering prejudice and social stigma associated with Hansen's disease.

Conclusion: The Hansen's Disease Museum in Japan represents pioneering efforts by the people affected by the disease themselves. It has the potential to serve as a model case for other countries to learn, as they seek to address the social stigma towards Hansen's disease.

O-189

EXPERIENCES OF INCLUSION AS AN EFFECTIVE TOOL TO REDUCE LEPROSY RELATED STIGMA AND DISCRIMINATION

Presenter: Sushil Kumar

Sushil Kumar(1), Dr. P.R. Manglani (1), Dr. M.A. Arif (1)
1. NLR India

Community based rehabilitation (CBR) was primarily designed to cater to the rehabilitation needs of the persons with disabilities who had no access to institution-based rehabilitation in late seventies and early eighties. However, the approach holds a significant importance in contemporary period too. This paper demonstrates the effectiveness of community managed people's institutions including Self-Help Groups (SHGs), Block Development Committee (BDCs) and Disabled Peoples Organizations (DPOs) in combating leprosy-related stigma and discrimination in rural India. It has been widely witnessed that platforms of disabled persons lack the representation and participation of persons affected by leprosy. One of the primary reasons is that leprosy has been recognized as an age-old disease causing enormous stigma and discrimination worldwide.

Objective: To share experiences of the effect of mixed self-help groups and other community based institutions on reducing stigma and discrimination related to leprosy.

Methods: A rapid cross-sectional survey was planned to assess the rehabilitation needs of persons with disabilities including persons affected by leprosy. The concept of SHG was introduced and one SHG was formed in each of 204 Panchayats in Aurangabad district of Bihar (India). The 204 SHGs have 427 persons affected by leprosy who are involved in regular meetings, saving, inter-loaning to meet their financial needs to improve the socio-economic status through livelihood promotion. Many of the persons affected by leprosy are serving as president, secretary or treasurer to their respective SHG. Each SHG has sent a democratically elected member to the BDC. Eleven BDCs have been serving as General Body to their registered DPOs. The 11 DPOs have been strengthening the voice of persons with disabilities including persons affected by leprosy.

Results: With leadership skills and enhanced economic status through livelihood established from inter-loaning and bank linkage, society has learnt the value of persons affected by leprosy. The inclusion of persons affected by leprosy in SHGs, BDCs and DPOs of persons with disabilities has been instrumental in reducing the leprosy related stigma and discrimination. There is substantial increase in terms of sharing resources, buying edibles, and participating in social activities together. The SHGs, BDCs and DPOs don't make any form of discrimination based on leprosy or disability.

Conclusion: The adequate representation and participation of persons affected by leprosy in decision making processes have changed the perception of the society about persons affected by leprosy and also helped in reducing the leprosy related stigma and discrimination in rural settings.

O-197

MAINSTREAMING OF LEPROSY DISABLED BY ADULT LITERACY IN BANGLADESH

Presenter: Dalwor Hossain

Dalwor Hossain
Community Programme, The Leprosy Mission International Bangladesh, DBLM hospital, Notkhana, Nilphamari 5300, Bangladesh

Objective: To assess improvement of rights and accessibility of people with disability by Adult literacy in 4 districts of North West Bangladesh.

Methods: 150 People have selected for adult literacy training by 15 different groups & with 15 different teachers. Among them 135 have completed 1 year course. Out of 135 clients 33 leprosy disabled, 55 general disabled and 47 general people. The participants were invited to be interviewed about their social accessibility, acceptance, reading & writing skills and livelihood at the start and end of the course. A questionnaire was used to get information.

Results: 135 clients have completed 1 year adult literacy training. Out of 135 clients 33 are leprosy disabled, 55 general disabled and 47 general people. Results on different areas have been recorded with score 0 for very bad, 1 for bad, 2 for satisfactory, 3 good and 4 very good. Each area of findings made average of before training and at the end of training. The average end training findings were compared with before training and improvement are on accessibility 52%, social acceptance 45%, livelihood 52% and reading writing skills 307%. Improvement on specific areas are as getting entertainment information 61%, acceptance among spouse 61%, Success in IGA 118%, reading book/newspaper 970% and support child education 336%.

Conclusion: Adult literacy can provide much better life of people with disability including leprosy. Better improvement seen on accessibility, Social acceptance and livelihood and huge improvement found on reading & writing. Huge improvement found on daily life such as receiving entertainment information, acceptance among spouse, reading book and newspaper and supporting child education. Tremendous improvement on using cell phone, reading signboard, medicine name, performance in Self-Help Group with daily accounts. They told us that now they see their world differently by reading signboard, billboard beside the road and market

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O-202

'PRACTICING HUMAN RIGHTS BASED APPROACH TO ACCELERATE TOWARDS A LEPROSY –FREE WORLD'

Presenter: Bagival Kumar

Bagival Pradeep Kumar
[1]The Leprosy Mission International, UK.

Objective: There is a growing interest amongst leprosy stakeholders to understand leprosy from a human rights perspective as majority of persons affected by leprosy are from the poor and marginalized communities. Stigma leading to pervasive discrimination has left majority of those affected disempowered and marginalized. The global leprosy strategy 2016-20 rightfully acknowledges the importance of human rights based approach in accelerating towards a leprosy free world.

Methods: The paper will explain the concept of human rights based approach in the context of leprosy and its key pillars such as participation, non-discrimination and accountability. An attempt will be made to explain intersectionality between 'Right to health' with other human rights that are guaranteed by various human rights treaties and national constitutions. Further, the paper will discuss human rights based interventions within the global leprosy strategy and how adherence to human rights based approach could eventually result in:

1 Strengthening government ownership, coordination and partnerships.

2 Stopping leprosy and its complications

3 Stopping discrimination and promoting inclusion.

Results: The paper will showcase some of the interventions guided by human rights based approach in increasing government ownership, prevention of disability and addressing stigma and discrimination against persons affected by leprosy in select countries that have been led by persons affected by leprosy and their representative organizations.

The paper will highlight certain preferred practices in participation, both national and global, that have led to persons affected by leprosy to be in the epicentre of service delivery and in ensuring accountability on the part of the national governments.

Conclusion: The paper will conclude with key messages to the leprosy stakeholders that human rights based approach leads to participation of persons affected by leprosy who have every right to be part for the decision making process in the course of design , implementation and monitoring of policies and programmes that directly impact them. The importance behind addressing discrimination to ensure vulnerable groups such as women and children affected by leprosy have equal access to health care and treatment will be emphasized. Lastly, the paper will highlight the importance of government's accountability by stressing the fact that the decision makers need to be transparent and appropriate judicial and non-judicial mechanisms have to be in place to ensure accountability.

O-211

ADVOCACY IN HANSEN'S DISEASE: WITH EMPHASIS ON THE RIGHTS OF PATIENTS

Presenter: Magda Levantezi

M. Levantezi [1,2,3]; L. Lima [1]; C. R. F. Coriolano[1], R. Maia [1]; T.P.S. Flores [4].F. C. Mesquita. [4],; V.L.G Andrade [5]

[1] Secretary of Health Surveillance / General Coordination of Leprosy and Diseases in Elimination / Ministry of Health of Brazil [2] Centro Universitário de Brasilia [3] Universidade de Brasilia [4] Movement of Reintegration of People affected by hansen s disease [5] Organização Pan Americana de Saude

Objective: To promote space for discussion among health professionals, patients and former patients to disseminate the rights of people affected by Hansen's Disease

Methods: The method used consisted of two steps: 1. Conversation wheel with leaders, local managers, civil society organizations, health professionals, public health system's users, and the media in advocacy activities; 2- Home visits to patients, previously identified by the health service that present difficulties on follow up. The visits were carried out by the community agent in the area where the patient resides, a physician and a nurse from the health unit and social mobilizer, to discuss appropriate attitudes towards people affected by Hansen's Disease, discussing issues of stigma and discrimination, health and human rights. The activities were part of the Innovative Approaches Project to intensify efforts for a Hansen's Disease-free Brazil - Bangkok Declaration Special Fund Projects (BDSF) coordinated by CGHDE/SVS/Ministry of Health of Brazil in partnership with the Pan American Health Organization. The activities were accompanied by professionals, from Ministry of Health and municipalities, with a participation of a social mobilizer, preferably who was a leprosy patient.

Results: A total of 530 professionals participated, including 129 nurses, 91 social workers, 76 psychologists, 22 physiotherapists, 20 occupational therapists, 15 physicians, 8 speech therapists, 169 community health agents and

121 users, civil society and leadership. All participants were responsible for multiplying the acquired knowledge. In relation to the home visits, 40 were performed, about 2 per municipality

Conclusion: It is needed the integration among professionals from health and social care, who assist Hansen's disease patients, to ensure that they can enjoy the social rights provided for in legislation and human rights. We highlight the positive impact of the participation from a former patient as a facilitator. We point out that it is increasingly considered by the managers that this professional is included in the health teams as a transforming agent for coping with stigma and discrimination and for the defense of rights. We also accentuate the need to intensify these activities by making them part of the services routine.

O-230

CAPACITY BUILDING OF CSOs RESULTING IN STRENGTHENING OF CSOs (OF PEOPLE AFFECTED BY LEPROSY AND DISABILITIES) TO ADVOCATE FOR THEIR RIGHTS, ADDRESSING THEIR ISSUES & ACCESSING THE ENTITLEMENTS

Presenter: HARSHA GUDASALAMANI

Harsha Gudasalamani, Tina Mendis and James George
THE LEPROSY MISSION TRUST INDIA

Introduction: People affected by leprosy and/or disability experience high levels of stigma and discrimination, because of the misconceptions about leprosy and through widespread negative social attitudes towards leprosy and misunderstandings regarding how it is spread. This has resulted in their continued exclusion from the mainstream society and violation of their human rights at multiple levels. self-stigma impacts their position to challenge the existing injustice, and raise their voice on issues that affect them. This has resulted in them being unable to challenge injustice which has perpetuated human rights violations and poverty.

Adding to this is the uncoordinated structures of Community-based organisations (CBOs) of such people, that could be the potential platforms from where these concerns can be voiced, In addition, there are not many civil society organisations (CSOs) working with these groups/individuals on the issues of their empowerment, to challenge this status quo. Moreover, CSOs have inadequate skills and experience in advocacy, the fight for being heard is even tougher for people affected by leprosy as they have remained a highly invisible minority within the disability movement and other major social movements in India.

The Leprosy Mission Trust India initiated the "CSOs for Resource mobilisation Empowerment, Advocacy, Training and Employment (CREATE) project" in the year 2016 with one of its specific objective to build and develop the capacity of CSO's of Person affected by leprosy and disabilities to engage in community development and also challenge injustice & discrimination.

Objective: The objective of this study is to determine the outcome of Capacity building training of the CSOs(Civil society organisations of People affected by leprosy and/or disability are the primary members) resulting in organisational strengthening of CSOs with regard to Leadership, Conflict Resolution, Documentation, Action Planning, advocacy to challenge injustices and address issues of stigma and discrimination faced by people affected by leprosy and/or disability.

Methods: Study design and Location:
This is an impact assessment study conducted in Andhra Pradesh, Chhattisgarh and Uttar Pradesh
Study Sample and participants:

The CSO members affected by leprosy from 30 CSOs Andhra Pradesh, Chhattisgarh and Uttar Pradesh who have been capacitated through CREATE Project. The respondents are from both rural and urban areas.

Data collection:
Structured questionnaire was used to collect data; including demographic details, disease related information and

CSOs capacity building attributes.

The assessment was done before the activities of capacity building were initiated and after the capacity building trainings were completed.

Data analysis:
A selective sample of 30 CSOs was taken from 3 states for this study. The data collection was done using the structured questionnaire tools. Data was analysed using Microsoft Excel database.

Results: *The results will be presented during conference*

Conclusion: The results will show the outcome of capacity building activities among the CSOs (of person affected by leprosy & disabilities) in regard to functioning of CSOs, participation of the members, accessing entitlements and addressing their issues.

O-236

INTERSECTIONALITY OF HEALTH RELATED STIGMA: CHALLENGES IN A UNITED FRONT OF STIGMA REDUCTION STRATEGY IN INDONESIA

Presenter: Irwanto Irwanto

Irwanto Irwanto[1], Ruth Peters[2], Sarju Sing Rai[2], Marjolein Zweekhorst[2], Elena Syurina[2], Denise Naniche[3], Sari Lenggogeni[4]

[1]Faculty of Psychology, Atma Jaya Catholic University of Indonesia, Jakarta, Indonesia, [2]Athena Institute, Faculty of Science, Vrije Universiteit, Netherlands, [3]Barcelona Centre for International Health Research (CRESIB), Hospital Clínic, Universitat de Barcelona, Barcelona, Spain, [4]HIV-AIDS Research Centre, Atma Jaya Catholic University of Indonesia, Jakarta, Indonesia.

Objective: Health related stigma affects individuals in multitude of ways. Individuals with stigmatized health conditions may be stigmatized by the disease, his/her gender or sexual orientation, occupations, and socio-economic status. This study looked at the experiences of individuals who were affected by stigmatized diseases, particularly leprosy, HIV and AIDS, schizophrenia, and diabetes and how the state and the community have attempted to address and reduce the affects of stigma.

Methods: Data were collected through 12 FGDs and 80 in-depth interviews in Jakarta and Cirebon Districts. Relevant legal and policy documents were identified and examined.

Results: Preliminary findings suggests most people affected by stigmatized health conditions experience barrier to effective treatment and loss of social support. Most of them also expected that the state should step up its effort to deal with stigma and discrimination. On the other hand, trajectories of the disease affects how the community and the state reacted to the conditions. The global and domestic movements are momentous in pressuring the state to devise itself with laws and regulations that protect the general population as well as acknowledging the rights to health of the vulnerable population and pushing government investment in the national health system strengthening.

This movement also gets its momentum from the political reform in 1998 to 2010 during which the state ratified relevant human rights treaties. Since HIV infection is closely related to mental health issues, the long neglected issues of the rights of persons with mental disorder becomes the second drivers of anti stigma and discrimination.

Conclusion: The state of the matter to date indicates that advocacy against stigma has been fragmented within each affected population. This study helps researchers to look for alternative and more united ways to deal with stigma and discrimination.

O-247

JUDICIALIZATION OF THE RIGHT TO HEALTH IN THE SCIENTIFIC CONTEXT IN BRAZIL: AN ANALYSIS OF THE PUBLICATIONS IN THE CONTEXT OD LEPROSY

Presenter: Maria Solange Araújo Paiva Pinto

N. R. N. Andrade[1]; C. F. O. Nunes[1]; F. B. Albuquerque[2]; Adriana da Silva dos Reis[1]; T. I. B. Andrade[1]; G. S. M. García[1]; A. F. Ferreira; M. S. A. P. Pinto[1,2], Donato, I.M.[1] A. N. Ramos Jr[1]

[1] Department of Community Health, School of Medicine, Federal University of Ceará, Brazil; [2] Department of Public Law, Faculty of Law, Federal University of Ceará, Brazil; [3]Netherlands Hanseniasis Relief, Brazil

Objective: To verify the presence of publications regarding the judicialization of the right to health with a focus on leprosy from 2013 to 2019 in Brazil.

Methods: This is a systematic review carried out in the databases of the Virtual Health Library, Pubmed, Lilacs, and Scielo Gate, using as search descriptors the composition of the following syntax: (i) "judicialization or legislation and jurisprudence", (ii) " judicialization", (Iii) "judicial decisions" and (iv) "Judicial Orders", using as filter the year of publication within the period from 2013 to 2019.

Results: A total of 90 published studies had as general theme the process of judicialization of the right to health in Brazil in the period from 2013 to 2019. There was an increasing trend, averaging 49% per year for productions. However, none of these papers analysed focused on the judicialization of the right to health involving any of the aspects related to leprosy, either the treatment of *Mycobacterium leprae* infection or its complications due to physical disability or deficiencies, secondary infections, leprosy reactions, surgical complications, and others, in order to guarantee access.

Conclusion: The absence of publications with analyses of leprosy lawsuits in the context of the judicialization of the right to health in Brazil reinforces the neglected nature of the disease and the vulnerability of the affected populations, with restriction of access to the judiciary. The search for the judiciary has been a strategy aimed at guaranteeing a right guaranteed by the Brazilian Federal Constitution in the various health demands on various issues. The phenomenon of the judicialization is criticized for the consequences of some lawsuits demanding actions whose subject matter is of high value and with clear conflicts of interest. Failure to access of this population to the judiciary may be occurring especially in aspects related to the complications of the disease.

O-330

STIGMA AND EMPOWERMENT IN LEPROSY: PERSPECTIVES OF THE PEOPLE AFFECTED IN A HYPERERENDEMIC TERRITORY IN THE NORTHEAST REGION OF BRAZIL

Presenter: Maria Solange Araújo Paiva Pinto

M. S. A. P. Pinto[1,2]; J. A. Menezes [1]; A. N. Ramos Jr[2]; E. A. Souza[3]; H. X. Oliveira[1]; N. N. L. Ferreira[1]; G. S. M. García[2]; A. F. Fuentes; M. A. G. Carneiro[2]; I. M. Donato [2]; M. S. Florêncio[2]; L. G. Teixeira[2]; G. K. A. Rocha[2]; N. R. N. Andrade[2]; A. S. Reis[2]; T. I. B. Andrade[2]; J. C. Barbosa[1,2]

[1]Netherlands Hanseniasis Relief, Brazil; [2]Department of Community Health, School of Medicine, Federal University of Ceará, Brazil; [3]Multidisciplinary Institute for Health, Campus Anísio Teixeira, Federal University of Bahia, Vitória da Conquista

Objective: To evaluate the stigma and empowerment related to leprosy in people affected by the disease, living in an endemic area in the Northeast region of Brazil.

Methods: A cross-sectional study carried out in the city of Fortaleza, capital of the state of Ceará, Brazil, as part of an international multicentre study including Brazil, India and Indonesia linked to the Post-Exposure

Chemoprophylaxis Project (PEP++). This is a study in progress including people affected by leprosy, diagnosed in the years 2017 and 2018 and notified in the Information System of Notifiable Diseases. We used: sociodemographic and clinical questionnaire, Empowerment Scale (ES) and Explanatory Model Interview Catalog (EMIC-AP), all validated for Brazil. Data entry was performed in EpiInfo 7 with analysis in Stata 11.2. The analysis included the 95% confidence interval. The study was approved by the National Commission for Research Ethics, CAAE: 86480218.9.0000.5054, and funded by the Netherlands Hanseniasis Relief - Brazil (NHR Brazil NGO).

Results: A total of 74 patients were interviewed, mostly men (52%, n=39), with mean age of 52.38 years (Std 14,62), race/color brown (Brazilian Pardo) (52%, n=39), catholics (69.3%, n=52), in the first leprosy treatment (85.1%, n=63), with multibacillary operational classification (64%, n=48), with no history of leprosy reactions (60%, n=45), and without physical disability (64%, n=48). Most of them reported the diagnosis status for another people (80%, n=60) and have other cases of leprosy in the family (45.3%, n=34). The Empowerment Scale had a mean score of 59.84 (95% CI=58.97-60.71), higher than the general mean of the scale, which can vary from 1 to 100. For the EMIC-AP, there was a mean score of 11.74 (CI%: 9.79-13.69).

Conclusion: These preliminary results suggest that people affected by leprosy presented higher levels of empowerment than perceived stigma in this hyperendemic area, the fourth largest capital city in Brazil. Internationally, it has been shown that empowerment constitutes a key strategy for coping with leprosy as a neglected, stigmatizing disease with a high potential for generating disability. Therefore, it promotes channels for comprehensive care to people and their families with a view to reducing stigma, length of care and prevention of disability, even after discharge from multidrug therapy.

ILC-2: SOCIAL SCIENCE:

2.3 Social Aspects

O-013

BARRIERS IN AVAILING LIVELIHOOD LOANS FROM GOVERNMENT BY PEOPLE AFFECTED BY LEPROSY AND OTHER DISABILITIES

Presenter: Suresh Dhondge

Suresh Dhondge, Karthikeyan Govindasamy, Tina Mendis
The Leprosy Mission Trust India

Inclusive Holistic Development of Individuals with Disabilities (IHDID) Project at Kothara Hospital of The Leprosy Mission Trust India, aims at promoting Community based inclusive development (CBID). As part of the project, a baseline survey was conducted in 75 villages in Amravati District, which is an endemic district in Maharashtra in western India, at the initial phase of the study in the year 2013. Purpose of the survey was to identify the livelihood status.

Objective: To understand the barriers in availing loans for livelihood among person with leprosy and other disabilities

Methods: A structured questionnaire was used to collect data on livelihood status and also to identify the difficulties faced in availing welfare schemes for people with disabilities. The concerned government authorities were also interviewed to understand their views on low availing of the schemes.

Results: A total of 1027 (1.97%) people with disabilities were identified from the 75 villages with a population of little over 52,000. The prevalence of locomotor disability was high (45.2%), followed by Low vision (14.4%) and leprosy related disability (12.8%).

Of all the people with disability, only 04 people with disabilities were self employed and none of them availed loans from Government. The barriers related to beneficiaries were unawareness about welfare schemes, lengthy and tiresome procedures and documents, long distance travel to reach district head quarters to apply for schemes.

The barriers related to the providers were the district wise slab for total number of loan disbursement per year (only 50 for the entire district) and other reasons.

Conclusion: This study will conclude that In spite of all the efforts by the government to uplift the life of people with disabilities, there are barriers that prevents beneficiaries from availing it. Also, it will highlight the need to review the system to make the procedure more user friendly.

O-071

DEVELOPING COMMUNITY EDUCATION AND BEHAVIOURAL CHANGE INTERVENTIONS FOR LEPROY PREVENTION AND MANAGEMENT

Presenter: Anna Tiny van 't Noordende

A.T. van 't Noordende[1,2], S. Lisam[3], W.H. van Brakel[1], M.A. Arif[3], I. J. Korfage[2]
[1]NLR, Amsterdam, Netherlands, [2]Erasmus MC, University Medical Center Rotterdam, Rotterdam, Netherlands, [3]NLR India, New Delhi, India

Objective: Leprosy remains a public health problem in many countries. The use of traditional medicine, low awareness of modern treatment, unawareness of leprosy, a belief in self-cure, unavailability of services,

unavailability of skilled health care workers, stigma and the influence of traditional or community leaders are potential causes for delayed diagnosis of leprosy and thus hinder the eradication of leprosy. This study aimed to design effective public messages on leprosy using the most acceptable channels of communication to optimise early case detection in leprosy. The study was conducted in Fatehpur and Chandauli districts, Uttar Pradesh state, India.

Methods: An exploratory study (December 2017 - June 2018) consisted of a baseline study to assess perceptions regarding leprosy and persons affected by leprosy, as well as a study to explore what means of communication people have access to, are using and prefer to receive information on leprosy. This was followed by a workshop with input from people affected, their community member representatives and experts in communication and leprosy. Development of the interventions consisted of the following steps: (1) The exploratory studies in which the health problem is assessed, key concepts to be communicated are identified and the most suitable settings and methods to reach the intended audiences are explored; (2) conceptualization of interventions; (3) design and refinement of interventions; (4) implementation; and (5) evaluation. Finally, we developed a stepped-wedge design to assess the effectiveness of the messages and materials, in which the interventions will be implemented one-by-one from February 2019 onwards.

Results: The baseline studies into perception revealed poor knowledge regarding leprosy among index patients, close contacts, community members and health care workers. Knowledge on mode of transmission, cause and symptoms of leprosy was especially poor. The communication methods assessment showed that TV and radio were not used frequently in the communities. Loudspeakers, community group meetings and posters were considered the most acceptable means of communication. Participants of the workshop on the development of interventions selected training of health workers, interpersonal contact with people affected, posters, mobile messages and community meetings with discussions, a testimonial video and loudspeakers as the most appropriate interventions. Draft prototype posters were developed and pre-tested among the campaign target audience between June and November 2018. The visuals and content of the posters were adjusted based on the pre-test.

Conclusion: Introducing the newly developed interventions in a stepped wedge design will allow us to determine what the relative effect is of the individual interventions such as the posters will contribute to improvement of early detection of leprosy.

O-092

COMPARISON OF PERCEPTIONS AND KNOWLEDGE OF LEPROSY BETWEEN LEPROSY ENDEMIC DISTRICTS IN INDIA AND INDONESIA

Presenter: Anna Tiny van 't Noordende

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[1]NLR, Amsterdam, Netherlands, [2]Erasmus MC, University Medical Center Rotterdam, Rotterdam, Netherlands, [3]NLR Indonesia, Surabaya, Indonesia, [4]NLR India, New Delhi, India

Objective: Sufficient knowledge of early clinical leprosy presentation and leprosy services and low levels of stigma are essential for early detection of leprosy. This study is one component of the PEP++ project comparing the knowledge, attitudes and practices regarding leprosy in Chandauli district, India with those in Pamekasan and Pasuruan districts, Indonesia. This study seeks to compare the nature and extent of leprosy-related stigma between the two countries.

Methods: The study used a cross-sectional design with a mixed-methods approach. We assessed knowledge, attitudes, and practices with the KAP measure, and stigma with the Explanatory Model Interview Catalogue community stigma scale (EMIC-CSS) and the Social Distance Scale (SDS). In addition, semi-structured interviews

and focus group discussions were conducted with all participant groups. The quantitative data were analysed using stepwise multivariate regression. The qualitative data were analysed using open, inductive coding and content analysis.

Results: A total of 827 participants were included in the three study areas: 100, 119 and 119 persons affected by leprosy, 100, 119 and 119 close contacts and 50, 50 and 51 health care workers respectively in Chandauli, Pasuruan and Pamekasan districts. In addition, in each district 24 in-depth interviews and three in focus group discussions were conducted. Almost all participants were from rural areas (93-97%). Most participants (96%) from India were Hindu and all participants from Indonesia were Muslim (100%). Levels of adequate knowledge of leprosy ranged from 19% in Chandauli, to 23% in Pasuruan and 16% in Pamekasan; poor knowledge levels ranged from 18% in Chandauli, to 25% in Pasuruan and 25% in Pamekasan. The mean SDS score was highest in Indonesia with 7.9 in Pasuruan and 7.3 in Pamekasan compared to 5.1 in Chandauli. The mean EMIC-CSS score was similar in the three districts, with 12.2 in Chandauli, 11.9 in Pasuruan and 12.8 in Pamekasan.

Conclusion: This study revealed poor knowledge regarding leprosy and high levels of stigma in all three study districts. Participants of Pamekasan district, Indonesia, had lower levels of leprosy-related knowledge and higher levels of stigma towards persons affected by leprosy compared to participants from the other two districts. In order to improve knowledge, reduce misconceptions and positively influence the perception of leprosy, context-specific community education is needed and will be an integral part of the wider PEP++ initiative.

O-093

THE IMPACT OF LEPROSY, PODOCONIOSIS AND LYMPHATIC FILARIASIS ON INDIVIDUAL AND FAMILY QUALITY OF LIFE: A QUALITATIVE STUDY IN NORTH WESTERN ETHIOPIA

Presenter: Anna Tiny van 't Noordende

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Objectives: Quality of life has received considerable attention as a concept to assess general well-being in recent years. Several studies showed leprosy, podoconiosis and lymphatic filariasis to have an impact on quality of life. In contrast, family quality of life has not received much attention, despite anecdotal evidence that families are affected also and the crucial role of the family in most societies around the world. This sub-study looks at the impact of leprosy, podoconiosis and lymphatic filariasis on individual and family quality of life. It is part of a larger project that aims to develop a family-based approach to support prevention of disabilities in the Ethiopian context.

Methods: The study used a cross-sectional design with a qualitative approach. Both semi-structured interviews and focus group discussions were conducted. Participants, persons affected and their family members, were selected by purposive sampling. Data were collected between August and November 2017 in Awi zone, northern Ethiopia and analysed by two independent researchers using open, inductive coding and content analysis.

Results: 56 people were interviewed in-depth: 12 affected by leprosy, 12 by lymphatic filariasis, 13 by podoconiosis, one with leprosy and podoconiosis and 18 family members. In addition, ten people affected and six family members were included in focus group discussions. We found that persons affected often experience pain and visible impairments due to their condition. Some participants are ashamed of their disease and/or feel inferior to those who are not affected. Persons affected and their family members are sometimes insulted by their community members. Divorce and difficulties in finding a spouse were not uncommon, even extending to their family members. While most people get social and physical support from their families there are exceptions. In particular,

persons with younger children seem to lack social support. Many participants reported participation restrictions. Half of the study participants were unable to work because of the physical or social limitations they face. Financial problems and loss of livelihood were reported by almost all participants, this sometimes led to begging. Financial problems and stigma also prevented affected persons and their family members from attending school.

Conclusion: This study revealed that leprosy, lymphatic filariasis and podoconiosis have an effect on several dimensions of individual and family quality of life. Many problems reported relate to stigma and a lack of finances. A family-based approach that addresses social and economic aspects is needed to improve individual and family quality of life.

O-106

LEPROSY TRANSMISSION PATTERNS IN NEPALESE FAMILY SETTINGS

Presenter: Kanchha Shrestha

K. Shrestha[1*], D. RSJB. Rana [2], S. Dulal[2], R. Thapa[2], J. Maharjan[2], D. Shrestha[2], K. D. Neupane[2], I. R. Shrestha[2], R. Shrestha[2], M. Shah[2], I. B. Napit[1], D. A. Hagge[2]

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Objectives: The probability of transmission of leprosy by any index case to household family members is higher than to social contacts. Therefore, it is imperative to study the dynamics of transmission of leprosy to better understand the risk factors of leprosy transmission within family households.

Methods: Medical records of multi-case family leprosy patients, registered at Anandaban Hospital from 2008-2018 were retrieved for retrospective study. Both first case and first case's respective family members defined as second case was also diagnosed and confirmed leprosy at Anandaban Hospital were included. Patient age-groups 0-5, 6-18, 19-60 and >60 years were classified based on Nepalese socio-cultural settings; Ridley-Jopling classification, bacillary index (BI) and transmission relationship among index/family were analyzed. Z-test score was used to compare leprosy transmission proportions by various risk factors.

Results: Leprosy cases (n=109) were 52 male (Median=25, R=6-72) and 57 female (Median=30, R=8-75) years were analyzed for the potential transmission of leprosy. For females, proportions of transmission by brother (p<0.05), father (p<0.05) and mother (p=0.09) was higher when she was diagnosed at 6-18 years compared to when she was 19-60 years, by which time most Nepalese women would have already left to dwell with her husband's family. Similar correlation was not seen for male cases. While compared to the proportion of transmission by offspring to male or female parents, a higher proportion (p=0.03) of transmission was reported from mothers than fathers. Among new cases having a known male leprosy contact, higher proportions (p<0.005) presented with lower BI (0-1) than higher (4-6). Comparing first-degree relatives of index cases, male first-degree relatives are more often the transmitter (p<0.05) of disease compared to female first-degree relatives, revealing a gender-based male potential transmission contributor. Second cases were more likely (p<0.005) to be BI positive compared to first cases. First cases were more likely (p<0.05) to be BT than BL/LL when second cases were BT. If second cases were BL/LL, first cases were equally BT or BL/LL.

Conclusion: The study revealed the transmission was more often reported to be connected to male index cases rather than female cases; and that female cases were more often reported to be connected to their husbands' family rather than their family of origin. However, stigma may also have a role in reporting, household dynamics of detection and duration for presentation of leprosy. Hence the transmission patterns of leprosy are varied based on gender and time duration of close contacts.

O-112

145 YEARS AND COUNTING - WHAT HAS THE LEPROSY MISSION LEARNT FROM SUPPORTING SELF-HELP GROUPS OF PERSONS AFFECTED BY LEPROSY?

Presenter: Jannine Ebenso

J. Ebenso[1], T. Mendis[2], J. Boiragee[3]
[1]The Leprosy Mission International, Brentford, UK, [2] The Leprosy Mission Trust, India, Delhi, India, [3]The Leprosy Mission Bangladesh, Dhaka, Bangladesh.

Objectives: Founded in 1874 in India, The Leprosy Mission currently supports almost 200 projects in more than 20 countries across Africa and Asia, impacting a total population of over ½ billion people. Within the communities where we work, The Leprosy Mission supported 4,641 self-help groups in 2017 with a total membership of 44, 466 people.

The Leprosy Mission seeks to be a learning organisation and over the past 145 years, we have learnt from how we design and implement our programmes and projects, including our support to self-help groups.

The presentation will draw from our experience in Africa and Asia and will demonstrate what The Leprosy Mission has discovered in terms of **what works** and **what doesn't work** in self-help groups.

This study seeks to:

- Demonstrate the effectiveness of self-help groups to increase quality of life of persons affected by leprosy and their families.

- Identify success factors and challenges in self-help groups for persons affected by leprosy.

Methods: Retrospective, descriptive study using both quantitative and qualitative methods.

Data collection:
- Desk review of project reports, evaluation reports and other relevant documents
- Semi-structured interviews with key informants (self-help group members, project managers and CBR officers).

Results: The Leprosy Mission strongly believes in the principle of '*nothing about us without us'*, so the impact of self-help groups on the lives of individuals and communities will be highlighted with personal testimonies from persons affected by leprosy themselves.

Particular emphasis will be on the impact of self-help groups on social integration, household income and quality of life.

The Leprosy Mission's global strategy 2019-2023 has three priorities – zero transmission; zero disability and zero discrimination. The presentation will highlight how self-help groups contribute to achieving these three zeros.

Conclusion: Self-help groups of persons affected by leprosy are commonplace all around the world. They vary in size and the activities that are conducted by the groups. Self-help groups are support structures to the members, allow resources to be pooled and shared and help amplify the voice of individuals. Previous studies have showed that participation in society is improved through self-help groups.

The presentation will highlight the **impact**, the **key success factors** and the **risks and challenges** of self-help groups in TLM countries

O-113

FEASIBILITY STUDY FOR PERIODIC MENTAL HEALTH ASSESSMENT AMONG PERSONS AFFECTED BY LEPROSY IDENTIFYING RISK INDICATORS NEEDING MENTAL HEALTH MANAGEMENT USING SIMPLE STANDARDISED TOOL

Presenter: Manikkathan Varghese Jose

Dr. R.R.Lanong[1], Dr. N. Manimozhi[1], Dr. Jose Manikkathan[1], Dr. Giovanni Gazzoli[1]

[1]AMICI DI RAOUL FOLLEREAU, India

Objectives:
To study feasibility of assessing mental status among persons affected by leprosy, periodically at the peripheral health system level, identify patients at risk using PHQ 9 assessment tool for provision of quality leprosy services

To find out if there is mental depression among persons affected by leprosy, assessment of severity of depression.

To find out if there is any difference in the mental health among those who reside in Leprosy Rehabilitation Centre and those living in Leprosy Settlement village.

Methods: A total of 73 (seventy three) persons affected by leprosy, age between 24 to 82 years, who were willing to participate, included in the study (55 Males & 18 Female - all RFT adults). Out of the 73 respondents 71 had visible Grade-II disability, Interviewed using Schedule Patient Health Questionnaire (PHQ-9) tool categorizing depression into score 0-4 (minimal depression), 5-9 (mild depression), 10-14 (moderate depression), 15-19 (moderately severe depression) and above 20 (severe depression). It took an average of 15 minutes to fill in the forms for each respondent by the Investigator.

Results: Out of 73 respondents, 34 (46.57%) had indication of minimal depression, 28 (38.36%) with mild depression, 9 (12.33%) moderate depression, 2 (2.74%) moderately severe depression and none with severe depression.

Difference found in the mental health of those living in two places mentioned–out of 45 living in Rehabilitation Centre and out of 28 living in Leprosy Settlement village - there is indication that higher degree of depression varying from mild to moderately severe depression (no severe depression) found in 21 (75%) respondents of Settlement village, as compared in 18 (40%) respondents of Leprosy Rehabilitation Centre having mild to moderate depression (no moderately severe or severe depression).

Out of 28 who live in Settlement village 16 (59.14%) felt the daily life very difficult and 4 (14.29%) extremely difficult, while out of 45 who live in Leprosy Rehabilitation Centre, 21 (46.67%) felt their daily life is very difficult and 1 (2.2%) felt their daily life extremely difficult.

Conclusion: It was found to be feasible simple investigation in identifying mental health status, which can be periodically and can be collected by Health worker and needy patients be referred to the nearest Referral Centre for management. The study shows the possibility of mental depression among persons affected by leprosy and there is a need for expert counseling to be included in the leprosy programme.

O-116

INTEGRATION OF LEPROSY COLONIES WITH MAINSTREAM-A STEP TOWARDS ZERO STIGMA

Presenter: Laxman Kumar Karmi

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Health and Family Welfare Department, Government of Odisha, India

Objectives: The Leprosy colonies are persistent focus of stigma in the mindset of general community, so with the background of Human rights, elimination of Leprosy colonies by innovative methods will definitely be fruitful step towards reducing of Stigma. The objective is to develop a project framework with the colony inmates for elimination of colony existence.

Methods: A systematic questionnaire developed by a panel of experts. The four Leprosy colonies of Jharsuguda district with a population of 350 was the target population. Out of which, 50 persons were taken into account for the purpose. The selection criterion was-The persons, who can understand and answer the questions properly. This questionnaire has been used to collect the opinion from the colony inmates by the method of one to one interview. Finally the data so collected is compiled and analysed.

Results: The major portion of inmates (72%) do not want to return home and preferred to stay in the colony till the end of life. About half (50%) of the inmates are invalid and cannot work for earning the livelihood. The parents are interested (96%) to send their children to the nearby boarding schools, but the pupils (78%) are apprehensive of leprosy stigma in the school. The youngsters (15 to 25 years) are interested (85%) to do job at distant places, but only 45% of youngsters interested for the vocational trainings. The young girls are very much interested (92%) to form Self Help Group for loan and small scale business.

Conclusion: As the colony people are hesitant to return home and prefer to stay at the existing colonies, we have to support the invalid persons holistically to live a dignified life. The families may be provided with minimum land and home with all the basic amenities. The name of the Leprosy colonies may be changed to normal names with easy accessibility to the main roads. The capable persons engaged in suitable jobs. The youngsters provided with jobs at distant places, so that they will stay away from colony and gradually they will dislike staying in the colony. The interested Self Help Groups provided with subsidiary loan and encouraged to small scale business. The children encouraged to pursue education in the nearby boarding schools with strict vigilance about stigmatisation. The offspring's of beggars should be educated and job engaged in such a way that they will stop the begging of their parents.

O-121

COMMUNITY ROLES IN RETHINKING THE MULTIPLE HISTORIES OF HANSEN'S DISEASE

Presenter: Daisuke Kamal

T. Tamura[1], D. Kamai[2], K. M. Tanaka[3]

[1]National Hansen's Disease Sanatorium Nagashima Aisei'en Historical Museum, [2]Hansen's Disease World Heritage Promotion Council (NPO), [3]Otemae University

Objectives: Recently, movements have begun on a global scale to reintegrate survivors of Hansen's disease into society and preserve the legacy of their stories. In Japan, this has taken the form of preserving former quarantine hospitals, raising awareness, or reaching out to families who had a relative diagnosed. While such outreach and activism is undoubtedly important, the role of the regional community and the role it plays in reintegration and the shared trauma caused by broad social discrimination has been neglected. Recent historical scholarship by

Hirokawa Waka has highlighted the importance of considering the multiple and complex ways communities responded to people with Hansen's disease. Building on her work, we demonstrate that in order to have historical and social reconciliation on local levels, it is necessary to complicate dominant dichotomies (communities who discriminate/those who are discriminated against) with a reconsideration of common ties and the multiple ways communities understood Hansen's disease.

Methods: We introduce a project that investigates multiple connections between two sanatoria on the island of Nagashima, Aisei-en and Kōmyō-en, and the place of the island within the shared history of the local community Mokake. The community shared ties that were economic, political, and social. In order to give voice to multiple experiences, a research project undertaken to collect data through interviews and archival work with the aim of relocating Nagashima within the Mokake community. A second prong of the project involves the translation of our work and the shared histories into English in order to make the information available to the global community.

Results: We have begun collect and translate date and archival materials. Our work demonstrates that highlighting shared history helps people affected by Hansen's disease and community members to focus on their commonalities. Here, we introduce our translation of the first part of a regional history that underscores the multifaceted ways members of the community were affected by the establishment of the leprosaria.

Conclusion: By thinking broadly about community stakes and issues of Hansen's disease, this project highlights the ways Hansen's disease was a shared and important historical experience, not only for the island's residents, but also for the regional community. Furthermore, by highlighting shared experiences and the importance of community ties, the work we present is an important sociological model for recognizing multiple histories, raising awareness, and decreasing discrimination. The recognition of shared local experience is an important way to restore community ties between institutions and the surrounding area.

O-148

HOSPICE CARE FOR THE PEOPLE AFFECTED BY LEPROSY IN LEPROSY VILLAGE

Presenter: Michael Chen

Fan Yang[1], Michael Z.Q. Chen[1], Jean M.J. Fei[1], Sally X.L. Qi[1],
[1]HANDA Rehabilitation & Welfare Association

Objectives: There are about 20,000 elders living in 600 leprosy villages in China with an average age of 70. Every year there are people pass away in almost every village. How to face the death and deal with the fear and emotional distress has become a big issue in these leprosy villages. There is very few hospice care research carried out in leprosy community, and the limited research focused only on nursing care but not a holistic model. This research is to explore the possible model of hospice care in this kind of special community, where it has limited social resources and still relatively separated from the general society.

Methods: The research is based on a hospice care case study in a leprosy village of Mazhou in Guangdong Province, which applies the principle of Dignity Model in hospice care developed by Dr. Chochinov. Study is using qualitative research method, using participatory observation/in-depth case study analysis and in-depth interview to each individual in the village.

Results: There are 25 people living in Mazhou leprosy village. The average age of the villager is 70.08 years old. Each year about 2-4 people pass away. Even though these villagers are not diagnosed with terminal illness with a prognosis of 6 months or less, they are facing the great fear of death and serious distress of bereavement as they have so close relationship between each other. Some people even got depressive disorder when they saw their peers dying in a miserable condition without proper care. An interdisciplinary team consists with two social workers

was setup to provide hospice care for all the villagers. According to the needs of the people, the main focus is the social, emotional and spiritual care rather than physical care. A “Two Life and Three Wills” model is applied to promote a positive attitude of the people to face the death and reduce their stress. After two years of hospice care, the life quality of the villagers has been greatly improved.

Conclusion: Leprosy village or colony is relatively closed community comprise mainly elder people with disability. A high death rate in a small community where people have very close relationship will cause serious depression or mental problem to the villagers. Hospice care is important part of care which should be included in leprosy services system especially in leprosy village or colony with only elders.

O-153

BUILDING PSYCHOSOCIAL RESILIENCE AGAINST LEPROSY-RELATED DISCRIMINATION, BASED ON EVIDENCE AND PARTICIPATORY METHODS

Presenter: Anna Tiny van 't Noordende

A.T. van ‘t Noordende[1,2,3] , P. Kuipers[4], Z. Bakirtzief da Silva Pereira[5]
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Objectives: Persons affected by leprosy and their family members still face multiple forms of prejudice and discrimination. To date, few interventions have sought to help individuals and families affected by leprosy to deal with discriminatory and exclusionary behaviour through promoting psychosocial resilience. This research used conventional and participatory research methods to identify evidence-based “core elements” for building individual and family resilience in the face of leprosy-related discrimination. The core elements were operationalised into a comprehensive intervention, which is currently being piloted in an endemic setting.

Methods: This study consists of four phases: (1) a scoping review of the English literature and a narrative review of the Portuguese literature to identify core elements of effective personal and family resilience interventions developed in other contexts. (2) In-depth interviews and focus group discussions with people affected by leprosy, their family members and health service providers in Brazil, and with health professionals in India. (3) The development of an initial intervention based on the initial results of the scoping reviews, the in-depth interviews, focus group discussions and discussions with the ILEP Panel of People Affected. (4) Contextualisation, implementation and evaluation of a pilot intervention for persons affected and their family members in Hyderabad, India.

Results: Core principles identified to strengthen resilience include: information provision, counselling and acquisition of coping skills. Multi-pronged strategies focusing on increasing knowledge and improving self-esteem were required, as was tailoring the intervention to the target community. These principles are currently being piloted in an intervention in Hyderabad, India.

Conclusion: This presentation outlines the core principles identified, the evidence-based and participatory methodology employed, the hallmarks of the resilience intervention currently underway, and the measures used to explore outcomes and investigate sustainability of the approach.

O-172

A COMPARATIVE STUDY OF THE PSYCHOSOCIAL EFFECTS OF HANSEN'S DISEASE ON MALE VERSUS FEMALE PATIENTS IN A TERTIARY GOVERNMENT HOSPITAL

Presenter: Jerlyn Maureen Servas

J.M. Servas[1], K. Mabilin-Prieto[1], M.A. Lavadia[1], M. Villanueva[1], D. Arcega[1]
[1]Department of Dermatology, East Avenue Medical Center, Philippines

Objectives: Hansen's Disease is a potentially disabling infectious disease caused by Mycobacterium leprae which has psychological and socioeconomic effects due to stigma. There are very few reports on the impact of this disease in relation to gender. This study aims to compare the psychosocial effects of Hansen's Disease among male and female patients in a tertiary government hospital.

Methods: This cross-sectional study documents 36 diagnosed cases of Hansen's Disease (18 males and 18 females) in the outpatient department. A questionnaire was designed to assess the psychosocial effects of the disease. The Dermatology Life Quality Index (DLQI) was used to evaluate the impact of Hansen's Disease on quality of life. Gender differences based on qualitative measures were assessed using Chi-square test. Data was analyzed with SPSS v20 program. Significance is based on p-values ≤ 0.05.

Results: More male patients sought medical attention a year after initial symptoms appeared (p=0.042). Physical deformities and concern about health were the common triggers for seeking help in both men and women (p=0.721). Upon diagnosis, informing the immediate family members was given importance but most males would not reveal their condition to friends. Discrimination and depression were more common among female participants. Possible problems arising from family life were of great concern in all participants initially but as the disease progressed, family life was more affected among females, while work and self-worth issues affected the males. Accessibility of medications and support from loved ones were the driving factors in starting and completing therapy. The overall quality of life scores (DLQI) showed that Hansen's Disease had a greater impact on the psychosocial well-being of females when compared to males.

Conclusion: Both men and women are similarly affected by the stigma of leprosy with no statistically significant difference. However, females are more likely to hold self-stigmatizing attitudes that can interfere with their daily lives. Physicians and healthcare staff should be aware that the stigma and psychosocial impact of leprosy does not cease, even after treatment.

O-179

THE PSYCHOLOGICAL AND BEHAVIORAL CONSEQUENCES OF LEPROSY AMONG PEOPLE AFFECTED BY LEPROSY AND THEIR FAMILY MEMBERS IN BOGRA DISTRICT, BANGLADESH: A QUALITATIVE STUDY

Presenter: Myo Htet

M. Htet[1], A.K. Thu[1], A. Priyadarshani[1], F.A.B. Hossain[1], E.D. Anggara[1], S. Hossain[1], F. Islam[1], [1]R. Azmi
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Objectives: Leprosy is beyond a medical problem. Its adverse effect on the mental wellbeing of victim and society is much higher than its physical consequences. Bangladesh National Leprosy Elimination Programme is also trying to achieve the goal of "zero stigma and discrimination" by implementing National Leprosy Strategic Plan 2016-2020. The study aimed to explore the psychological and behavioral consequences of leprosy among people affected by leprosy (PAL) and their family members so that the findings could be helpful in leprosy program strategy implementation.

Methods: Using the exploratory qualitative study design, total 28 respondents (14 PALs and 14 family members) were purposively selected according to inclusion and exclusion criteria from 6 out of 12 Upazillas in Bogra district. In-depth interview was conducted by audio-recording, followed by transcribing and translation process. Thematic analysis was done through the process of data familiarization, coding with pre-generative codebook as well as clustering and segregating with the use of data matrices.

Results: The study showed that most respondents perceived leprosy as a punishment by God, and a contagious disease based on strong religious belief, traditional and cultural norms. The evidence revealed that fear of infection is the main reason of stigma and discrimination to PALs among family members and society. On the other hand, the PALs have feeling of sadness, guilty as sinner, worried and tensed because of socio-cultural norms and fear of the stigma and discrimination. In this study, most PALs change their behavior as keeping quiet, socially isolation and restricting their social participation. Moreover, disabled PALs are more stigmatized than non-disabled ones.

Conclusion: Misperception and belief on leprosy within community is one of the main root causes of stigma which affect all the psychological, social and behavioral consequences among PALs and family members. Regarding the improper representation of whole target population, further studies with larger sample size from throughout the country would be useful. However, the national program should enforce on community awareness raising and public education with the messages relevant to the context to reduce misperception and stigma in community. Moreover, multidisciplinary approach should be strengthened to meet the psychological, social, spiritual and economic needs in giving care to PALs.

O-184

PROGRESS SELF-HELP GROUP TACKLING LEPROSY-RELATED DISCRIMINATION IN NEPAL

Presenter: Taranath Sigdel

Taranath Sigdel

Progress Self Help Group, Nepal, Association for IDEA, Nepal

Objectives: The Progress Self-Help group (PSHG) was established in 2012 by the efforts of 41 leprosy-affected persons (LAPS) who were dedicated to improving the living standards and quality of life of all LAPs. PSGH was established under the Social and Economic Rehabilitation (SER) Programme run by the Leprosy Mission (TLM) in Nepal.

The aims of the programme were to improve the physical health and social and economic status of members of the self-help group and their dependents. Actions included access to medical checkups for LAPs experiencing recurring wounds, education in self-care, hospital referral, distribution of self-care tools, distribution of free medicine, distribution of relevant information for early detection of disease, and to promote a positive message about leprosy in the community to break down stigma and barriers.

Methods: Several activities were delivered, including an inauguration day and a special Prevention of Impairment of Disability (POID) health camp and health and awareness programme. The outputs included: 19 LAPs with chronic wounds received treatment; all members learned practical self-care tools and techniques, and improvements in disability. One LAP was referred to the Aanandaban Leprosy Hospital for septic surgery and wound care.

LAPs face high levels of stigma, isolation and poverty in Nepal because of superstition and fear. PSHG addresses this by providing education for the children of members; it runs income generating programmes through microfinance projects; organises skill development and vocational training; supports members to become self-sustaining through handicrafts, and by providing general and specific medical support.

Results: To date, special medial and ulcer care has been delivered to 13 members with infected wounds, home visits have been carried out to monitor the health status of members; the self-care awareness and POID programme has been delivered for group members and other LAPs; financial support has been given for further education of two members' children; financial support has been arranged arranged through SET for two members to receive training in chicken and pig keeping; eight members have completed handicraft training; two members have improved sanitation through the SER programme, and World Leprosy Day has been celebrated since the project began.

Conclusion: The PSHG project has succeeded in reaching out to very vulnerable LAPs who receive little or no other support because of the levels of fear and stigma associated with leprosy in Nepal.

O-206

PSYCHOLOGICAL EMPOWERMENT STRATEGIES AMONG POSITIVE DEVIANTS IN OVERCOMING STIGMA AND FOSTERING SOCIAL INCLUSION: COMPARISON BETWEEN NARRATIVES OF PEOPLE AFFECTED BY LEPROSY AND THOSE LIVING WITH OTHER STIGMATIZED DISEASES IN INDONESIA

Presenter: Sarju Sing Rai

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Objectives: Psychological empowerment is known to help stigmatized individuals overcome the negative effects of stigma and related adversities, improve self-esteem, and develop self-efficacy. A positive deviance inquiry approach may be helpful in uncovering successful psychological empowerment strategies used by high performers or 'positive deviants' who are able to prevent or overcome unpleasant experiences of stigma and turn their lives around towards a positive direction of social acceptance and inclusion. This study aimed to identify and explore successful positive deviant strategies for psychological empowerment employed by people living with leprosy in Indonesia to overcome stigma and foster social inclusion, and to compare those with strategies employed by people living with three other stigmatized health conditions - schizophrenia, HIV, and diabetes.

Methods: This study comprised of 40 interviews and 12 focus-group discussions among 80 people (14 positive deviants) living with leprosy, schizophrenia, HIV and diabetes selected through convenience sampling in Jakarta and West Java, Indonesia in 2018. Psychological empowerment models of Spreitzer and Zimmerman were used for thematic analysis of the data.

Results: This study found that all positive deviants underwent a similar positive upward spiral of psychological empowerment. The process was initiated with a trigger to drive and motivate the positive deviants in making a positive change in their lives. This triggered the entry of positive deviants into an inner recursive loop of three steps. First, the individuals strengthened themselves through self-acceptance, positive spiritual beliefs, active use of information, and prioritization of self-care. Second, the persons exhibited empowerment by reclaiming control of their lives and life decisions by selective disclosure, indifference to others' stigmatizing responses, situational adjustments, and innovative behavior. Third, the persons were driven by passion and desire to help other stigmatized people through advocacy, peer support, and fostering social awareness. The end goal of empowerment for the individuals was to make an impact by diffusing the tacit knowledge of the strategies they employed for self-empowerment to others, and eliciting public understanding and empathy towards people living with their condition – paving the way to social acceptance and possible inclusion. With each recursive step the process further empowered the positive deviants, creating an upward spiral of psychological empowerment.

Conclusion: The strategies employed by positive deviants can help people affected by leprosy and other stigmatized diseases in Indonesia in overcoming stigma and fostering social inclusion through interventions that facilitate their entry into the positive upward spiral process of psychological empowerment.

O-213

145 YEARS AND COUNTING: WHAT HAS THE LEPROSY MISSION LEARNT FROM SELF HELP GROUPS?

Presenter: Naushad Hasan Ansari

Naushad Hasan Ansari[1] Tina Mendis[2]

[1]Program Manager, The Leprosy Mission Trust India, Uttar Pradesh. [2] Head: Sustainable Livelihood & Empowerment Programs, The Leprosy Mission Trust India, New Delhi.

Introduction: The Leprosy Mission currently works in 10 states in India and implements 8 community outreach programs to improve quality of life for those affected by leprosy, disability and other marginalized groups for socio-economic and political inclusion through promoting Self Help Groups. Self Help Groups attempt to address and solve several socio-economic and political issues by a process based on shared experience. The Leprosy Mission strongly believes in the principle of nothing about us without us, so the impact of self-help groups on the lives of individual and communities will be highlighted by people affected by leprosy, people with disabilities and other marginalized communities.

Objectives: Highlight key learnings through the 2500 odd self-help groups established over the past 5 years.

Methods: A series of participatory discussion, case studies, focus group discussion, reviewing project reports, evaluations reports and interviews with multiple stakeholders

Results: Result indicates that 20239 marginalized community members are actively involved in financial transactions and show enhanced income. The process of accessing mainstream resources such as housing, street lights, sanitation facilities, safe drinking water etc. were made easier thorough SHG led advocacy. Self-help groups have solved social issues such as gender discrimination and violence against women. Importantly, discrimination against people affected by leprosy and disability were reduced to almost nil and new cases of leprosy were diagnosed early and disabilities were prevented. Significant improvement in mobility, decision making, negotiation skills and rights based advocacy among people affected by leprosy, other disabilities and marginalized women observed..

Conclusion: Self Help Groups create an enabling environment for effective advocacy and promoting socio-political and economic inclusion. It is pivotal in reducing/ending various forms that discrimination prevalent in society.

O-214

A NEW APPROACH THAT PAYS: LEPROSY AWARENESS CAMPAIGN WITH A MASCOT

Presenter: Nikita Sarah

N. Sarah[1], J. Oommen[2]

[1]Head- Advocacy and Communication Domain, TLMTI, [2] Team Leader-Communication, TLMTI

Objectives: Considering that India accounts for 60% of the *world*'s new *leprosy* cases, and despite running various campaigns by the Government of India and organisations working in the field of leprosy, India could not

eliminate leprosy, The Leprosy Mission Trust India (TLMTI) conceptualised a 'fresh approach to awareness raising' through an integrated social awareness campaign using a mascot with a unified strategy to deliver the message and recall across India, as busting the myths and spreading awareness about the disease is fundamental to the elimination of leprosy.

Methods: After much brainstorming and studying the success of various campaigns, both in public health and commercial, TLMTI created a campaign mascot by the name ***Sapna*** (*sapna* means 'dream' in Hindi), with a tagline '*Kyunki Sapna hai kusht mukt Bharat ka*' (can be translated as 'because the dream is about a leprosy-free India'). Sapna, a fictional character, is a 12-year-old girl from a rural community. She was diagnosed with leprosy, but overcame the challenges of the disease. She has devoted her life to raising awareness about leprosy in the country – because her most cherished dream is to see a leprosy-free India! TLMTI launched the campaign – Sapna Leprosy Awareness Campaign – in 2017. Uniform and consistent messaging was adopted across all traditional and non-traditional channels to reinforce each other, utilising an assortment of channels to send out consistently branded messages which the spectrum of audiences could relate to.

Results:

1) Impressed by the new approach to raising awareness about leprosy, the nodal government department for leprosy control programme in India, the Central Leprosy Division of the Ministry of Health and Family Welfare, Government of India, adopted the mascot.

2) The government launched its leprosy awareness campaign with Sapna, during World Leprosy Day in 2018. Sapna has become a familiar face across the length and breadth of the country, giving a new dimension to the campaign.

Conclusion: Much awareness-raising has been done ever since MDT was introduced in India, but still the country could not eliminate leprosy. Hence, a fresh approach using a tried and trusted way, i.e., with a mascot, increases the recall value of the key messages disseminated through the campaign. The bubbly girl – *Sapna* – passionate about making India leprosy-free makes you smile and think – and act!

O-232

QUANTITATIVE IMPACT OF COMMUNITY BASED ACTIVITIES: COMPARISON OF PRE AND POST INTERVENTION SITUATIONS IN EXPERIMENTAL AND CONTROL AREAS

Presenter: Solomon Raju Moturu

Raju MS
Social Scientist, The leprosy Mission Trust India, Research office TLM Community Hospital

Objectives: To assess the impact of community action programmes carried out by the village committees known as Stigma Reduction Organizing Committees (SROC)[1] formulated as per the choice of village social structure.

Methods: A total 60 SROCs were formulated in the state of CG, UP and WB (@ 20 in each state), out of which 32 were of small size, having 8-12 members, 22 were of medium size, having 13-15 members, and 6 were big having 16-20members. Out of them 20 committees had the Sarpanch/ Panchayat member/ Pradhan as the Chairman of the committee, 6 had teachers, 10 had the village doctors, 10 had SHG leaders and 14 had Gram Vikas Samiti workers or social workers. Seven committees constituted of males only, 5 were exclusively female dominated but majority of those (48) consisted of both males and females. In 26 committees, leprosy afflicted persons were included.

The quantitative impact community based activities carried out by SROC has been assessed by comparison of pre and post intervention situations in both experimental and control areas, towards acceptance of the leprosy affected, considered as *positive change* and vice versa is *negative change* in five major areas viz. family, community, workplace, religious centres and treatment centres.

Results:

1 Though, there is positive change in the experimental area with reference to all the family situations, due to small sample size, the change is not statistically significant, except in case of 2 situations viz. participating in family discussion & sharing the food along with other.

2 Similarly, the change is negative with reference to all the family situations(except to do house hold work like others), in the control area but significant only in case of participating in the family situations.

Conclusion: This may be inferred that the positive change in the experimental area is due to SROC/community action, where as the negative change in the control area signifies the chronological deterioration of the situation due to lack of any positive social change inputs.

O-239

THE POTENTIAL IMPACT ON LEPROSY SERVICES THROUGH FAITH-BASED INITIATIVES AND THE MOBILIZATION OF RELIGIOUS LEADERS AND THEIR CONGREGATIONS

Presenter: James Pender

J.S. Pender[1]
[1]The Leprosy Mission England and Wales (TLMEW)

Objectives: To effectively reduce stigma and provide leprosy services in hard to reach locations through mobilization and partnership with religious leaders, congregations and faith-based organisations. Thus, creating a significant contribution to the success of societal stigma reduction, improved health outcomes and economic wellbeing.

Methods: While engaging in leprosy initiatives in ten focus countries in Africa and Asia, The Leprosy Mission England and Wales (TLMEW) has actively sought to pilot initiatives partnering with faith-based organisations, theological colleges, churches and inter-faith committees to expand the reach and impact of leprosy-focused programmes. This has ranged from leprosy case detection, awareness raising, stigma reduction and medical service provision. The introduction of faith led 'training of trainers', using modules focusing on specific areas of discussions, has been used to mobilize religious leaders to raise awareness and work to reduce leprosy stigmatization. Conservation agriculture training materials incorporating related scriptures has been used to motivate rural leprosy affected communities to change farming practices. While faith communities have been given technical training to provide services in remote locations where leprosy and disability provision is not available, based on volunteers supporting a small number of paid staff.

Results: As eight-in-ten people worldwide identify themselves as having religious faith and probably even more strongly in leprosy endemic countries, partnership within faith-based organisations has been readily forthcoming. As a faith-based organisation TLMEW has started exploring partnerships with churches and Christian organisations, where it has existing linkages, to see how faith motivation to help the vulnerable, can open doors to supporting those affected by leprosy and facilitate change where core beliefs in local communities are heavily influenced by religious faith. This approach has enabled:

- Detection of 65 new cases of leprosy

- Complication management in conflict affected areas where other organisations are not permitted
- Disability and leprosy resource centres to provide services to 5500 people
- Effective uptake of improved agricultural techniques by over 4000 households in leprosy affected communities through incorporation of scriptural verses alongside technical material;
- Church-led interfaith partnerships with Government leprosy officer support raised leprosy awareness of 27220 people.

Conclusion: The partnership between leprosy focused organisations and religious or faith-based organisations has enabled programmes to be more effective as well as reach people and areas that otherwise would not have been impacted. It is recommended in order to go the last mile in elimination of leprosy, religious leaders and their congregations be more widely used in faithbased leprosy initiatives.

O-242

THE IMPACT OF LEPROSY REACTIONS ON PATIENTS' LIVES IN EAST JAVA, INDONESIA: A PARTICIPATORY STUDY

Presenter: Annisa Ika- Putri

Annisa Ika Putri[1,2], Kevin de Sabbata [2], Medhi Denisa Alinda[1], Regitta Indira Agusni[1], Bagus H. Kusumaputra[1], M. Yulianto Listiawan[1], Cita R.S. Prakoeswa[1], Barbara de Barros[3], Stephen L. Walker[3], Ruth M.H. Peters[2]
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Objectives: To gain further insight into the impact of leprosy reactions on the everyday life of patients in Indonesia by analysing the clinical, practical and relational-social issues influencing their experience of the condition, and identifying person-centred solutions which can lead to an improvement in these individual's quality of life. The study is one of the first accounts putting at the centre the view of people with leprosy reactions and looking into the nuances of their subjective experiences.

Methods: First, 30 in-depth interviews have been conducted with East-Javanese individuals with type-1 and type-2 leprosy reactions above the age of 16, with the aim of studying how they manage their everyday life and care. Questions have focused on the participants' life before and after leprosy reactions, experiences of seeking care, barriers and facilitators for timely treatment, patients' needs and worries, faith in treatments. Second, 4 focus groups were conducted involving caregivers, and health professionals, with the aim of getting further insights into the causes of the challenges faced by people with leprosy reactions in different community and care settings, and exploring possible solutions. Finally, a participatory workshop with people with leprosy reactions has been organised in order to give meaning to the findings and elaborate specific recommendations. Data, collected between January and May 2019, have been analysed through content and discourse analysis.

The study adopts a participatory approach by giving people with leprosy reactions a voice in the development of solutions. Such an involvement is obtained by employing two research assistants living with leprosy reactions in data collection and analysis phase, and through the participatory workshop in which people with leprosy reactions are given the possibility to impact on the conclusions and recommendations emerging from the study.

Results: In the results section we will illustrate how type-1 and type-2 reactions influence in various ways the life of people affected, their treatment chances and their attitude towards life and care. We will explore the challenges of the study participants and focus on symptoms typical of their condition such as neuropathic pain, practical issues such as the lack of support towards covering healthcare, and relational-social dynamics such as stigma.

Conclusion: People with leprosy reactions face a number of clinical, practical and relational-social challenges. Such barriers can be significantly attenuated by adopting a care approach which, starting from the opinions of

people affected, provides financial and practical support tailored to their needs, information programmes and more extensive psychological support.

O-243

PERCEPTIONS AND KNOWLEDGE OF LEPROSY: A BASELINE STUDY IN FATEHPUR DISTRICT, NORTHERN INDIA

Presenter: Suchitra Lisam

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Objectives: Successful introduction of post-exposure prophylaxis (PEP) interventions for contacts of leprosy patients requires knowing the level of knowledge and the perception of leprosy among the populations, so as to tailor communication optimally to the current local context and situation. This study is a baseline study of the PEP++ project and aimed to access the knowledge, attitudes and practices regarding leprosy in Fatehpur district of Uttar Pradesh state, India.

Methods: The study used a community-based cross sectional design with a mixed-methods approach. We assessed knowledge, attitudes and practices (KAP) with the KAP measure, and assessed stigma with the Explanatory Model Interview Catalogue community stigma scale (EMIC-CSS, range 0-30) and the Social Distance Scale (SDS, range 0-21).In addition, in-depth semi-structured interviews and focus group discussions were conducted with all participant groups. The quantitative data were analyzed using step-wise multivariate regression. The qualitative data were analyzed using open, inductive coding and content analysis.

Results: A total of 446 participants across four participant groups were included in the study: 100 persons affected by leprosy, 111 close contacts of persons affected by leprosy, 185 community members and 50 health care workers. In addition, 24 in-depth interviews and four focus group discussions were conducted. We found that 13% of the participants had adequate knowledge of leprosy while 22% of the participants had poor knowledge. Knowledge regarding cause (answered correctly by 10% of the participants), mode of transmission (5%) and symptoms of leprosy (16%) was particularly poor. The mean EMIC-CSS score was 15.3 (95% CI, 14.6-16.0) and mean SDS score 7.2 (95% CI, 6.6-7.8), indicating a high level of stigma among the public. Better knowledge of leprosy was associated with lower levels of social distance towards persons affected by leprosy.

Conclusion: This study revealed poor knowledge regarding leprosy and high levels of stigma towards persons affected by leprosy. Community education that takes cultural beliefs, knowledge gaps and fears into consideration may improve knowledge, reduce misconceptions and positively influence the perception of leprosy.

O-244

SOCIAL EXCLUSION/INCLUSION AND LIVELIHOOD STATUS OF LEPROSY AFFECTED PEOPLE IN NEPAL - A CASE STUDY OF JHAPA AND UDAYAPUR DISTRICTS

Presenter: Bashudev Yadav

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Objectives: Leprosy has long been remained as a medical as well as a socially and culturally constructed problem in Nepal; there is a very common belief and folklore that the disease causation is rooted in religious and cultural

beliefs, rather than biological or pathological conditions. As a result, s/he suffers from social rejection including social participation, mental suffering and a denial of human rights apart from disease burden. Therefore, this study was conceived against that people affected by the disease and their family members who are often discriminated against and denied opportunities for education, access to health services, rehabilitation, education, employment, livelihood opportunities and to social participation.

Methods: The project formally started in April 2016 by surveying 276 leprosy-affected persons (Male – 60%, Female – 40%) from two districts – Jhapa and Uadayapur.

In addition, the study interviewed 40 key informants identified by reputational or positional criteria as knowledge about leprosy-affected people. The study also conducted six focused group discussions throughout the study.

Results: Basically the results are subdivided into four areas which are:

Livelihood**:** It is revealed that there is an enormous variation in the form and intensity of social exclusion between the affected persons who carry physical consequences of the disease and who do not. Of the total respondents, 33% people said that they had some kind of restrictions to adopt various livelihood options.

Discrimination**:** Out of the total respondents, 21% reported that they were discriminated and misbehaved by the family members. The study found that only few people (12%) reported that they had been discriminated in participating socio-cultural life.

Participation**:** However, it is revealed that restrictions on socio-cultural sphere do not take place overtly, but covertly, community members do not dare to exclude and restrict leprosy-affected people to participate in the socio-cultural events.

Giving meaning to leprosy and Stigma**:** Although direct physical social exclusion of leprosy affected people is impossible, the practice of social exclusion and participation restrictions on leprosy affected people exists in the community in the invisible form. The exclusion and asymmetry of relationships is exercised less in the realm of behaviour, but more in mental realm.

Conclusion: With the situation of social exclusion/inclusion of leprosy affected people, this project aimed to find out whether some of the major socio-economic and cultural barriers that might have hindered leprosy-affected persons' access to health services, rehabilitation program, education, employment, livelihood opportunities and to social participation.

O-245

EFFECTIVENESS OF COMMUNITY BASED REHABILITATION PROGRAM AMONG PEOPLE AFFECTED BY LEPROSY (PALs) AND PEOPLE WITH DISABILITY (PWDs) IN THE RURAL SETTINGS OF NEPAL

Presenter: Nati Desar

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Objectives: Community-based rehabilitation (CBR) programs aim to address socio-economic obstacles alongside patients and community members to generate more effective participation within their communities. This study aimed to measure the improvement of social status of people affected by leprosy (PAL) and people with disability (PWD).

Methods: A CBR program called “participatory action for community empowerment and development” was launched in high leprosy-endemic Madi Municipality, Chitwan, Nepal, from January 2015 - December 2018. Self-help groups (SHGs) consisting of 10-20 people comprising PAL and PWD were established in the region. Socio-economic survey was performed in 4 villages in January 2015 to assess socio-economic status of SHG members. Custom economic survey and Participation Scale were utilized for assessment. Poverty was defined as daily income of USD 1.9/day (WorldBank 2015). For CBR interventions, microfinance systems were initiated to SHGs. SHGs received essential trainings related to entrepreneurship and leadership, prevention of disability, health and sanitation, capacity building and co-operative management at the beginning and/or during the study period.

Results: Total n=328 (45 PALs, 283 PWDs) were surveyed in January 2015 and n=173 (29 PALs, 144 PWDs) in December 2018. Sanitation measures toilet utilization was increased in PWDs ($p<0.01$) and PALs. Participation restriction measured by P scale revealed decrease in severe and extreme levels in PWDs ($p<0.05$) but not in PALs. The higher levels of severe and extreme social participation was observed in PWDs compared to PALs ($p<0.001$) before and after CBR interventions. Increased trends of average food sufficiency was observed in SHGs members; statistically increased in PWDs but only slightly increased in PALs. Seeking for Disability Cards from the Government and its utilization was significantly increased in PWDs after CBR interventions.

Conclusion: Significant improvements were observed in SHGs with respect to utilization of toilets, social participation, food sufficiency, seeking and utilizing Disability Cards (for PWDs) after CBR interventions. Higher effectiveness of CBR interventions was found in PWDs relatively compared to PALs. This study reveals that the effective CBR is crucial for quality of life improvement in PWDs and PALs.

O-249

EVALUATION OF THE ECONOMIC BURDEN OF LEPROSY AMONG MIGRANT AND RESIDENT PATIENTS IN GUANGDONG PROVINCE, CHINA

Presenter: Mingzhou Xiong

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Objectives: Our goal was to assess the economic burden of leprosy on migrant and resident patient populations in Guangdong province, China.

Methods: We conducted a population-based cross-sectional survey from February to July of 2016. A self-designed questionnaire was administered to leprosy patients who: (1) had registered in Leprosy Management Information System in China (LEPMIS) by the end of February 2016, (2) had received multiple drug treatment (MDT) drugs at a local leprosy control institution for three consecutive months or had had at least one physical check in the past half year, and (3) were willing to take part in the investigation and give informed written consent. Demographic characteristics, Financial and disease information, and costs before and after leprosy diagnosis were collected and compared using t-test and $\chi 2$ test.

Results: A total of 254 participants completed the questionnaires, including 168 males and 86 females. Migrants and residents accounted for 33.9% and 66.1% of patients, respectively. Among migrant patients, the median cost before diagnosis was $131.6 (39.2-450.9), the median yearly cost of leprosy treatment after diagnosis was $300.6 (158.4-868.5), and the median yearly cost of leprosy complications was $69.5 (11-178.4). In comparison, among residents the median yearly costs were $152.4 (30.7-770.9) pre-diagnosis, $309.7 (103.2-1016.7) after diagnosis, and $91.9 (32.6-303.1) for leprosy complications. Base on this, we determined that the median yearly total expense after diagnosis amounted to 15% of migrant and 38% of resident patients’ annual income.

Conclusion: Leprosy places a heavy economic burden on both migrant and resident leprosy patients and governmental policies and programs could substantially alleviate this. Measures to implement more active surveillance and early diagnosis would benefit both populations, while labor protection and medical insurance are urgently needed for migrant patients and easier access to medical services and social aids could substantially decrease the burden of leprosy for resident patients.

O-252

SOCIAL AND TECHNICAL DETERMINANTS OF INCOME GENERATION ACTIVITIES IN FRAGILE AND POST-CONFLICT SETTINGS: CASE OF SIX VILLAGES OF KONGO CENTRAL, DEMOCRATIC REPUBLIC OF CONGO

Presenter: Raphael Mbuyamba Mulamba

Raphael, M, Mulamba[1], Jacob K, Kadima[1]
[1]The Leprosy Mission DR Congo.

Objectives: To explore the social and technical determinants of success in managing income generating activities (IGA) in six leprosy affected communities in Kongo Central province

Methods: Qualitative study, using semi-structured interviews with key informants, focuses group discussions and SWOT analysis in these 6 communities

Results: The members of the 6 communities identified a number of factors that determine the success of IGAs**:**

1. Deep context analysis and beneficiary capacity assessment
Context analysis is key. For it is important to analyze means of transport and disposal of agricultural products, land fertile, availability of agronomist in the place, physical and technical capacities for this type of activity. Is there plague and other epidemics? Are the houses close to the main road?

2. Clear and precise communication from the beginning.
Clear communication from the beginning of the IGA is a key technical component. If not the beneficiaries think that these are donations.

3. Participation and motivation.
The involvement of the beneficiaries from the design to the evaluation of the IGA project was key to its success.

4. Proximity monitoring.
Close monitoring, i.e. follow-up by local committee members, promoted repayment and good management.

5. Continuing Education
Beneficiaries who were supported through in capacity building managed their IGA well.

6. Initiation to savings
Savings-minded beneficiaries who applied the savings tips, were well managed and reimbursed for those who did not have the savings.

7. Facilitate the choice of lucrative activities
Beneficiaries who made wise choices about the activities to be carried out with local committee members, according to the needs of the community, achieved good results.

8. The beneficiary's support in their daily activity.
Beneficiaries who were supported in what they were already doing were able to reimburse to their loan. Those who chose the new activities spent time to learn and get used to these new activities.

9. Gender.
Women managed well their IGAs and are among the people who paid back than men, because in the context of extreme poverty women are the now the breadwinner and very specialized in informal business.

Conclusion: The success of the management of IGAs in context of extreme poverty depends on social and technical factors, which often are lacking among many health professionals. These results appeal for a intersectoral collaboration at the village level.

O-255

REDUCTION OF STIGMA AND DISCRIMINATION OF LEPROSY AND UPLIFTING SOCIO-ECONOMIC STATUS OF PEOPLE AFFECTED BY LEPROSY AND DISABILITY

Presenter: Erica Sithling

Erica Sithling
Nepal Leprosy Fellowship, Nepal

Objectives: To reduce social stigma and discrimination and uplift socio-economic status through mobilization of the People Affected by Leprosy and Disability in community development activities.

Methods: Through coordination with local and district level Government, community situation analysis was done using Participatory Rural Appraisal tools and provided them orientation. Then the local health workers and key community persons including People with wounds with deformity were educated about leprosy and its consequences. In the beginning, a group of 4 Leprosy affected persons with deformities were gathered and provided self care trainings for their physical wellbeing and later the number of leprosy affected were increased to 18. Then the mainstreaming approach was taken place to develop into Disabled Peoples Organization to get recognized from the Government and was later developed into cooperative. Interactions among the group members were held to get involved in the local community development and that resulted the necessity of having organized milk collection and selling centre. After participating in the Proposal Writing training, they submitted a proposal to local Government, supporting relevant organizations and political groups. Later the group received financial, physical and recognition support and started putting effort in addressing difficulties of collecting, storing, delivering and selling the milk at nearby market. They established their own collection center and started selling milk at their standard rate through the support received from organizations.

Results: The rate of milk also increased with Rs.10/- as profit per liter by each farmer, initially 30 households participated and now increased to more than 300 households and among them 18 leprosy affected persons. It began with 50-60 liters and increased to 500 liters making Rs.5000/- profit per day. From the income they bought their own vehicle for collection & delivery, appointed a paid staff and bought cooling machine with the support from local stakeholders. Participants have no uncertainty to wait for vendors to collect milk and they sell milk at the center and reasonably get paid. This activity involved most of the local community farmers seeing the benefit that created positive environment for their socio-economic improvement. Now the group is gaining attention from the stakeholders and other communities and reduction of stigma and discrimination is observed in the community.

Conclusion: Continuous self care for physical wellbeing, then increased participation, proper networking activities and increasing access to local rightful resources helps reduce stigma and discrimination and increase socio-economic status of people affected by leprosy.

O-259

A STUDY OF ISSUES FACED BY ADOLESCENT LEPROSY PATIENTS

Presenter: Anita Ghising

Anita Ghising[1] , Panina Rai[1], Bijay Shrestha[1]
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Introduction: Adolescence - young people between the ages of 12 and 18 years - has been described as the period in life when an individual is no longer a child, but not yet an adult. It is a period in which an individual undergoes enormous physical and psychological changes. In addition, the adolescent experiences changes in social expectations and perceptions. Physical growth and development are accompanied by sexual maturation, often leading to intimate relationships. The individual's capacity for abstract and critical thought also develops, along with a sense of self-awareness when social expectations require emotional maturity.

Objectives: To identify the challenges faced by leprosy affected adolescents –
• Educational
• Social
• Family
• Physical

Methods: This will be a cross-sectional study, consisting of 50 (25 males and 25 females) adolescents and 25 over 40 aged adult with leprosy who were registered for treatment at Lalgadh Leprosy Hospital and Services Centre at least 1 year at the time of interview to compare the issues of adolescents with leprosy. The study will be conducted from January 2019 to June 2019. Altogether, 75 participants will be interviewed by using the SARI stigma scale.

Research ethics approval will be sought from the Nepal Health Research Council (NHRC).

Results: The results of the study will be available after the completion of the study and will be shared in the International Leprosy Congress, Manila.

Conclusion: The findings of the study will make an invaluable contribution towards rendering visible what it actually means to be an adolescent with leprosy. It will highlights what action is needed on the part of government and LLHSC if those adolescents are to realize their rights, to overcome the profound and devastating struggles they face daily, and to be afforded the dignity that is the birth right of every human being.

O-291

ELIMINATION OF SOCIAL DISCRIMINATION AND REBUILDING PEOPLE AFFECTED BY LEPROSY (PALS) CONFIDENCE BASED ON "PATIENT-ORIENTED APPROACH" – SOME EXPERIENCES OF THE LEPROSY PROJECT

Presenter: Kai Man Kam

X.F. Xu[1], J. Shiri[1], J. Erqie[1], H.F. Liu[1], H.Y. Wang[1], S. Riha[1], M. Chen[1], S.W. Yang[1], Q. Asha[1], Y. Ma[1], N. Pirie[1], P. Barrett[1], T. Leung[1], S. Tseung[1], G.S. Liem[1], K.M. Kam[1,2]

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Objectives: To describe the psycho-social aspects of work by The Leprosy Project (Hong Kong) amongst People Affected by Leprosy (PALs) in parts of China.

Methods: Our project worked in an ethnic area in China, aiming to help resolve issues on mental health of PALs. We performed PALs-oriented activities, as follows:

1. Launch interactive campaigns that focused on the lives of PALs
PALs are direct victims of discrimination, and most of them suffer from inferiority complex. Instead of serving PALs based on their needs, some external organizations worked with their own perspective without PALs' consent. These often lead to more harm than good. We encouraged PALs' own initiatives in organizing activities during ethnic festivals, and attracted community participation (including key local government officials) in interactive activities (eating, dancing together, hugging each other) during torch festival events.

2. Reshaping the social image of PALs based on capacity building during rehabilitation.
Self-denial, low social image of PALs deepen the social discrimination, e.g. some dare not ride on public transports to town. We organized one-day city tour for PALs, to go to big shopping malls, watch movies, stay in hotels. Conversely, if they become confident/capable, they can resist social discrimination and also win extra resources and opportunities in self-development during rehabilitation.

3. Project based capacity building through self-empowerment of PALs
Illiterate PALs have to endure long-term stigma from the community. Capacity building is a time-consuming and laborious process, which can become vague or too broad. To empower PALs, we improved their ability by guiding through project execution steps, as well as management/ allocation of resources. This also meant that management team (with PAL participation) was required to execute projects. When management team had no right in making decision, capacity building became empty talk.

Results: Our campaigns became more acceptable to PALs and their families, and able to improve quality of their lives. Leprosy would no longer be a label of discrimination, but become associated with "hard-working", "capable","team-oriented" and "modest". One key factor was the suitable adaptive changes of project facilitator. Facilitators must be good at guiding growth in organization of PALs in all aspects of the project. The establishment of a self-management organization was critical.

Conclusion: Through our patient-based approach, we promoted mental health development of PALs and delivered the correct decision-making during project execution. These processes can at times be difficult, and we need to reconnect, reflect and continuously improve our practices.

O-308

SUSTAINABLE LEPROSY CARE : A MODEL

Presenter: Pius Kalathil

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Objectives:
To eliminate the stigma traditionally attached to leprosy.
To provide comprehensive care to leprosy affected persons.
To integrate leprosy care with feasible general health care.
To eliminate stigma attached to leprosy and its victims.
To generate resources from the general health clients to provide free treatment to the leprosy affected and to make the facility self-supporting.

Methods: The process of integration began in the year 2000. Obtained approval of management for diversification. Identified the areas of feasible diversification and integration. Availed initial support from GLRA and CBM. Conscientized and trained the existent staff, recruited new ones required. Modified the infrastructure and acquired necessary equipment. Publicized through local community groups and satisfied clients. Net-worked with community organizations. Constantly monitored, reviewed all aspects and modified as required emphasizing on quality care at low cost, with human touch at all levels.

Results: The efforts gradually paid off; the stigma attached to leprosy and the Hospital diminished and more people began to avail the services. By 2010 the facility was widely accepted as an integrated facility providing quality care for leprosy, tuberculosis, skin, eye, dentistry, orthopedics and diabetes. The hospital and its services for the leprosy affected which were totally dependent on donations from Organizations like GLRA, began to generate resources from general health services and became less dependent on external donations to continue its free services for the leprosy affected. By 2012 GREMALTES became self-supporting and GLRA support ceased. The team gained more self-confidence and ready to take up more challenges. In 2013 took up the management of another Health Centre.

Conclusion: The objectives have been mostly achieved. The stigma attached to leprosy has diminished. GREMALTES has become a busy, integrated health care facility. Of the 125000 clients patronizing annually, only around 2% are leprosy and tuberculosis affected; thanks to the drastic reduction in the leprosy prevalence in the community; other 98% constitute general patients. It is a matter of pride and satisfaction that the Organization is accepted by the community and is confident to run on its own steam. Thanks to GLRA and others for providing the foundation to work on; and the committed staff for achieving wider acceptance and sustainability.

O-315

HEALTH-RELATED QUALITY OF LIFE IN PATIENTS AFFECTED BY LEPROSY: CROSS-SECTIONAL OBSERVATIONAL STUDY IN A REFERENCE CENTER

Presenter: Ximena Illarramendi

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Objectives: To assess health related quality of live (HRQoL) in patients affected by leprosy in different stages of the disease and follow-up

Methods: Cross-sectional observational study in patients attending the Souza Araújo Outpatient Clinic, Fiocruz, Rio de Janeiro. We interviewed adults affected by leprosy with more than two months of multidrug therapy (MDT) or during follow-up after release from therapy (RFT) for control or complications. We applied the Short Form Health Survey (SF-36) HRQoL questionnaire that has 36 items organized in 8 scales that measure physical and mental components of HRQoL: physical functioning (PF), role physical (RP), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role emotional (RE), and mental health (MH). We compared three groups of patients according to the period of interview: during MDT, during RFT with (RFTC) and without complications (RFTNC). We analyzed the scales according to sociodemographic and clinical variables.

Results: We evaluated 139 patients, 68.3% male, mean age of 48.86±14.7 years. RFTC patients (n=60) were evaluated in average at 72 (±67.2) months after RFT, while patients of the RFTNC group (n=32) an average of 56.2 (±34.6) months after RFT. Main complications were reactions (73%) and neuropathic pain (27%). Women had significantly less scores in all of the scales except for RE, SF and RP. Regarding the period of interview, RFTC patients had significantly lower scores than MDT (n=47) and RFTNC groups in PF and RP (p=0.003 and 0.027,

respectively). Comparison of patients followed after RFT showed that patients with complications also had significantly lower scores in VT than patients without complications. The three groups had similar scores in MH, SF, BP and GH. HRQoL was significantly lower in women than in men especially during MDT in all of the physical components, except for GH, and two elements of the mental dimension: VT (p=0.012) and MH (p=0.001). In the RFTNC group, it was only different in GH (p=0.013) and RE (p=0.013). No difference was observed between the genders in the RFTC group.

Conclusion: Complications are common after RFT and are an important cause of morbidity in leprosy; consequently, they lead to reduced HRQoL and to the elevated human costs of the disease. The physical and mental effects that leprosy causes are long lasting after diagnosis. Therefore, care for the person affected by leprosy must consider a multidisciplinary approach and preventive strategies that consider QoL, especially in women both during MDT and after RFT.

O-332

UNDERSTANDING CONSEQUENCES AND ITS IMPACT ON THEIR WELLBEING IN INDIA

Presenter: Rajni Singh

Rajni Kant Singh*, Dr Eleanor MacPherson**
*LEPRA Society, Bihar, India **LSTM, Liverpool, UK

Aim: To understand the consequences for men and women living with disabilities caused by LF and leprosy and how they impact on their wellbeing in the Munger District in India.

Objectives: To understand the challenges faced by men and women living with LF and leprosy.
To explore how the two diseases impact on an individual's daily life.

Methods: Qualitative methods were used to meet the study objectives. These included in-depth Interviews and focus group discussions. Purposive sampling was done, and twenty participants were selected for in-depth interviews and forty participants for five FGDs, from all backgrounds (age, gender, religion and occupation). All the interviews were digitally recorded, and notes were taken to capture the participant's emotional responses. A thematic framework approach was applied to analyse the data.

Results: Participants discussed the ways in which disability restricted their participation in daily life. Many had lost their jobs and had limited job opportunities. Stigma is the main element of distress, making them fearful, depressed, anxious and sometimes led to suicidal thoughts. Self -stigma was more common in LF (Elephantiasis) and it has significant impact on the quality of life. Participants had lost belief in the public health system and sought help from traditional healers. This out of pocket expenditure pushes them into poverty.

Conclusion: It is recommended that the Government should focus on early case detection and treatment through an intensive awareness programme. Health service delivery needs to be strengthened for the prevention of worsening disabilities.

O-335

THE DRAMATIC CHANGE AS A SOCIAL MAJORITY IN KOREA

Presenter: Kil Yong Lee

K.Y.Lee[1]

[1]President, The Korean Federation of Hansen Associations(KFHA), Seoul, Korea. Republic Of

Objectives: Those affected by HD (HD people) as known as leprosy, who were socially segregated in Korea, hammered away at imminent issues by themselves and have legislated the Hansen-related law by suggesting to the government together with the National Assembly. Making a role model for this fruitful movement, it is important to learn about the paragon of messages for many HD prevalent countries in the world so that they can carve out for their challenges positively as HD people have been strived in Korea.

Methods: For the first time, HD people had initiated a livestock-raising business in the resettlement villages with financial assistance from government, Christian communities and foreign charitable organizations. With this seed money, we incredibly achieved the self-support as spiritual and socio-economic rehabilitation. HD people never do anything to accomplish if we could not be united together. Based on this grit, our solidarity facilitates to make our voice heard to the Korean government and society.

Results:
1. Recuperation of the social status of HD people through various activities
2. Enhancing integration into the general public and improving the welfare system tailored to HD people
3. Participation in the policy-making program and revising the law
4. Promotion of HD People's human rights and welfare around the world

Conclusion: Focusing on the shaping for a better future, KFHA is the driving force to struggle to protect human rights and promote the quality of life. On the basis of valuable motivation, we understand that our unified big voice bring about better than expected. Accordingly, it is most important to acknowledge that we should work out our own hardship. When we enthusiastically tackle the HD issues, we are able to integrate into the general public and have become key members who can make a strong voice to society. Further, I think these advanced experiences in Korea should become an ideal pattern for other countries.

ILC-2: SOCIAL SCIENCE:

2.4 Participation

O-014

PILOTING PEOPLE AFFECTED BY LEPROSY AND DISABILITIES TO BECOME JOB PLACEMENT COACHES TO LINK OTHER COMMUNITY MEMBERS WITH DISABILITIES TO EMPLOYMENT

Presenter: Nyi Nyi Lwin

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Objective: Following the motto of the disability movement, 'Nothing About Us, Without Us,' The Leprosy Mission Myanmar (TLMM) pilots increasing income for people affected by leprosy and disability in Yangon, Mandalay, and Taungoo, Myanmar by supporting linkages to employers and income-generating opportunities via paid Job Placement Coaches (JPCs) who, themselves, have disabilities.

Method: CBID experts at Enablement (Netherlands) facilitated an 8-day JPC classroom-based training, followed by two days on-the-job training at a job fair and in the field, giving them opportunity to apply their newly learnt skills in practice.16 people affected by leprosy and/or disability were trained to become paid JPCs. 6 TLMM Disability Resource Centre staff were also trained, to enable them to support the JPC team if needed. Following the initial training, 12 months of coaching was provided by Enablement while JPCs entered their communities to link others with employment (formal and informal) and raise awareness of rights to employment for people affected by disability.

Result: This activity is on-going. Over a period of 10 months, JPCs supported 615 persons with disability to complete a vocational skill and interest assessment and improved their knowledge of job opportunities, the rights of people with disabilities, and the Myanmar Disability Law. So far, JPCS have linked 23 people with disabilities to waged employment resulting in an increased income, 19 people with disabilities have joined vocational training supported by JPCs, and JPCs met with 11 different potential employers to advocate for the employment of people with disabilities. Enablement also created a comprehensive 'Training Manual: Job Placement Coaches for People with Disabilities' that can be widely disseminated for replication across Myanmar (and other countries). Challenges faced in securing employment include low educational and skill levels of people with disabilities due to lack of inclusion in training programs, negative attitudes of potential employers, overprotection by non-disabled family members, and lack of accessible transportation. Challenges faced in engaging people with disabilities as JPCs includes general lack of educational and vocational experience, low self-confidence leading to challenges approaching and negotiating with employers, negative attitudes of employers towards the JPCs (e.g., not taking them seriously), and low capacity to manage a larger client base.

Conclusion: Investing time and resources in honoring 'Nothing About Us, Without Us' by empowering people affected by leprosy and/or disability to become JPCs for people with disabilities is a valuable and impactful strategy for economic empowerment of people with disabilities.

O-100

AN ASSESSMENT IN THE ORGANIZATIONAL UTILIZATION OF THE 2010 WHO-SEARO GUIDELINES FOR STRENGTHENING PARTICIPATION OF PERSONS AFFECTED BY LEPROSY IN THE PHILIPPINES

Presenter: Calixto III Trillanes

C.J. Trillanes III[1], E.M. Caccam, Jr[1], A. C. Cunanan, Jr.[2]
[1]Culion Foundation, Inc., [2] Culion Sanitarium and General Hospital

Objectives: This study was designed to evaluate current status of SPP (Strengthening Participation of People Affected by Leprosy) among a number of organizations in the Philippines following the formulation of the 2010 WHO -SPP guidelines used by CLAP (Coalition of Leprosy Advocates in the Philippines) in its goal to assist the delivery of leprosy control services in the country.

Methods: This study fostered a Participatory Collaborative Approach through a descriptive, cross-sectional survey among consenting leprosy-interest organizations. A survey questionnaire was developed in reference to the 2010 WHO- SPP Guidelines to address primary (A) and operational issues (B) in leprosy. Primary issues include stigma and discrimination; equity, social justice, human rights; and gender issues. Operational issues include IEC (information, dissemination and communication), promotion of advocacy, counselling, training & capacity building and many more. The survey asked respondents to rate their degree of involvement in each activity promoting the guidelines. Ratings were 0 = not done; and 1-5= if done, depending on their level of involvement varying from seldom done (1) to done all the time (5).

Results: Out of about 30 leprosy-interest organizations in the country, a total of 7 organizations consented to participate in the survey. Under Primary Issues, top priorities were on stigma and discrimination (mean=4.0); equity, social justice, human rights (mean=3.3) and gender issues (mean= 3.30). Under Operational Issues, top priorities were planning and management (mean= 3.4); advocacy (mean=3.2); and referrals (mean=3.2). Monitoring and evaluation got the lowest mean value of 2.0.

Comparatively, although more organizations were engaged in various activities under Operational Issues (87%), the quality or degree of engagement was low (mean=2.85). In contrast, though fewer organizations were engaged in various activities under Primary Issues (81%), the quality or degree of engagement was high (mean = 3.54).
Furthermore, primary factors which promoted PAL's active participation to leprosy-related activities include personal commitment, support from institutions and availability of active support groups. Deterrents include financial, geographic and educational limitation. Other contributory factors to non- participation include the lack of information campaign; self and social stigma, discrimination, lack of essential leprosy services; limited access to primary and skilled leprosy-related services in general hospital facilities to which they are integrated.

Conclusion: Leprosy-interest organizations in the Philippines support the 2010 WHO-SPP guidelines with varying degrees of engagement. Overall, stigma and discrimination are the top priorities while monitoring & evaluation is the least priority. The latter finding can be used as a basis in reevaluating and redesigning program priorities, otherwise the lack of monitoring and evaluation could adversely affect long-term sustainability of leprosy control programs in the country.

O-104

COLLAGE STORIES: CAPTURING THE IMPACT OF COMMUNITY BASED REHABILITATION PROJECTS ON COMMUNITY PARTICIPATION AND PERSONHOOD FOR PEOPLE WITH LEPROSY AND OTHER DISABILITIES IN TAMIL NADU, INDIA

Presenter: Tarin Dempers

T. Dempers[1], Manivannan G[2], D. Long[1,] T. Mendis[2]
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Objective: To identify ways in which community-based rehabilitation (CBR) projects within the Partnerships, Advocacy, Research and Training towards Inclusion (PARTI) project have impacted community participation for people with leprosy and other disabilities in Tamil Nadu, Cuddalore district. This pilot study examines the links between community participation and the impact of stigma, examining the impact CBR programs have had on these. Understanding community participation and personhood from participants' perspectives offers potential insights as to how future directions in rehabilitation and socioeconomic CBR projects can be undertaken to most effectively have meaning and value for the people engaged in the programs.

Method: The PARTI program in Tamil Nadu India was evaluated using a mixed methodology design including focus group discussion, change stories and P-Scale. Data collection, via participant story telling, followed procedures of development evaluation over a period of three days in this piloted study. Content analysis with thematic coding was used to detect the common significant changes described in stories. Meta-analysis using the CBR framework was carried out to enrich the understanding of programme outcomes. Participation scale data was used to enhance focus group stories collected.

Result: A total of 30 stories were collected in the three rounds of story collection from the selected programmes. Results demonstrated that, across all programmes, stories focused on changes in people with disabilities and described aspects of programme development. When mapped against the elements of the CBR framework the changes were (1) social and community participation, (2) economic independence and (3) increased knowledge of government schemes. The results highlighted ongoing concerns and difficulties participants faced at a macro level. As well as document change stories, the study highlighted community relations and in asking participants 'what made you proud' showed the extent to which adequate and well placed CBR practices, despite potentially being influenced and underpinned by a largely western notion of development, can indeed add to community participation and personhood.

Conclusion: While changes in social, financial and the ability to advocate for rights from government were reported by participants in the PARTI project, ongoing structural macro level difficulties persisted. These included access to transport, adequacy of housing infrastructure and government pension level. While grass roots micro solutions can be transformative at an individual level, it is also important to acknowledge the insights they can offer to experiences and challenges in larger structural systems.

O-105

DIGNITY, EMPOWERMENT AND INCLUSION AMONG INDIVIDUALS WHO HAVE PERSONALLY EXPERIENCED LEPROSY: COMPARING THREE AFRICAN COUNTRIES—MOZAMBIQUE, NIGER AND NIGERIA USING THE UN PRINCIPLES AND GUIDELINES IN PARTICIPATORY CAMPAIGNS TO INCREASE

Presenter: Yohanna Abdou

Yohanna Abdou[1,2], Issa Harouna[2]

[1]IDEA Niger, [2]TLM Niger

Objectives:

- To develop participatory methods to create communication tools for people who have experienced leprosy to help understand their rights

Methods: Participatory: video-recording; collecting testimonies; discussions

Results:

- On-line meetings were held among IDEA Coordinators from three countries—Niger, Nigeria and Mozambique—Research Consultant and AIFO Mozambique Representative to gather information on individuals' understanding of their rights and to plan workshop agendas and logistics.
- A preliminary workshop was held in Maradi, Niger for 10 IDEA leaders from four regions to learn the fundamentals of human rights documents, concepts of rights and rights claiming, UN Principals and Guidelines, and engagement in participatory workshops.
- The Coordinators and Representative met in Niamey, Niger to participate in a train the trainers session with the Consultant, learning video-production, participatory video methods and videoconferencing.
- Workshops were conducted in Niamey, Zinder and Maradi Niger as follows:
    - A training session for 166 individuals who had experienced leprosy on the UN human rights guidelines on leprosy (translated into Hausa); fundamentals of operating video equipment; video techniques; and production of community-based short videos. Trained Individuals subsequently trained other individuals and so on. A total of 220 people were trained.
    - 38 men and 25 women affected by leprosy, family members (39 girls and women; 48 boys and men) and 20 community leaders gave video-recorded testimonies. People decided their topics including their challenges and how these were overcome.
    - Discussions were held and video-recorded on how participants' own experiences related to human rights.
    - 30 skits were created, acted and recorded by participants on topics they chose including their medical, education, voting and stigmatization to portray rights lost and gained.

Conclusion: Participatory methods were effective as people had a role rather than be seen as subjects.
As Coordinators become trainers, their expertise was acknowledged, and through this they could convey to participants, that they too can advocate for change in their own life and communities.

Participants gained an understanding of their rights and became empowered through the process.
Using the footage, meaningful training materials can be produced including an audio-visual unique to each community where the videoing took place.

Coordinators from Nigeria and Mozambique applied what they learned to duplicate workshops in their countries.
The international collaboration and sharing among people from three countries—Niger, Nigeria, and Mozambique--and two ILEP members—AIFO and TLMI--with University of Arizona Research Consultant from the US.

O-118

INTERSECTIONALITY AND INCLUSION: THE STORY OF USWATUN

Presenter: Ruth Peters

Uswatun Khasanah[1], Ruth Peters[2], Sarju Sing Rai[2,4], Abdul Mujib[1], Irwanto[3], Elena Syurina[2], Marjolein Zweekhorst[2]

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Objective: The objective of this paper is to explore the value of theories of intersectionality and inclusion for stigma research by listening to the story Ms. Uswatun who was diagnosed with leprosy when she was 14 years old. We believe it is important that people affected by leprosy participate in all aspects of the research including the dissemination phase. Hence, we have invited Ms. Uswatun to join the research team to the 20th International Leprosy Congress.

Method: This study is part of a larger study that aims to fill the existing gap on comprehensive understanding of health-related stigma by focusing on the positive experiences, attitudes, and success stories of stigmatized persons. In total, 40 interviews (Uswatun was one of them) and 12 FGDs were executed among people living with four different health conditions – Leprosy, Schizophrenia, HIV, and Diabetes - in Jakarta and West Java. Study participants were selected through convenience sampling. Thematic analysis was conducted for analysis.

Results: Uswatun was studying in junior high school when she was diagnosed with leprosy. Because of the spotting in her skin, Uswatun was shunned and harassed in her school, which made her shut herself down and skip school. It was with the undeterred support from her parents, her strong religious faith further reinforced by support she received from her religious community, and counselling from the SARI Project that Uswatun managed to turn her life around.

A framework that can be used to understand exclusion and inclusion on a multidimensional basis is the 'intersectionality' framework. Intersectionality is the idea that multiple identities such as gender, social economic status, religion, age, illness intersect to create a whole that is different from the component identities. Uswatun's personal story reflects the adversities and hardships that she faced because of her disease and poverty – but at the same time her religious identity and her identity as a daughter striving to make her parents proud motivated her to overcome the stigmas she faced in her life. The study also uncovered that like Uswatun, there are many other individuals who faced varying experiences of not only stigma but also empowerment and support because of the multiple identities they hold.

Conclusion: Theories of intersectionality and inclusion and, also in particular, the combination of the two can shed a new light on the experiences of people affected by leprosy.

O-166

IMPORTANCE OF ORGANIZATION GOVERNANCE IN THE DEVELOPMENT OF A PEOPLE'S ORGANIZATION - A CASE STUDY OF A HANDA REHABILITATION & WELFARE ASSOCIATION

Presenter: Michael Chen

Michael Z.Q. Chen[1], Sally X.L. Qi[1], Jean M.J. Fei[1]

[1]HANDA Rehabilitation & Welfare Association

Objectives: The participation of people affected by leprosy is understandably an important force in fighting against leprosy. People's Organizations (PO) are one of the most important platforms and pathways for people affected

by leprosy to get involved in leprosy services and be empowered. However, even though a number of POs have developed and are playing an important role in the field of leprosy, there are still a limited number of POs and many are facing challenges for survival. This research focuses on the study of a people's organization, exploring the development of the organization and the role the governance body plays in leading that development.

Method: The research applies qualitative research method, using participatory observation/in-depth case study analysis and in-depth interview to collect relevant information about the history and the development of the organization, and the evolution of the governance system in the past 22 years.

Results: HANDA Rehabilitation & Welfare Association (HANDA) was founded in 1996 as an organization of people affected by leprosy in China, inspired by the founding of IDEA International. HANDA began with no outside funding, only with the courage of the founder and the commitment of a few key members. After 20 years of development HANDA has grown to be an accountable and professional NGO with more than 4000 members, 25 full time staff and thousands of volunteers. Its work had covered more than 200 leprosy villages in China, promoting the rights of people affected by leprosy and providing comprehensive services for social integration. In the process of its development, the governance body of HANDA has evolved from a symbolic party to a fully functional one, from having an unclear mandate to having clear responsibilities, and from one comprising people affected by leprosy only to a board of diversified members. The governance body plays a very important role leading the development of the organization to ensure its sustainability and accountability.

Conclusions: 1. Effective governance is one of the keys to the success of an organization, and even more so in the case of people's organization. An effective governance body will help the organization to ensure accountability and develop sustainability.

2. While people affected by leprosy play a pivotal role in governing the organization, the inclusion on the board of experts from other fields, is also critical to the development of the organization.

O-167

EXPERIENCES AND EXPRESSIONS OF LEPROSY PATIENTS AT ANANDABAN HOSPITAL

Presenter: Rakchhya Maharjan

M. Rakchhya
The Leprosy Mission Nepal

Objective: To explore patient perception of leprosy and treatment received at The Leprosy Mission Nepal run Anandaban Hospital using Photovoice

Method: Photovoice is a participatory evaluation method which has been used to understand patient perceptions of illnesses and to promote patient engagement. Critical case sampling was used to identify 2 patients receiving long term leprosy treatment at Anandaban Hospital. They were taught basic photography composition, the importance of consent, provided a point and shoot camera and instructed to take photos to record and reflect their hospital stay. Researcher explained the process of storytelling and primed them to think of some of the stories they might tell from the photos they captured. The process took 8 weeks. Facilitator and patients reviewed photos together, selecting those they felt best represented their experiences. For each picture selected, researcher wrote accompanying captions with the patients to illustrate the story told through them. Patients were self-directed in the process but supported and encouraged by the researcher throughout. One to one interviews with the patients also helped with the backstory and gave more depth to the research.

Results: Patients captured day to day nuances of hospital ward stay and emphasized the importance of interaction with hospital staff and the relationship they have with other fellow patients. In one to one interviews, various other contextual factors of perception such as physical manifestations of leprosy, quality of services and accessibility were revealed. Hence, the method also proved to be an evaluation of care provided at Anandaban Hospital as experienced by the patients, portrayed in a powerful, visual way. The use of photography eliminated the limitations of language (to some extent), ethnicity or education. Participants were happy to develop a new skill, had increased confidence and experienced inclusiveness in their own terms during their stay at the hospital.

Conclusion: Photovoice is an effective participatory process giving patients the opportunity to provide recommendations and unique insights. The follow-up narrative methodology elicited in-depth and real-time practical findings that are useful in evaluating and improving the care provided at the Hospital. This research proved essential in supporting self-representation, expression and engagement of patients in a change process. Photovoice can accentuate Anandaban's existing hospital based counseling service by engaging patients, who are usually passive beneficiaries and of the most marginalized in the communities as well, to open up through a visual medium.

O-174

EAD MORHAN: THE USE OF VIRTUAL TECHNOLOGY AND MEDIA AS AN UPGRADING INSTRUMENT FOR VOLUNTEERS AND PEOPLE AFECCTED BY HANSEN DISEASE.

Presenter: Paula Brandao

S.B. Paula[1], C.S Artur[2], N.O. Mercedes[3]

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Objective: Create a basic course to present and update Hansen disease contents for volunteers and people affected by leprosy of the Reintegration of People Affected by Leprosy, using virtual media (videos) and with rapid and agile dissemination on digital platforms.

Method: Prepared by the Morhan Training Department, TV Morhan and the university extension project "Epidemiology & Media" of UERJ. The target audience was MORHAN volunteers. The material was organized into thematic blocks (Historical Leprosy Retrieval, Public Policy and Leprosy, Leprosy Care and Network Construction and Interdisciplinary Leprosy Arrangement), each with up to ten 15-minute videos, supporting texts and up to ten content-fixing questions.

Result: Initially, 30 participating volunteers received the videos, texts and links for testing. In the period from July to November of 2017 twenty videos were produced. Among these, four of the first block (History of Leprosy, Leprosy x Leprosy, Social Movements and Statute of MORHAN) were edited by the extension project "Epidemiology & Media" and widely available in social networks. Getting a total of 1118 views on YouTube.

Conclusion: Among the actions developed by MORHAN and the university are those of health education. The growth and popularization of digital media allowed the diffusion of information to publics with difficulties in accessibility and little schooling. The limitation of resources was one of the factors that delayed the completion of the course. In 2019, the project intends to resume production of modules, improve editing and dissemination, improve the evaluation process and extend to all MORHAN volunteers in Brazil.

O-198

IMPACT OF COMMUNITY BASED INCLUSIVE DEVELOPMENT (CBID) IN SOCIAL INCLUSION OF PERSONS AFFECTED BY LEPROSY AND THEIR FAMILIES – A GLRA EXPERIENCE

Presenter: Shibu George

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German Leprosy and TB Relief Association - India , Pushpa Hospital, Dallirajhara, India
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Objectives: The Key objective of GLRA is to improve the quality of life of Persons with Disability and enable them to be contributing members to their family and society. India accounts 50% of the global burden of Disability Adjusted Life Years (DALY) due to leprosy where 60% global leprosy reported every year with 4% visible disabilities. Considering the necessity and priority for Community Based Inclusive Development (CBID), from 2012, German Leprosy and TB Relief Association has piloted inclusive CBR projects in 5 locations in India, i.e. Kerala, Tamil Nadu, Chhattisgarh, Andhra Pradesh and Urttarkhand to support Persons with Disabilities by formation of their groups, improve livelihood opportunities and access to social benefits.

Method: Project intervention was developed in consultation with Persons with Disabilities and people living in leprosy colonies. Sensitization sessions were organized for Government authorities and stakeholders. Baseline assessment was done by trained community volunteers including people affected in 62 villages. Formation of inclusive Self-Help Groups was the process adopted to perform collective advocacy to access entitlements and social security benefits. Selection and adaptation of possible skill trainings, Income Generation Program, Disability prevention/identification camps, arranging assistive devices were the major activities besides home based self-care training to affected people & care givers. Monitoring appraisal was conducted to assess the changes by meeting the beneficiaries, reviewing the documents and baseline results.

Results: Project has profiled 1624 Persons with Disabilities including 321 (20%) persons affected by leprosy with visible disabilities along with 7682 family members. Baseline assessment revealed 14.5% had disability certificates out of which 7.2% were persons affected by leprosy. In 5 years until 2016 project has enabled 1196 [73%] people including 246 persons affected by leprosy to receive disability certificate. Monthly pension was arranged for 961 people. Formation of 56 inclusive SHGs with 621 members (128 persons affected by Leprosy), 207 received assistive devices, 105 had undergone skill training, 92 people and 17 SHGs established income generation through seed money with the help of financial institutions.

Conclusion: CBID approach ensures greater reach of Persons with Disabilities specially for persons affected by Leprosy for their social participation as change agents. Family involvement in SHGs are vital in behavioral change and reduction of self-imposed or community stigma. Social mobilization through inclusive SHGs improves confidence to access social entitlements and demand for rights. While promoting CBID, involvement of government, stake holders and affected people's participation to be ensured for better results.

O-201

SINGING FOR ZERO LEPROSY: UTILIZING THE VERNACULAR PEDAGOGY OF APPLIED THEATRE IN LEPROSY CAMPAIGNS

Presenter: Bahadir Celiktemur

Dr Bahadir Celiktemur[1]
[1]The Leprosy Mission England and Wales

Objective: The objective of this paper is to present and discuss Applied Theatre and Performance as a community-based intervention resource towards Zero Leprosy.

Campaigns and interventions that focus on leprosy awareness, disease and complications management, and stigma alleviation have traditionally relied on transmissive educational approaches such as printed materials (e.g. leaflets and posters), audio-visual media (e.g. radio messages, short videos) or experts like health extension or social workers. The effectiveness of these approaches has been stunted by barriers such as high illiteracy, lack of access to radio or television, or the top-down attitudes of experts who merely convey information to targeted communities without much time or thought for interaction to understand local problems. While transmissive educational approaches will always be vital to any leprosy intervention, they alone will not be adequate to take us to the last mile in the fight against leprosy. Zero Leprosy requires the utilisation of a variety of educational resources, not least vernacular pedagogies that have traditionally existed in local communities.

Method and Result: This paper argues that Applied Theatre and Performance is one such vernacular resource, which employs a participatory communication process that is appropriate to many leprosy-affected communities, because of its links to ancient singing, drumming, ritual and dance cultures. While transmissive educational approaches rely on conveying, translating and disseminating information to a passive audience, Applied Theatre and Performance help community members become active participants in their learning. It can more fully capture and represent the experiences and narratives of marginalised voices of people affected by leprosy. It can facilitate a process of social change by capitalizing on human learning at the community level. As a result, community members become knowledge creators, develop a sense of a learning community and discover new ways of understanding their own context. It is precisely because of these strengths and qualities that the HIV community have used Applied Theatre and Performance widely and successfully in HIV/AIDS campaigns.

Conclusion: The paper starts with an outline and literature review of Applied Theatre and provides examples of its use in HIV/AIDS campaigning, especially focussing on its advantages over transmissive educational approaches. It then introduces and discusses two recent cases where it has been used for leprosy awareness - the first in a Leprosy Self-Care Group in Northern Mozambique, and the second by a CSO in Sri Lanka. The paper concludes by further recommendations of ways forward towards Zero Leprosy using this vernacular pedagogy as a resource.

O-210

GOOD PRACTICES IN STRENGTHENING PARTICIPATION OF PERSONS AFFECTED BY LEPROSY IN LEPROSY SERVICES

Presenter: Michael. Z. Q. Chen

Michael. Z. Q. Chen[1], K. Beise[2], H. Soyagimi[3], B. Chofifah[4] , H. Cross[5], A. Cunanan[6], R. Pemmaraju[7], S.X.L. Qi[1]

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Objectives: Strengthening the participation of persons affected by leprosy in leprosy services(SPP) is one of WHO global strategies to ensure and sustain quality leprosy services. However, the participation of persons affected by leprosy is still limited in most of leprosy services. On the other hand, there are some people's organizations, who have been actively engaging in different kind of leprosy services and have brought great impact.

This research is to collect and analysis the good practices of participation of persons affected by leprosy in leprosy services, so that the experiences of participation could be shared in wider area and become a force to strengthen the participation of persons affected by leprosy in leprosy services.

Method: The research applies qualitative research method, using questionnaires and interview to collect relevant information and carry out case study. Workshops are also organized to have in-depth discussion on the topic and the encouragement of experience sharing.

Result: Eight people's organizations (PO), including 3 federations of associations or self-help groups, 4 associations and one self-care group from seven countries participate in this study. Two associations with longest history were founded in 1996 and 1997 respectively, and two federations with shortest history of 4 years were both founded in 2014. The average year of the institutional history is 11.25 years with a median of 10 years. The services provided by these organizations are widely ranged from Detection of Suspected Cases (DSC), Defaulters Tracing (DT), Prevention of Disabilities (POD), Counselling (CS), Social-economic Development (SED), Awareness Raising (AR), Advocacy (AD), and Peer Supporting/Networking (PS/NW). Among all the services, POD is the most common activity of these POs and all 8 POs engage in it. Awareness raising is the second common activity and is carried out by 7 POs. The least common services such as DSC and DT are carried out by 4 POs. This is probably because those services require more professional knowledge and skill, and they are mainly authorized by medical professionals. Great impact has been made by these POs, but how to be sustainable is still the main challenge of these POs.

Conclusion: POs have been actively participating in leprosy services. Even though the scale and scope of services differ from different organizations, they are contributing to leprosy program in some degrees and making great impact. On the other hand, most of these organizations are facing great challenges for sustainability due to limited resources and organizational capacity.

O-216

EMBEDDING INCLUSION IN MAINSTREAM MICROFINANCE SYSTEMS THROUGH PILOTING THE SUPPORTED-APPROACH TO MICROFINANCE IN MYANMAR

Presenter: Nyi Nyi Lwin

Dr. Z.M. Aung[1], N.N. Lwin[1], A.M. Thu[1], H.S. Wai[2], and K.M. Riley[1]
[1]The Leprosy Mission Myanmar, [2] BRAC Myanmar

Objective: Microfinance loans are often not accessible to people affected by leprosy and/or disability, as these individuals are generally seen as 'risky' clients by MFIs and are often overlooked as potential loan group members due to attitudinal barriers among community members and field-level microfinance staff. The Leprosy Mission Myanmar (TLMM) partnered with BRAC, MFI to pilot the establishment of accessible microfinance programmes to support the economic empowerment of the poorest of the poor in Myanmar.

Method: Based on BRACs experience in Bangladesh and other countries in the Global South, BRAC (with inputs from TLMM) is developing a 'mainstream' microfinance product that is more accessible to *all* people, including those affected by leprosy and disability. Additionally, BRAC is developing the 'supported-approach to microfinance', which targets those on the fringes of society, such as people affected by disability and/or leprosy, and brings them up to a position of loan-readiness over a period of several months. This supported-approach to microfinance includes key elements such as life skills training, regular home visits, provision of an asset (e.g., a pig, a sewing machine) paired with asset management training, a monthly stipend, and business/financial skill building. Once these individuals have been supported to achieve a level of loan-readiness, they are then eligible to participate in a mainstream loan product along with other members of their communities.

Results: Piloting of the supported approach to microfinance and the development of an accessible mainstream microfinance product is currently taking place and will be on-going through June 2020. Until now, actions have been focused around internal capacity building, needs identification of people affected by leprosy and/or disability, and product development. In the coming months, targeted beneficiaries will begin skill building, receiving monthly stipend and asset transfer, and regular home visits. The accessible/adapted mainstream loan product will roll out this year

Conclusion: Poverty among people affected by leprosy and disability is higher than in the overall population, which is related to their increased levels of unemployment and low income. Through giving people with leprosy and disability accessible microfinance options and appropriate assistance to avail the opportunities, their lives will be transformed not only economically but also in terms of social and emotional well-being. Although inclusive access to financial services is normal in developed countries, this is an important step in making them available in developing countries.

O-217

GENDERED DIFFERENCES IN P-SCALE SCORES FOR PEOPLE AFFECTED BY LEPROSY PARTICIPATING IN A CBR PROJECT IN MAKWANPUR, PARSA AND CHITWAN DISTRICTS OF NEPAL

Presenter: Bishnu Prasad Dhungana

Bishnu Prasad Dhungana
The Leprosy Mission Nepal

Objective: The objective of this prospective study was to measure changes in the social participation of women and girls compared to men and boys affected by leprosy (in Makwanpur, Parsa and Chitwan districts of Nepal) before joining leprosy Self Help Groups (SHGs) and after two half years of participation. The establishment of SHGs was facilitated as a part of a Community-based rehabilitation (CBR) program which aimed to generate more effective participation for people affected by leprosy within their communities.

Method: Of a total population of 800 Self Help Group members, a random sample of 121 people affected by leprosy were interviewed with standard P-scale questionnaires both before joining the SHGs (baseline) and 2 years after joining (midterm of CBR project). Of the total sample, participants were divided into male (n=72 and female (n=49) groups for more detailed analyses.

Results: For the total sample of participants selected for the study, the median P-Scale score at baseline was 29 (moderate restriction). At mid-term, for the same group the median P-Scale score had decreased to 25 (moderate restriction).The median P-scale score for sampled women and girls at baseline was 38.5 (severe restriction), compared to 20 (mild restriction) at mid-term. Comparatively for men and boys, the median P-scale score remained unchanged at 32 (moderate restriction)from baseline to mid-term.These results suggest that women and girls affected by leprosy (in the study districts of Nepal) are subject to higher levels of social inclusion compared to men and boys. These results also suggest that the CBR project under analysis made marked progress towards addressing issues of social exclusion for women and girls, but did not succeed in making a significant difference for men and boys affected by leprosy.

Conclusion: In rural communities of Chitwan, Makwanpur and Parsa, Nepal, women and girls affected by leprosy appear to be subject to higher levels of participation restriction compared to men and boys. More research is needed to determine the causes of this inequity. For the CBR project in question, women and girls appear to have benefitted more than men and boys in terms of social participation. Again, further research is needed to determine the causes of this gendered discrepancy.

O-219

ADVOCACY FOR INCLUSIVE AGRICULTURE BY PEOPLE WITH LEPROSY AND DISABILITY IN PARTNERSHIP WITH DIFFERENT ACTORS

Presenter: Sabyasachi Sinha

Jiptha Boiragee[1], Sabyasachi Sinha[1], Masuma Parvin[1], Md. Khalequzzaman[1], Noyel Tappa[1], Alex Frank Raulim[1]

[1] Leprosy Mission Bangladesh

Objective: To assess the effectiveness of Self-help Groups and Federations of people affected by leprosy and disability for livelihood development through inclusive agriculture

Methods: Piloting this model in two districts of Northern Bangladesh with careful monitoring of impact using mixed quantitative and qualitative approach, using following techniques;

- Partnership between Federation with Empowering Self-help Groups on Convening and Convincing (ES-CC) project
- Sensitize agricultural sector and building linkage with federation
- Sensitize agricultural wing of political parties and building linkage with federation
- Journalist award for reporting on disability in agriculture
- Develop farmer forum with active farmer groups
- Recruitment and capacity building of Community Resource Person (CRP) for agriculture
- Strengthen Federation in the field of organizational development, lobby and advocacy

Results: Partnership and linkage between federation and agricultural sector has contributed in the lives of people affected by leprosy and disability in Bangladesh which are as follows;

- 13 Federations (335 SHGs with 3,230 members, 80% related to leprosy) have signed MoU with ES-CC Project
- Engaged and oriented all Govt. Agricultural Officials on leprosy, role of federation and needs and priorities of its members.
- Approximately 15% members have received Govt. agriculture service e.g. farmer card, seed, fertilizer and skill related training
- Bring all district level political parties in a common platform for the betterment of federation members and political leaders are actively supporting disable farmers for accessing govt. agriculture service e.g. members inclusion in local level govt. agricultural committees.
- Engaged 75 journalists and 71 reports were published in print and electronic media for public awareness and draw attention of policy maker for inclusive agricultural policy
- District based 2 farmer forum have developed with different active CBO/DPO representatives for higher level advocacy
- Federation leaders have selected 13 CRP (60% are people with leprosy and disability) to support building linkage with govt. agricultural sector and other stakeholders as well as support leaders for organizational development

Conclusion: The piloting shows evidence that federation of people affected by leprosy and disability can influence agriculture sector to increase accessibility of its members as 77% members livelihood depends on agriculture. However, federation needs comprehensive support from active actors like political parties, media for inclusive agriculture policy change and adaptation. Disability in agriculture is the newer area of sustainable Community Based Rehabilitation (CBR) that needs further study to measure the impact.

O-222

TLMM'S 'DOUBLE-MAINSTREAMING APPROACH' PROVES EFFECTIVE IN SUPPORTING PEOPLE AFFECTED BY LEPROSY BY LINKING WITH THE WIDER DISABILITY MOVEMENT

Presenter: Nyi Nyi Lwin

Dr. Z.M. Aung[1], N.N. Lwin[1], and K.M. Riley[1]
[1]The Leprosy Mission Myanmar

Objective: Double-mainstreaming is an approach developed by the Leprosy Mission Myanmar (TLMM) to strategically mainstream people affected by leprosy into the wider disability movement and then to mainstream people with disability into wider society. This results in less isolation of people affected by leprosy and creates a stronger voice and more opportunities for the sustainable improvement of the situation for people affected by leprosy.

Method: The double-mainstreaming approach (DMA) was initially a key component of TLMM's 2004-2009 strategy. Then, in 2008, TLMM established Disability Resource Centres (DRCs) as an effort to move the focus away from establishing and maintaining institutions and towards more activity-focused programmes. With the DMA, targeted, leprosy-specific activities ensure the needs of people affected by leprosy are addressed, thus empowering them to join and benefit from the wider disability movement and a wider disability focused 'twin-track' approach[i]. Since it is found that leprosy also carries a stigma in the disability community, awareness raising of leprosy and sensitization of people with *disabilities* around leprosy is essential for inclusion in the wider disability movement.

Result: Since 2014, TLMM has supported 942 persons affected by leprosy and 15,294 people with disabilities through project implementation based in the DRCs. This means that 6% of TLMM's direct beneficiary population have been people affected by leprosy. In addition to TLMM-led activities, TLMM also supports leprosy detection and treatment through specific local leprosy hospitals. When we consider these beneficiaries in the total, TLMM has supported 4,276 people affected by leprosy since 2014. This is equivalent to about 22% of TLMM's total beneficiary population.

Conclusion: Considering that around 100,000 out of 300,000 people affected by leprosy are currently living with Grade 2 disability[ii], the DRC and the DMA has proven to be a successful strategy for improving the lives of those affected by leprosy and disability in Myanmar. It has also enabled the utilisation of large funds from international donors set aside for disability interventions to be used to benefit people affected by leprosy.

[i] Kathy Al Ju'beh, *CBM Disability-Inclusive Development Toolkit*, (January 2017), page 55: the twin-track approach demonstrates, "the need for: a) providing disability-specific initiatives to support the empowerment of persons with disabilities and; b) integrating disability-sensitive measures into the design, implementation, monitoring and evaluation of all policies and programmes (e.g. mainstreaming disability in areas such as HR and budgeting)."
[ii] Data courtesy of the National Leprosy Control Programme

O-273

THE RESTORATION OF HUMAN DIGNITY AND INTERNATIONAL RELIEF PROJECT BY ACTIVE SOCIAL PARTICIPATION

Presenter: Sang Kwon Jung

S. K. Jung
[1]President, IDEA Korea (International Association for integration, Dignity and Economic Advancement), Seoul, Korea, Republic Of

Objective: I was diagnosed with HD when I was 16 years old. I received my treatment at Sorok-do National Hospital until declared to be completely cured. However no matter how much I tried my best to regain my dignity as

a human being, I was always discriminated and stigmatized by others of once having HD. I had no choice but to hide that I once had HD. But after publicizing my health history and with my active social participation I regained my human dignity. The result of my effort to mingle back with the society is a testimony of challenge to other HD patients of different nations and their children's restoration of dignity and to actively partake in the society.

Method: In 1994, I was elected as the chairman of IDEA Korea. We actively promoted various international relief projects and programs. During those times, I publicly shared my history of HD, which caused positive awareness to many on their view of HD. Through this, I was able to resolve the social prejudice and helped create awareness on proper understanding of HD and its patients. Now, IDEA Korea is actively leading on various international relief operations and programs with increasing cooperation from HD patients and those who are not, as well as several religious organizations.

Results: My endeavors and efforts brought positive impact to Korean HD patients. They were able to regain their human dignity and allowed them to be part of the society that once rejected them. Today, many of us are able to actively take role in our society and different organizations as dignified human beings. Korean HD patients like me who once depended on external help are now able to support other nations' HD patients. We are helping others with scholarship programs, school and church construction, housing projects, etc. which encourages HD patients to regain their respect and dignity.

Conclusion: Changing the deep-rooted bias takes a lot of time and effort. To break the social stigma and discrimination towards HD in Korea took us years and perseverance. As a result, we were able to regain back the human dignity and respect as well as social justice. Thus, active social participation of worldwide HD patients in international relief projects can restore the human dignity and respect.

O-290

THE PARTICIPATORY APPROACH AND ITS' IMPACT ON THE SUCCESS AND SUSTAINABILITY OF THE LIVELIHOOD IMPROVEMENT PROGRAMS IN THE LEPROSY COMMUNITY

Presenter: Anthony T O Leung

T. Leung[1], G.S.Liem[1], T. Wiedemann[1], J. Bowden[1], K. Xu[1], H.F Liu[1], M. Chen[1], J. Shiri[1], J. Erqie[1], S. Riha[1], H.Y Wang[1], W Yang[1], S. Tseung[1], K.M. Kam[1], N. Pirie[1], P. Barrett[1],

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Objective: Empowering leprosy villages to improve their health and livelihood through group decision making and learning skills.

Method: The Leprosy Project runs a comprehensive set of programs developed in full consultation with village communities. The Project initially provided health care and rehabilitation for individuals affected by leprosy and has expanded to include programs on nutrition, water and irrigation, family farming, sanitation, and social awareness. When The Project began in 2000 programs were implemented from the top down. This was not sustainable as villagers came to expect handouts and did not take responsibility for improving their condition. We also faced hurdles due to the difference in cultures and expectations of the villagers.

With the participatory approach, The Project initially experienced challenges getting villagers to accept responsibility. To overcome this, we spent time building trust and demonstrating commitment to achieving results with them, rather than for them. We sought and respected their input, guiding the decision making process. Final decisions were accepted and agreed by all. The result was villagers were committed to projects and embraced success as their own. Additionally they acquired the skills and knowledge to maintain the projects. The village health care workers who had been trained by The Project were instrumental in helping us in the villages.

Results: Three villages now have water storage and irrigation systems that were installed and are managed by villagers who have the skills to maintain them. The nutrition level of the families has improved. They grow a wider variety of nutritious crops and are able to commercialize surplus harvest. With irrigation throughout the year now they are more resilient against climate change. Hygiene and sanitation have improved through villagers' efforts to build incinerators and toilets. Health care workers continue to provide primary health care services to the leprosy patients in the villagers. The results have been noticed and exemplified by the Government. This greatly enhanced the villager's confidence and self-esteem.

Conclusion: Our project will continue to assist villagers to gain the knowledge and confidence required to improve their livelihood in a sustainable manner. We believe participatory approach is the best to do this.

O-302

INNOVATIVE APPROACH TO CREATE MASS AWARENESS ABOUT LEPROSY USING NEIGHBORHOOD GIRLS "SAPNA" UNDER SPARSH LEPROSY AWARENESS CAMPAIGN (SLAC) IN INDIA

Presenter: Latika Rewaria

L. Rewaria[1], National Consultant (IEC & Training), A. Kumar[1], Deputy Director General (Leprosy)

[1]Central Leprosy Division, Directorate General of Health Services- Delhi, Ministry of Health & Family Welfare, Government of India

Objectives: 1. To increase awareness about early detection of leprosy and to reduce stigma & discrimination against leprosy.

2. Involvement of community members in creating awareness about leprosy prevention and control.

Methods: SLAC is a nationwide annual mass awareness campaign under National Leprosy Eradication Programme (NLEP) since 2017, under this Gram/village Panchayat (primary unit of local self-government, Gram panchayat is a cabinet of the village, directly elected by the adult citizens of the village) level meetings being organized on 30th January i.e. 'Anti-Leprosy day' with major activities done at **"NO COST"** like declaration by District Magistrate, Speech by Gram Sabha Pramukh (head), IEC activities (street play "nukkad natak", role play, essay writing, folk songs on leprosy and puppet show etc.). Dissemination of key awareness message was done through NLEP mascot 'Sapna', a neighborhood girl living in same community.

Results: SLAC along with other innovations have given the needed impetus to the activities of NLEP and as an effect the rising trend of Grade II disability is showing decline, Grade II disability per million which was 4.48/ million population (March, 2015) has been decreased to 3.34/ million population (March, 2018) against the target of <1 case of Grade II disability/ million population, given by WHO Global Leprosy Strategy, 2016-2020. Further, Google Trends is a website that analyzes the popularity of top search queries in Google Search across various regions and languages, which shows the word "leprosy" in all categories of web searched significantly increased (more than twice) in the month of January as compared to the other months of the year.

Conclusion: Identification and use of appropriate approaches and tools for communication can bring about desired behavior change in the community to meet the objectives of any Public Health programme. Utilization of exiting Gram Panchayat level units is a **cost effective** way of generating mass awareness and involvement of "Sapna" mascot in place of deformed/disfigured disability images portrayed positive image of leprosy in the community. Sapna is now part of all IEC activities of Central Leprosy Division as well as State leprosy control units in India.

O-317

CAPTURING THE IMPACT OF THE "LEPROSY FRIENDLY VILLAGE" APPROACH, A COMMUNITY-BASED APPROACH FOR LEPROSY ELIMINATION, USING MOST SIGNIFICANT CHANGE TECHNIQUE

Presenter: Teky Budiawan

T. Budiawan[1], A. Ferdiana[1], S. Daendel[2], R. Widayati[3], M. Soesman[1], L. Mieras[4]

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Objectives: To document significant changes brought by a 5-year community-based approach for leprosy elimination in North Minahasa district, North Sulawesi Province, Indonesia, called: 'The Leprosy Friendly Village Approach' (LFV).

Methods: In LFV, group and individual health education sessions on leprosy were delivered to health center (HC) staff and community. Group sessions were performed annually by the district and provincial leprosy team. Information on leprosy was included in monthly interdisciplinary meetings with HC staff. Individual health education to community was delivered frequently by integrated HC teams. Influential Community Members (ICM) were involved to promote positive attitude towards leprosy in the community. This approach has been implemented in 15 villages since 2012.

An evaluation was performed using the Most Significant Change (MSC) technique to provide data on impact in complex interventions by collecting stories of the most significant changes. In-depth interviews (IDIs) and focus group discussions (FGDs) were conducted with different groups i.e. 1) policy makers and program managers, 2) HC staff, and 3) community members, including ICM and persons with leprosy. Secondary data were reviewed to document changes in the number of new cases.

Results: Twenty-eight respondents were interviewed, including 6 program managers/ staff, 3 HC leprosy workers, 10 health workers, 7 community members and 2 persons with leprosy. Four FGDs with community members were conducted. Stories on changes were categorized into four domains:
1) knowledge and attitude of health workers, 2) leprosy case management, 3) stigma and attitude of community and 4) self-stigma among people with leprosy.

The most significant change among health workers was better knowledge and a more positive attitude towards leprosy. They were more involved in health education to community and referred more people suspected to have leprosy to leprosy health workers. Among the community members, the most significant change was less discrimination and fear of leprosy, more referral of people suspected to have leprosy to HCs, and better integration of people with leprosy in social activities. People with leprosy perceived less stigma and better acceptance from community. Secondary data showed a decreasing trend in the annual number of new leprosy cases from 33 in 2012 to 11 in 2017.

Conclusion: Adequate exposure to information on leprosy among health workers and community members helps to improve knowledge and attitude towards leprosy, which contributes to early case finding. Information on leprosy should be delivered in a consistent, positive and regular manner on a long-term basis, involving health staff and ICM.

ILC-3: BASIC SCIENCE:

3.1 Immunology and Vaccines

O-046

A PHASE 1A CLINICAL TRIAL TO EVALUATE THE SAFETY, TOLERABILITY, AND IMMUNOGENICITY OF LEPVAX, A LEPROSY-SPECIFIC ADJUVANTED PROTEIN SUBUNIT VACCINE, IN HEALTHY ADULT SUBJECTS

Presenter: Malcolm S. Duthie

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Objective: We sought to determine the safety, tolerability and immunogenicity of a novel, leprosy-specific vaccine ("LepVax") among healthy adults in the United States (US). LepVax is comprised of fusion protein ("LEP-F1") made as a tandem linkage of four *Mycobacterium leprae* open reading frames (ML2531, ML2380, ML2055 and ML2028) and a synthetic toll-like receptor 4 agonist (GLA-SE).

Methods: Two cohorts of 12 healthy adults (ages of 18-55) were enrolled in a Phase 1, open-label, dose-escalating clinical trial in Madison, Wisconsin. Participants in each cohort were sequentially assigned to receive either 2 µg LEP-F1 + 5 µg GLA-SE or 10 µg LEP-F1 + 5 µg GLA-SE, given as intramuscular injections on days 0, 28 and 56. The safety of the vaccine was evaluated by recording adverse events (AE) from Day 0 through Day 84, serious adverse events (SAEs) from Day 0 through Day 421, characterizing local and systemic reactions to vaccination, and assessing clinical and laboratory parameters. IgG response to LEP-F1 was assessed by ELISA (endpoint dilution) on Days 35 and 63 relative to baseline. Antigen-specific cytokine secretion after incubation with LEP-F1 or PBS were measured by multiplex whole blood assay on Days 35 and 63 relative to baseline.

Results: LepVax was safe and well tolerated. One participant in the low-dose arm experienced a Grade 3 AE: injection site pain after the third injection. No participants withdrew because of an AE. The vaccine elicited robust production of LEP-F1 specific IgG antibodies, increasing steadily through Day 63 post-vaccination, with no difference observed between the two dosing groups. LepVax elicited a strong Th1 response, with concentrations of IFN-γ, TNF-α, and IL-2 increasing steadily through day 63 in recipients of the low-dose vaccine. High-dose vaccine recipients had lower cytokine secretion compared with low-dose recipients, which plateaued and declined after the second injection.

Conclusion: LepVax, a leprosy-specific adjuvanted fusion protein vaccine, was safe and well tolerated among healthy adult volunteers in the US. Strong humoral and Th1 immune responses were elicited, and lower dose antigen was associated with stronger and more sustained Th1 response. A Phase 1b trial to assess the safety and immunogenicity of LepVax among healthy individuals in a leprosy-endemic region, and persons with a diagnosis of paucibacillary leprosy, is ongoing. Future studies will assess the efficacy of the vaccine in the prevention of *M. leprae* as well as adjunctive immunotherapy to multidrug treatment.

O-056

STRATEGIES FOR ADVANCEMENT OF LEPROSY VACCINES: PROS AND CONS

Presenter: Malcolm S. Duthie

Malcolm S. Duthie, Corey Casper and Steven G. Reed
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Objective: Although leprosy currently appears to be under some form of containment its elimination as a global health concern appears to be just beyond reach. Vaccines have the potential to have a sustained impact on leprosy but until recently BCG, which provides only partial protection, was the sole vaccine in the control arsenal.

Methods: Two vaccines have recently been positioned for use in clinical trials with the goal of providing long-term protection and sustained leprosy control. MIP (heat killed Mycobacterium indicus pranii; previously known as Mycobacterium w) was initially developed at the National Institute of Immunology, India as an adjuvant component for use in vaccines and is now licensed and produced as Immuvac/Cadi-05 by Cadila Pharmaceuticals. LepVax is a defined subunit vaccine incorporating a recombinant fusion protein with a synthetic TLR4 agonist in a stable emulsion formulation that was developed specifically for leprosy.

Results: Truly prophylactic immunization strategies to prevent leprosy in teh general population are complicated by the low rate of disease emergence and slow progression of disease. These mean that large numbers of recruits would need to be tracked for extended periods of time. Even provision into a higher risk group, such as contacts, requires large numbers and long observation periods. Evaluation as therapeutics in patients reduces both the intake requirements and monitoring periods, but increases potential risk of failure. Although live attenuated or killed mycobacteria vaccines have generally been regarded as being well tolerated in general populations, immunization to boost inflammatory T cell responses against M. leprae could inadvertently precipitate disease or induce reactions. An important anecdotal observation that is now being documented is the precipitation of PB leprosy following BCG immunization of individuals believed to harbor asymptomatic M. leprae infection. In addition, patients should receive standard care as per national guidelines and vaccine evaluations among patients must therefore be conducted in conjunction with multidrug therapy.

Conclusion: Research evaluating the safety and utility of these promising leprosy vaccine candidates in the prevention of leprosy and its complications should be considered a critical public health priority. MIP and LepVax represent important building blocks towards disease elimination, with a combined chemo- and immunotherapeutic approach in a post-exposure setting providing immediate impact by preventing disease and transmission appears tenable. Accessing the regulatory and oversight systems of each particular leprosy-endemic country is required to continue their advancement.

O-107

BIOSENSOR AND ENZYMATIC IMMUNOASSAY BASED IN MIMETIC PEPTIDES FOR LEPROSY DIAGNOSIS IN A HYPERENDEMIC REGION

Presenter: Mayara Ingrid Sousa Lima

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Objective: This work aimed to validate mimetic peptides of Lipoarabinomannan (LAM) and a 65kD chaperonin of *Mycobacterium leprae* as antigens for ELISA platform in order to monitor leprosy in an hyperendemic region. The second aim was to develop biosensors for the rapid diagnosis of leprosy using salivary samples.

Method: In this work was used two mimetics peptides, called MPML14 (mimetic peptide of a 65kD chaperonin) and LAM-M1 (mimetic peptide of LAM), obtained by chemistry synthesis. The Enzyme-Linked Immunosorbent Assay (ELISA) was used for detection salivary IgA (136 samples) and serum IgG (445 samples) of patients, household contacts and healthy endemic controls were recruited in the population of state of Maranhão, Brazil. After, we developed a electrochemical biosensor using printed electrodes (DropSens®) modified with graphene oxide and chitosan, and immobilized with the peptides. After, the multibacillary patients and healthy endemic controls samples was analyzed in the biosensor by differential pulse voltammetry.

Results: The serological results using LAM-M1 indicated a sensitivity of 66.6% and specificity of 100.0% for this method. The individuals anti-LAM positive were 58.1% paucibacillary patients, 84.3% multibacillary patients and 39.7% household contacts. Already, the salivary results using MPML14 indicated a sensitivity of 72.7% and specificity of 95.0% for this method. The salivary IgA detection can also differentiate the various scenarios of the leprosy patients, for examples reactional patients, leprosy relapse, clinical discharge or follow-up only for treatment of sequelae. The immobilization of the peptides LAM-M1 and MPML14 was possible in the biosensor; it was able to differentiate multibacillary individuals from healthy endemic controls. In multibacillary patients the oxidation peaks are lower in comparison to the healthy endemic controls, due to the physical blockade of the electrode surface, since in multibacillary patients occurs the interaction between the peptide and specific antibodies present in the saliva forming immunocomplexes.

Conclusion: Our results point to the potential use of mimetic peptides in different immunodiagnostic platforms, both in enzymatic immunoassays and biosensor, which may aid in the rapid monitoring of leprosy, especially in hyperendemics areas, where it is necessary to use rapid tools for screening infected individuals.

O-108

DIFFERENTIAL IMMUNOGLOBULIN AND COMPLEMENT LEVELS IN LEPROSY PRIOR T0 REVERSAL REACTION AND ERYTHEMA NODOSUM LEPROSUM

Presenter: Kathryn M. Dupnik

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Objective: There is currently no way to predict which people with leprosy will develop a reactional episode against *Mycobacterium leprae*, either reversal reaction (RR) or erythema nodosum leprosum (ENL). In peripheral blood mononuclear cells (PBMC), there is increased expression of genes in the classical complement canonical pathway during active RR and ENL. Additionally, expression levels of immunoglobulin receptors and B cell receptors during RR and ENL support an antibody-mediated pathogenesis of each form. The objective of this study was to determine the biological correlates of previously reported gene expression differences in immunoglobulin- and complement-related canonical pathways during leprosy immune reactions.

Method: We followed newly diagnosed adult multibacillary (MB) leprosy cases (n=51) for two years for development of RR or ENL. Isolated neuritis without cutaneous inflammation was not included as a “reaction” outcome. Other MB patients with active RR (n=35) or active ENL (n=29) were compared. All specimens were collected in the absence of corticosteroids and thalidomide. B cell subsets were determined by flow cytometry analyses of PBMC according to the parameters of the Human Immunology Project. Complement, immunoglobulins, and IgG subtypes were quantitated in serum using ELISA or cytometric bead array. Complement receptor 2 (CR2) was detected in biopsy specimens using immunohistochemistry. Anti-*M. leprae* antibodies were measured using anti-LID-NDO ELISA.

Results: Fifty percent of people from the cohort with MB leprosy developed a reaction during 2 years of followup – 32% with RR and 18% with ENL. People with MB leprosy who subsequently developed ENL had increased total IgM, IgG1, and C3d-associated immune complexes and decreased complement 4 (C4) at initial leprosy diagnosis. People who developed RR also had decreased C4 at leprosy diagnosis. Additionally, elevated anti-*M. leprae* anti-LID1 antibody levels and elevated *M. leprae* bacterial index were associated with subsequent RR or ENL. For each 0.1 increase in the LID-NDO optical density (OD), in the two years after diagnosis the risk of RR increased by 12.7% and the risk of ENL increased by 27.7%.

Conclusion: The objective of this study was to determine the role of immunoglobulin subtypes and complement components in the development of leprosy immune reactions. Our findings of lower C4 and higher anti-*M. leprae* antibody levels at leprosy diagnosis suggest a central role for antibody-mediated pathogen recognition in the development of leprosy immune reactions.

O-124

DIAGNOSTIC TESTS FOR LEPROSY IN DEVELOPING COUNTRIES

Presenter: Yumi Maeda

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Objective: One of the main interventions to achieve the target of WHO's Global Leprosy Strategy, is to detect leprosy early before deformities occur. Presently, the diagnosis relies entirely on clinical findings. Sero-diagnosis is one of the easiest ways to detect leprosy, but user-friendly tools are not available to detect leprosy with high specificity and sensitivity. We screened for antigens useful for the detection of leprosy specially the paucibacillary leprosy (PB) patients by using the PB leprosy sera and found that A35 could be one of the candidates for detection of leprosy.

Method: Sera was previously obtained from the National Sanatorium Oshima Seishoen and stored frozen at -30°C until use. Histidine tagged antigens were expressed in *Mycobacterium smegmatis*, and purified using the Cobalt resin. The ELISA for the detection of anti-MMP-II and anti-A35 antibodies was performed according to our previous studies with slight modifications (DMID:83,3,274). The study was approved by the ethics committee of the National Institute of Infectious Diseases, Tokyo.

Results: Antibodies to Phenolic glycolipid-I and Major membrane protein-II (MMP-II) antigens were detected by ELISA, for the diagnosis of leprosy in Indonesia, Vietnam and China by our group and others. In the search for *M. leprae* specific antigens, the comparative genomic analyses, revealed that one of the antigens A35 was unique to *M. leprae*, and had no highly homologous sequences in *Mycobacterium tuberculosis*, *M. avium* and *M. smegmatis.* A35 was expressed and purified in *M. smegmatis* and used to detect antibodies in patients by ELISA. Preliminary results with Japanese leprosy sera stored at Leprosy Research Center, showed high positivity in multi-bacillary leprosy patients (MB) as expected but the level of detection of PB patients was about 60%. But, a combination of detection of antibodies to MMP-II and A35 could increase the detection rate of PB patients to 70%. Further study with increased number of subjects is needed to verify the results in this study.

Conclusion: Antibodies to a new A35 antigen could facilitate detection of PB patients in combination with antibodies to MMP-II or PGL-I and thereby contribute to the control of leprosy. A user-friendly tool like that of lateral flow test would probably accelerate to achieve the WHO's global target of elimination of leprosy.

O-157

MIMICKING PEPTIDES OF HOST AND M. LEPRAE: ROLE IN THE PATHOGENESIS OF TYPE 1 REACTION IN LEPROSY

Presenter: Itu Singh

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Objective: Mycobacterium leprae (causative agent of leprosy) is remarkably non-toxic organism and most of the tissue and nerve damage in leprosy is known to occur due to immune response of the host to M. leprae antigens. Mycobacteria are known to induce autoimmune response in host leading to imbalance in the homeostatic mechanism. Molecular mimicry may be primary mechanism for production of autoantibodies and might be responsible for tissue destruction in leprosy. Nerve damage in type 1 reaction is the primary cause of disability

associated with leprosy. We have reported earlier that high level of auto-antibodies against keratin, myelin basic protein (MBP) and myosin are present in leprosy patients. The aim of this study was to investigate the role of mimicking peptides of keratin and MBP in the pathogenesis of type 1 reaction (T1R) of leprosy patients.

Method: We recruited 20 healthy controls, 50 leprosy patients without reaction and 50 leprosy patients in T1R. Mimicking B cell epitopes and T cell epitopes of keratin and MBP of HPLC grade and > 98% purity were commercially synthesized from M/s Thermo Scientific. ELISA was performed to find out the antibody response against synthesized mimicking B cell epitopes. MTT assay was done to find out the lympho-proliferation with mimicking T cell epitopes.

Results: We observed the antibody level against several B cell epitopes by ELISA and lymphoproliferation with T cell epitopes by MTT assay. We observed that 7 B cell epitopes of keratin and 2 B cell epitopes of MBP gave significantly high antibody response in T1R of leprosy. It was observed that out of total 15 synthesized mimicking B cell epitopes 9 mimicking B cell epitopes were found to be significantly associated with T1R group of leprosy. Further, it was observed that out of 9 mimicking T cell epitopes 1 was found to give high lymphoproliferation in T1R group of leprosy.

Conclusion: These 9 mimicking B cell epitopes could be used as predictive markers for T1R in serological assay.

O-188

THE ERYTHEMA NODOSUM LEPROSUM NEUTROPHIL SUBSET DEFINED BY THE PRESENCE OF IL-10R1 TRANSMIGRATES INTO SKIN LESION IN VIVO AND RESPOND TO IL-10 IN VITRO

Presenter: Milton Moraes

F.S. Pacheco[1], R.B.S. Prata[1], H. Ferreira[1], J.A.C. Nery[1], I.S.Tavares[1], J.B. Santos[1], T.F. Rodrigues[2], C.O. Silva[2], M.O. Moraes[1], E.N. Sarno[1], V. Schmitz[1]

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Objectives: Previous studies have demonstrated that neutrophils isolated from the blood of healthy donors do not respond to interleukin 10 (IL-10), unlike autologous mononuclear cells. In fact, steady state neutrophils constitutively express IL-10R2, but not IL-10R1, and the latter IL-10R chain is crucial for IL-10 responsiveness. The anti-inflammatory effect of IL-10 is critical in controlling immune responses. The erythema nodosum leprosum (ENL) is an immune-mediated inflammatory complication, which causes significant morbidity in affected leprosy patients. Our first aim was to investigate the utility of the neutrophil IL-10R1 surface expression as a biomarker of ENL and the second was to evaluate whether ENL neutrophils respond to IL-10 *in vitro*.

Method: A case–control study was employed to recruit 34 patients with ENL and 34 non-reactional BL/LL patient controls at Souza Araújo Outpatient Clinic, Brazil. Blood and skin biopsy samples were obtained from each patient before treatment. The expression levels of IL-10R1 per neutrophil were quantitatively measured by flow cytometry. Highly purified neutrophils from patients with ENL cases and LL controls were cultured with or without *M. leprae* whole-cell sonicates in the presence or absence of recombinant IL-10 for 24 hours. The supernatants were assessed with the enzyme-linked immunosorbent assay (ELISA) for inflammatory and regulatory cytokines. Serum levels of IL-10 were also determined by ELISA. The neutrophil IL-10R1 expression in the ENL skin biopsies was determined by immunofluorescence.

Result: In this study, we described a subpopulation of circulating neutrophils of ENL patients that exclusively express abundant levels of surface IL-10R1. Immunofluorescence analyses demonstrated *in vivo* evidence that IL-10R1^{+} neutrophils are present in the ENL lesions. Moreover, ENL neutrophils, but not non-reactional leprosy controls, were able to secret detectable levels of TNF *ex vivo* and the addition of IL-10 blocked TNF-release. In

addition, we've observed that healthy neutrophils stimulated by *Mycobacterium leprae* antigens secrete TNF, IL-6, IL-8, CCL4, IL-1RA *in vitro*. Consistent with the presence of a fully functional IL-10R, IL-10 prevented *M. leprae*-induced cytokines and induced releasing of TGF-B1.

Conclusion: Our data reinforce that neutrophils are a key actor of systemic inflammation associated with ENL and pointed IL-10 pathway as a target for future intervention protocols.

O-207

THE EFFECTS OF PREDNISOLONE TREATMENT ON SEROLOGICAL RESPONSES AND LIPID PROFILES IN ETHIOPIAN LEPROSY PATIENTS WITH ERYTHEMA NODOSUM LEPROSUM REACTIONS

Presenter: Edessa Negera Gobena

Edessa Negera[1], Melaku Tilahun[2], Kidist Bobosha[2], Saba M Lambert[1], Stephen L Walker[1], John S. Spencer[3] Abraham Aseffaa[2], Hazel M Dockrell[1], Diana N Lockwood[1]

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Objective: We conducted a case-control study to investigate the changes in lipid profiles and serological responses in Ethiopian patients with ENL reaction after prednisolone treatment.

Method: A case–control study was employed to recruit 30 patients with ENL and 30 non-reactional LL patient controls at ALERT Hospital, Ethiopia. Blood samples were obtained from each patient with ENL reaction before and after prednisolone treatment as well as from LL controls. The serological host responses to PGL-I, LAM and Ag85 *M. leprae* antigens were measured by ELISA. Total cholesterol (TC), triglyceride (TG), high density lipoprotein (HDL) and low density lipoprotein (LDL) were measured by spectrophotometric method.

Results: The host response to *M. leprae* PGL-I, LAM and Ag85 antigens were significantly reduced in patients with ENL reactions compared to LL controls after treatment. Comparison between patients with acute and chronic ENL showed that host-response to PGL-I was significantly reduced in chronic ENL after prednisolone treatment. Untreated patients with ENL reactions had low lipid concentration compared to LL controls. However, after treatment, both groups had comparable lipid profiles except for LDL, which was significantly higher in patients with ENL reaction. Comparison within the ENL group before and after treatment showed that prednisolone significantly increased LDL and HDL levels in ENL patients and this was more prominent in chronic ENL than in acute patients with ENL.

Conclusion: The significantly increased prednisolone-induced LDL and TG levels, particularly in patients with chronic ENL reactions, is a concern in the use of prednisolone for extended periods in ENL patients. The findings highlight the importance of monitoring lipid profiles during treatment of patients to minimize the long-term risk of prednisolone-induced complications.

O-261

FREQUENCY OF T CELL PHENOTYPES IN PERIPHERAL BLOOD OF LEPROSY PATIENTS WITH TYPE 1 REACTION

Presenter: Vinay Kumar Pathak

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Objective: T cell phenotypes play important role in inflammatory reactions in leprosy. Type1 reaction also called reversal reaction (RR) which particularly occurs in BT through BL types of leprosy with exacerbations of the pre-existing skin and nerve lesions due to up-gradation of CMI more often during and after MDT. This study envisaged the identification and analysis of T cell subsets involved in the regulation of inflammatory episodes in the borderline forms of Leprosy.

Method: Total of 30 clinically confirmed cases of leprosy patients which include Non- Reaction (NR) leprosy patients (n=15), Type 1 Reaction (RR) leprosy patients (n=15) and healthy volunteers (n=5) as control, were recruited after taking informed consent from patients. Peripheral blood mononuclear cells (PBMCs) were isolated from heparinised blood by Ficoll-hypaque gradient centrifugation and suspended in RPMI-1640 supplemented with L-Glutamine, antibiotic - antimycotic solution and 5% heat inactivated fetal calf serum (FCS). Antigenic stimulations were given by MLSA (*M. leprae* sonicated antigen) and PHA was used for positive control. Frequencies of CD4+CD25+ Foxp3+ regulatory T cells (Treg), Vγ9Vδ2 T Cells, CD3+CD56+ Natural Killer T Cells (NKT cells) and CD3-CD56+ NK cells (NK cells) were measured by using flowcytometer (BD FACSAria), in 48 hours culture after staining for respective cell markers. The results were analyzed using BD FACSDiva software and GraphPad Prizm version 8.

Result: On analysis of T cell phenotype we found significantly higher mean frequencies of Treg cells ($p = 0.0001$), NKT cells ($p = 0.0016$), NK cells ($p = 0.0342$) in RR group when compared to NR group. Similarly we found significant difference of Vγ9Vδ2 T cells when compared in RR and NR groups.

Conclusion: In our study we found higher level of stimulation with MLSA in Type 1 Reaction group (RR) as compared to non-reaction leprosy patients (NR). This result suggests potential role of these immune cells in development of inflammatory reactional episodes of leprosy, more specifically in Type 1 reaction and the same may be further investigated to predict a biomarker for inflammatory reactions in leprosy.

O-334

AN EVALUATION OF THE NDO-BSA ,LID-1, NDO-LID AND ANTIGENS FOR THE DIAGNOSIS OF LEPROSY IN YUNNAN PROVINCE, SOUTH WEST CHINA

Presenter: Jian Liu

Liu Jian[1,2], Shang Xiujian[3], You Yuangang[1,2], Xing Yan[1,2], Yuan Lianchao[1,2], Malcolm S. Duthie[4], Wen Yan[1,2]

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Objectives: Although MDT（Multi Drug Therapy） has been widely used for nearly 40 years, leprosy remains a public health concern in some areas. Although early detection of leprosy cases is vital to interrupt *Mycobacterium leprae* transmission, diagnosis is typically achieved by recognition of clinical symptoms by professional staff performing physical examinations in conjunction with microbiological assessment of Skin Slit Smear (SSS) and histopathology. In the last ten years serum antibody detection tests have emerged as a promising method to aid leprosy diagnosis.

Methods: Here we evaluated the ability of antigens NDO-BSA and LID-1 (ML0405 and ML2331), and the conjugate of these, NDO-LID, to detect antibodies in the sera of 112 leprosy patients and 169 control individuals in Yunnan Province, South west of China..

Results: We found that each antigen was readily detected by sera from MB patients, with the positive rate of NDO-BSA ,LID- 1 and NDO-LID being 97.3%,97.3% and 98.6%, respectively. Even among PB patients the antigens were 74.4%,6.4% and 69.2%. Receiver operating curve (ROC) analysis indicated that no matter if the leprosy case was classified as MB or PB, the detection efficiency obtained with NDO-LID was better than the other two antigens (with LID-1 being a little better than NDO-BSA).

Conclusion: Our results indicated the utility of NDO-LID to assist in the diagnosis of PB and MB patients, and suggest that these assays represent powerful diagnostic tools that could be implemented into the procedures of local health centers in leprosy-endemic regions to assist in achieving earlier diagnosis.

ILC-3: BASIC SCIENCE:

3.2 Microbiology

O-131

BACTERIAL BIOFILM IN LEPROSY PLANTAR ULCER

Presenter: E. Kumar

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Objective: The objective of the study is to investigate the occurrence of bacterial biofilm and its association with anti-microbial resistance in infected plantar ulcers in leprosy.

Method: A total of 88 leprosy patients with plantar ulcers were enrolled. Patients were clinically examined and the demographic and clinical profiles were documented. Swab samples were collected from the base of the ulcer with sterile swab. After inoculation of samples on culture media plates, aerobic bacterial cultures were identified by morphology, gram stain, motility and standard biochemical tests. All isolates were subjected for antimicrobial susceptibility test by Kirby-Bauer disc diffusion method except skin commensal. The biofilm formation was detected by Congo Red method. Statistically analysis was performed by SPSS software.

Results: A total of 88 subjects with plantar ulcer were analysed, out of which 89.8% (79/88) were treated for leprosy in the past and the remaining were undergoing leprosy treatment at the time of enrolment. The distribution of females and males were 34.1% (30/88), 65.9% (58/88) respectively with mean age of 54.2$\pm$SD15.7. 10 out of 88 subjects had more than one ulcer. Nine out of eighty eight subjects (10.2%) had acute ($\leq$ 30 days) ulcers; where as 89.8% had chronic ulcers with a mean size of 03 $cm^2\pm$SD4.80. Out of 98 swabs inoculated, 57.1% (56/98) of swabs yielded pure growth of one organism, 26.53% (26/98) were yielded mixed culture. 16.3% (16/98) of swabs did not yield any growth. A total of 108 bacterial isolates were identified including 37.96% (41/108) of pathogens and 62.03% (67/108) were skin flora. Among pathogens, *Staphylococcus aureus* 53.65 (22/41) was the most common followed by *Proteus mirabilis* 19.51% (08/41), *Pseudomonas aeruginosa* 09.75% (04/41) and other Gram negative bacilli 17.07% (07/41). Of the 41 pathogenic isolates tested for biofilm formation 41.46% (17/41) were positive and 58.53% (24/41) were negative. The biofilm producers showed statistically significant antimicrobial resistance against drugs such as amoxy-clav, doxycycline and co-trimoxazole.

Conclusion: Biofilm producers were commonly multidrug resistant; this was observed in the study isolates also. Hence, the screening for biofilm formation, along with the usual antibiotic sensitivity pattern needs to be performed as a routine procedure in plantar ulcers in leprosy to formulate effective treatment strategies for these patients.

O-147

LEPROSY RESEARCH SUPPORT

Presenter: Ramanuj Lahiri

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Objectives: Through the *Leprosy Research Support* interagency agreement (IAA), the National Institutes of Allergy and Infectious Diseases (NIAID) and the Health Resources and Services Administration's National Hansen's

Disease Programs (HRSA/NHDP) provide essential infrastructure for the conduct of national and international research on leprosy. The NIAID has sponsored centralized propagation of *Mycobacterium leprae* since 1975, and the HRSA/NHDP became the exclusive supplier of leprosy infected armadillo tissues in 1995. Major emphases of this IAA are to: 1) establish and maintain reference strains for *M. leprae* and *M. lepromatosis*, a newly described causative agent for leprosy, and 2) make various animal models available for leprosy research especially for drug/vaccine development and peripheral neuropathy studies.

Materials and Methods: After the National Human Genome Consortium completed the *Dasypus novemcinctus* (nine-banded armadillo) whole genomic sequence in 2004, molecular reagents became available to facilitate utilization of this animal as a model for leprosy, especially leprosy neuropathy, and to enhance its use for bacillary production. Highly bacilliferous armadillo tissues are shipped to NIAID contractors to produce biomedical research reagents derived from *M. leprae* that serve the global leprosy research community (www.beiresources.org). Live *M. leprae* bacteria cultured in athymic nude mouse footpads are also provided directly to investigators worldwide through this IAA.

Results: Accomplishments included: (1) establishment of the armadillo as a research animal model for human leprosy neuropathy; (2) establishment of a repository of *M. leprae* reference strains available to the research community; (3) development and validation of *M. leprae* strain typing tools and molecular diagnostic assays; (4) establishment of genomic libraries for *M. leprae* and *M. lepromatosis* clinical isolates for use as advanced molecular tools to discover determinants for virulence factors, drug resistance, and transmission; (5) discovery of leprosy zoonosis in armadillos in the United States; and, (6) conduction of a safety trial of LepVax, a newly developed leprosy vaccine, in armadillos.

Conclusion: The *Leprosy Research Support* collaboration between NIAID and HRSA/NHDP supports research progress throughout the global leprosy community. NHDP's goals for the future are to:
(1) continue to be the global supplier for live *M. leprae* and *M. leprae*-infected armadillo tissues for the production of high quality research reagents; (2) serve as the nodal agency to test new leprosy drugs, drug regimens, and vaccine efficacy in animal models; and (3) advance the nine-banded armadillo as a research model for peripheral neuropathy.

O-175

EPIDEMIOLOGICAL, CLINICAL AND MICROBIOLOGICAL ANALYSES OF PATIENTS INCLUDED IN THE WHO SURVEILLANCE NETWORK OF ANTIMICROBIAL RESISTANCE OF LEPROSY: RESULTS 2009-2018 FROM ONE REFERENCE CENTER

Presenter: Maria Dolores Lorenzo Navarro

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Objectives: The WHO surveillance network of antimicrobial resistance in leprosy gather resistance data on leprosy cases from sentinel sites. Apart from resistance results, we need to know characteristics of the patients and investigate the diagnostic tools.

Method: We analysed the epidemiological, clinical and microbiological characteristics of all patients for whom our reference center was implicated for the resistance diagnosis.

Results: We analysed the data from 590 MB leprosy cases (73% men and 24% women, living mainly in Africa: Madagascar 50%, Benin 14%, Mali 20%, Niger 10%. Median age was 34, and 7% (IC 95% 5-9) were children (<15

years). The most common clinical lesion was skin patches, found in 70% (IC 95% 66-74) of our cases. In relation to the disabilities caused by the illness, neurologic motor impairment was present in 8% (IC 95% 6-10) and sensitivity impairment in 5% (IC 95% 3-7). 30% (IC 95% 26-34) of our patients displayed facial lepromas, which can be seen as a form of disability leading to social exclusion and stigma. The sample includes 96 relapse cases with a mean time to relapse of 11 years (IC 95% 8,74-13,26).

Assuming all our cases of leprosy were given correct clinical diagnosis, PCR RLEP was positive on 67% (IC 95% 64-71) of the tests conducted, PCR GenoType LepraeDR on 64% (IC 95% 62-70), punch-biopsy microscopy was positive on 66% (IC 95% 62-70) whereas slit-skin smear on the ground was positive on 83% (IC 95% 80-87), being the most sensitive test in our study. Out of 358 positive DNA amplifications, we found 11 cases (5 %) of antibiotic-resistance with gene mutations (8 folP with dapsone resistance, 1 gyrA and fluoroquinolones resistance, and no rpoB with rifampicin resistance).

Conclusion: We described the characteristics of leprosy MB cases included in the WHO surveillance network of antimicrobial resistance in Africa. Microbiological analysis was positive in two-third of the cases sampled for resistance and permitted the detection of 11 cases of resistance. Further analysis of clinical and epidemiological characteristics will be needed to improve the selection of patients included and the efficiency of the laboratory testing.

O-186

IMPROVEMENT OF THE LABORATORY NETWORK OF BRAZIL FOR STRENGTHENING SURVEILLANCE OF DRUGS RESISTANCE TO HANSENIASE AND MONITORING OF RELAPSES

Presenter: Rosalia Maia

R. Maia[1]; R. Moura[2]; J. S. Silva[1], C. R. Filha[1], V. L. G. Andrade[3]

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Objective: To report the experience of the training of the professionals of the Central Public Health Laboratories (LACEN), the state references for leprosy and the municipal laboratories in procedures of collection staining and reading of bacilloscopy from slit skin smear and histological section for the research of Mycobacterium leprae with a view to strengthening surveillance of drug resistance in leprosy and monitoring relapses.

Method: The training was carried out in two stages, the first with the objective of training multiplier professionals from LACEN and the reference units. The second stage was carried out in the LACEN of the 6 states selected for the Project "Innovative Approaches to Strengthen Efforts for a Leprosy-free Brazil" - Bangkok Declaration Special Fund (BDSF), with the participation of 2 professionals from each laboratory of the 20 municipalities of said Project. The first stage of the training had a workload of 40 hours, and the second of 32 hours and the theoretical content addressed aspects related to collection staining and reading of bacilloscopy from slit skin smear and histological section for the research of Mycobacterium leprae.

Result: A total of 153 laboratory professionals were trained, with 56 LACEN multipliers and reference units for leprosy, 45 professionals from the municipal laboratories included in the BDSF Project area, and 52 professionals from other Brazilian municipalities.

Conclusion: The training of professionals was a fundamental strategy to standardize the performance of these tests for the organization and strengthening of drug resistance surveillance network and verification / monitoring of recurrence cases.

In addition, it was observed that the integration between specialist instructors and the professionals of the laboratory network (state and municipal) allowed an enriching exchange of experience, arousing the interest of multiplying the course for the other Brazilian municipalities to improve the articulation between epidemiological and laboratory surveillance networks in monitoring and responses of drug resistance and relapse.

O-288

BENEFICES DU REGIME CETOGENE LORS DE L'INFECTION A *Mycobacterium ulcerans* : PREMIERS PAS VERS UNE AMELIORATION DANS LA PRISE EN CHARGE DE L'ULCERE DE BURULI

Presenter: Mélanie Foulon

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Objectifs: Le régime cétogène est exploité depuis de nombreuses années à travers un large éventail de pathologies. Certaines études ont permis de démontrer l'intérêt de cette diète dans la cicatrisation et la réparation des tissus, tandis que d'autres études semblent mettre en avant son utilité dans le traitement de maladies infectieuses (infections du tractus urinaire) et/ou inflammatoires (la goutte, l'acné…). Dans leur ensemble, ces études soutiennent l'idée selon laquelle le régime cétogène aiderait l'organisme à prendre le dessus sur une infection et/ou une inflammation. Toutefois, il n'existe que très peu d'études ayant poussé les investigations sur cette voie. L'ulcère de Buruli, ou infection à *Mycobacterium ulcerans,* est une maladie chronique d'origine infectieuse caractérisée par de larges ulcérations cutanées et une inflammation locale sévère. C'est dans ce contexte que nous avons évalué l'impact du régime cétogène sur cette pathologie en utilisant un modèle murin mimant tous les stades de l'infection à *M. ulcerans* chez l'Homme.

Matériels et méthodes: Deux groupes de souris (n=25), l'un sous régime conventionnel (contrôle) et l'autre sous régime cétogène ont été infectés par *M. ulcerans* (10^4 bacilles/queue). L'évolution de l'infection a été appréciée à travers l'apparition des lésions, et des analyses histologiques et microbiologiques ont été réalisées.

Résultats: Nos premiers résultats ont montré un retard conséquent dans l'apparition des lésions chez les souris cétogènes comparativement à des souris sous régime conventionnel. Nous avons alors étudié à la fois la réponse de l'hôte et du bacille : les souris sous régime cétogène présentent une inflammation locale plus faible d'une part et la croissance du bacille dans les tissus est significativement ralentie d'autre part (résultat soutenu par des expériences *in vitro*).

Conclusion: Pour conclure, l'ensemble de ces résultats montre l'effet bénéfique du régime cétogène face au développement des lésions suite à une infection à *M. ulcerans*. Nous cherchons désormais à coupler les avantages de cette diète à l'antibiothérapie usuellement prescrite afin de réduire le temps de traitement et d'améliorer la cicatrisation des lésions associées à l'ulcère de Buruli.

ILC-3: BASIC SCIENCE:
3.3 Molecular Biology and Genetics

O-003

INFERRING DRUG RESISTANCE FROM GENOME-WIDE ANALYSIS MYCOBACTERIUM LEPRAE CLINICAL STRAINS

Presenter: Charlotte Avanzi

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Introduction: Leprosy, an infectious skin and nerve disease caused by Mycobacterium leprae, is curable with multidrug therapy (MDT) comprising dapsone, rifampicin, and clofazimine. Although the relapse rate is low, drug resistance is increasingly reported in relapse cases and even in primary cases. Resistance is a growing concern as MDT is the sole means of disease control.

Objective: Although research on leprosy remains challenging, due to the slow growth and lack of in vitro culture of leprosy bacilli, genomics can uncover new drug resistance mechanisms.

Method: DNA was extracted from 271 human skin biopsies or animal tissues and used for library construction. Libraries were multiplexed and sequenced on an Illumina HiSeq and reads analyzed using an in-house pipeline. Mutations were first analyzed in the drug resistance determining regions (DRDR) of *rpoB*, *folP1*, and *gyrA* for rifampicin, dapsone, and the second-line drug ofloxacin, respectively. No resistance to clofazimine is currently known. Genes with >5 non-synonymous, frameshift or nonsense mutations were identified and the association of some mutations with known drug resistance determining region mutated strains was evaluated.

Results: 160 genomes with >5X coverage were analyzed. Mutations in DRDR were observed in 24 strains including 10 MDR strains. Unusually, one dapsone-resistant Brazilian strain from a primary case showed a mutation in *gyrB* (Thr503Ile). Five additional genes were highly polymorphic in 24 drug-resistant strains.

Conclusion: We identified a set of highly polymorphic genes and report a new mutation in the DRDR of *gyrB* associated with resistance to the second-line drug ofloxacin in a dapsone-resistant strain. In mycobacteria, mutations causing quinolone resistance occur principally in the QRDR of *gyrA* and, less frequently, in *gyrB*. Unlike *Mtb*, *gyrB* mutations in M. leprae clinical isolates have not been previously identified but this mutation likely confers quinolone resistance, as it does in *Mtb,* since Thr503 is situated in the essential TOPRIM domain, involved in binding *GyrA* to form the catalytic core of gyrase. Furthermore, thanks to genomics, we have identified a couple of genes that might be associated with drug resistance but additional investigation using surrogate mycobacterial hosts is required.

O-004

MOLECULAR SURVEILLANCE OF ANTIMICROBIAL RESISTANCE AND TRANSMISSION PATTERN OF *MYCOBACTERIUM LEPRAE* IN CHINESE LEPROSY PATIENTS

Presenter: Hongsheng Wang

Hongsheng Wang and Santosh Chokkakula
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Objective: Antimicrobial resistance (AMR) of leprosy is one of the major threats to clinical management and public health in China. We investigated the emergence of AMR of *Mycobacterium leprae*, its relationship with bacillary index (BI) before and after standard multidrug therapy (MDT) and strain transmission pattern in China.

Method: We enrolled 290 leprosy cases from 4 endemic provinces namely Guizhou, Hunan, Sichuan and Yunnan, and performed gene sequencing of both WHO recommended drug resistance determining regions (DRDRs) containing *folP1, rpoB* and *gyrA* genes and non WHO recommended DRDRs include *rpoB, gyrA, gyrB, rpoA, rpoC, 23S rRNA* and *nth genes* to establish comprehensive surveillance system for the AMR. The BI and its correlation with drug resistance were evaluated. Genomic and epidemiological features of M. leprae were analysed to examine the transmission patterns of drug resistance strains.

Results: Among 290 cases, 7 (2.41%), 1 (0.34 %), 5 (1.72%), 1 (0.34 %) and 1 (0.34 %) were confer to single drug resistant mutation of *folP1, rpoC, gyrA, gyrB* and *23S rRNA* genes respectively, whereas dual mutations of both *folP1* and *gyrA, rpoB* and *gyrA, gyrA* and *23S rRNA* genes were observed in 1 (0.34%) case each. Higher drug resistance frequency was reported in relapse than new cases (P= 0.004). The mutated strains occurred in 3 of 81 cases (*folP1, rpoC* and *gyrA* mutation in each case) with BI completely declined, 7 of 103 cases (5 folP1, 1 23S rRNA and 1 both rpoB and gyrA) with BI moderately declined and 4 of 34 cases (3 *gyrA* and 1 *gyrB*) with BI constant (P= 0.268). Mutated strains of *M. leprae* at counties level were deeply studied by obtained strains from patients resided in the counties where AMR strains detected. We recognised, most of the AMR strains exhibited no clear cluster pattern, indicates genetic diversity even in the same county. Interestingly, there is a one clear cluster was observed with wild and mutated strains from Huayuan county of Hunan with clean epidemiological and known migration information within the county level.

Conclusion: Higher AMR of dapsone and ofloxacin implies a concern of re-emergence of leprosy from cases previously treated with regimen other than WHO-multi drug therapy. AMR may not be a main cause for the constant BI in leprosy. Less transmission at county levels may indicates probable ongoing transmission of AMR strains at close contacts level in China.

O-010

MOLECULAR EPIDEMIOLOGY OF LEPROSY IN CEBU, PHILIPPINES

Presenter: Richard Truman

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Introduction: Despite widespread availability of quality medical care and Multiple Drug Therapy, the new case detection rate in the area of Cebu, Philippines has averaged 7.2/100,000 and produced more than 4509 new cases over the last 15 years. Unfortunately, approximately 10% of these new cases are children and >5% of the new cases present with Grade 2 disabilities. The continued accumulation of cases suffering the life-long effects of a slow

chronic infection puts an immense burden on healthcare systems. A better understanding of the networks which sustain leprosy transmission and new strategies to interrupt its spread is needed.

Method: We used molecular strain-typing to investigate the dynamics of leprosy transmission in Cebu. DNA was extracted directly from slit skin smears (SSS) of newly diagnosed cases and examined by PCR for gene sequences specific to M. leprae and M. lepromatosis. Strain diversity was further assessed by examining the allelic polymorphisms in a battery of 21 different Variable Number Tandem Repeats (VNTR), 16 specific Single Nucleotide Polymorphisms (SNP) or insertions/deletions (InDel), and later using Whole Genome Sequencing augmented with the use of a custom organic bait system to enrich and recover microbial DNA from the SSS. The identified Drug Resistance Determining Regions (DRDR) also were screened in some samples.

Result: A total of 362 patient samples were examined. All the samples were confirmed to harbor M. leprae, but no evidence of infection with M. lepromatosis was found. A total of 180 samples were fully typeable by VNTR and up to 10 different patient clusters could be identified. VNTR-Clusters showed significant geographical association, but no other underlying epidemiological similarity. WGS was successful and more rewarding with 41 samples. A total of only 634 genetic polymorphisms were observed in the M. leprae genomes recovered from these 41 cases revealing 3 major strain-types [1A (n=31), 1C (n=1) and 3K (n=9)] and a total of 6 new Pseudogenes. DRDR analysis found resistance only to Dapsone in 2.9% of the samples. SNP genotype diversity also showed strong geographical clustering and identified 5 cases with complete genetic identity likely belonging to the same transmission network.

Conclusion: Molecular epidemiological techniques can give valuable insights into the dynamics of leprosy transmission and help identify here-to-fore unrecognized transmission networks. With its low degree of genetic diversity, VNTR should be used along with SNP in a lineage dependent manner to gain the greatest insight into M. leprae strains and the ecology of leprosy.

O-015

GENETIC DIVERSITY, DRUG RESISTANCE AND DISTRIBUTION OF *M. LEPRAE* FROM 62 CLINICAL ISOLATES FROM BRAZIL

Presenter: John Stewart Spencer

J.S. Spencer[1], M.B. da Silva[2], R.C. Bouth[2], M.A.C. Frade[3], F. Bernardes Filho[3], E.N. Sarno[4], J.A.C. Nery[4], C. Avanzi[5], A. Benjac[5], S.T. Cole[5], C.G. Salgado[2]

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Objective: Whole genome sequence analysis of hundreds of clinical strains from all over the world have been characterized into four main SNP types (SNP 1-4) and 16 subtypes that have a fairly restricted geographic range worldwide. The genetic diversity and distribution of *M. leprae* strain types from clinical isolates from different regions of Brazil was examined.

Method: Skin biopsy samples from untreated leprosy patients were obtained and fixed in 70% ethanol. The samples were from five geographic areas: Pará (PA) and Maranhão (MA) in the north; Ceará (CE) in the northeast; Rio de Janeiro (RJ) and São Paulo (SP) in the southeast. *M. leprae* DNA was extracted from purified bacilli after depletion of host tissue DNA, and libraries were prepared and then sequenced. Sequences were aligned with those from published reference strains and phylogeny was performed on SNP alignments using MEGA6.

Results: Sixty-two *M. leprae* genomes were sequenced, with coverage ranging from 2X to 174X. The 49 *M. leprae* strains from the north and northeastern states (PA, MA and CE) belonged mainly to SNP type 4 (41 subtype 4N,

four 4P), three were subtype 3I, and one was 1D. SNP type 4 was originally found geographically in West Africa, and transfer of this subtype to South America was associated with the slave trade. In RJ, 8/9 strains belonged to SNP subtype 3I-2, while the one strain was 1D. Interestingly, 1D is found mainly in Southeast Asia but has never been reported in Brazil until now. In SP, three samples were SNP subtype 3I-1, while one was 4N. Subtype 3I-1 has been sequenced from medieval strains from Denmark and England burial sites and exists in present day squirrels in the British Isles, but had not been completely sequenced in South America until now. Two of the strains had mutations in drug resistance determining regions conferring resistance to dapsone.

Conclusion: Overall, our results show that diverse strains are circulating in Brazil but there are phylogeographic trends as the diversity within each state seems low. The finding of predominantly SNP type 4 strains in the north and northeast (45/49, 92%) is consistent with the former centers of the slave trade from West Africa being mainly in those regions of Brazil, whereas the finding of mainly 3I lineage in the southeast in RJ and SP (11/13, 85%) is consistent with settlers arriving from colonizing countries from Europe.

O-039

IDENTIFICATION OF BIOMARKERS OF LEPROSY PROGRESSION IN LEPROSY AFFECTED HOST SIGNALLING PATHWAYS USING A SYSTEMS BIOLOGY APPROACH

Presenter: Pushpendra Singh

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Objectives: Each year, >200,000 new cases of leprosy are detected globally. Early detection of leprosy is currently the single biggest priority of leprosy control efforts, but currently there are no tests available for that. Using nine-banded armadillo model (only animal that recapitulates all aspects of human leprosy), we investigated the transcriptional changes in the experimentally infected animals. Usually armadillos develop disseminated disease within 2 years of experimental infection, however, its been reported that approx. 20% animals can resist even high-dose experimental inoculation. We explored this differential susceptibility of armadillos to compare the gene expression pattern of the leprosy-resistant vs -susceptible animals in order to identify characteristic gene expression patterns associable with disease progression of the susceptible host.

Methods: 10 armadillos were challenged with high-dose experimental infection of M. leprae bacilli intravenously and their PBMCs were collected and cryo-preserved at the 4th and 18th month post-infection. These animals were monitored for the *M. leprae* specific antibody titers using ELISA and nerve conduction velocity. The revived PBMCs were stimulated with various *M. leprae* antigens and RNA was extracted, followed by library preparation for RNA-Sequencing. After sequencing was completed, an analysis pipeline assessed differential gene expression for the samples.

Results: RNA-Seq results of 13 samples from 10 armadillos (n=6 resistant and 4 susceptible) were compared for differential gene expression and hierarchical clustering using standard bioinformatics and statistics tools after normalization. The resistant animals clustered separately except one susceptible animal also getting clustered in their group while the susceptible animals grouped together.

Conclusion: This study has identified candidate genes and pathways related to autophagy which are important for elimination of mycobacteria from macrophages (MREG, OPTN etc). Genes involved in Lipid Droplet (LD) formation and subversion of immune response (Cav-1) and myelin sheath (MPZ) were also found to be differentially

expressed in susceptible animals and may be candidate biomarkers for disease progression. The pathways affected by these genes can help in identifying the biomarkers, which can be potentially useful for early detection of disease progression. Further validation of such biomarkers will be useful.

O-057

DEFINED PARAMETERS FOR MOLECULAR VIABILITY OF *MYCOBACTERIUM LEPRAE* IN TISSUES

Presenter: Linda B. Adams

J. H. Collins[1], S. M. Lenz[2], N. A. Ray[1], D. A. Hagge[3], R. Thapa[3], M. Balagon[4], D. M. Scollard[1], D. L. Williams[1], R. Lahiri[1], L. B. Adams[1]

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Objective: *Mycobacterium leprae* is a slow-growing bacteria that cannot be cultured in axenic media. This presents a number of challenges for studying the growth of *M. leprae* and the effectiveness of new and existing drug therapies for treating leprosy. We previously developed a molecular viability assay (MVA) which measured expression of *hsp18* and *esxA* to determine viability of *M. leprae* directly from infected tissue. The objective of the current study was to define objective parameters of viability in our MVA for practical use on clinical specimens.

Method: MVA Assay: DNA and RNA are extracted from the tissue and *M. leprae* are enumerated on the DNA fraction via RLEP qPCR. Based on this count, DNased RNA is normalized to the equivalent of $3x10^3$ *M. leprae* per reverse transcription reaction and each gene is amplified by quantitative PCR.

Using MVA results from *M. leprae* with high or low viability, we performed receiver operating characteristic (ROC) curve analyses to determine cutoff values for high viability, low viability, and dead bacteria based on the expression of *hsp18, esxA* and 16S rRNA. To verify these values, a time-to-death mouse foot pad assay was performed in immunocompetent BALB/c mice inoculated with $3x10^7$ *M. leprae* and sacrificed on Day 1 and at 1, 3, 6, 9, and 12 months post infection. We applied these parameters to determine *M. leprae* viability in clinical biopsy specimens from patients in Nepal and the Philippines.

Results: Our analyses established cut-off levels of expression of all three genes for viable bacteria with high confidence (99% CI). The time-to-death assay showed a significant decrease in the expression of all three genes over a 12 month period and confirmed our cutoff values. When applied to clinical specimens, there was a strong correlation between RLEP enumeration and the bacterial index of the biopsy. *M. leprae* viability decreased with ongoing MDT. The MVA also detected viable *M. leprae* in relapse patients. We developed a user-friendly Excel program for reporting viability data.

Conclusion: The MVA is an accurate, sensitive, field-friendly test which can be applied in both clinical and research settings. Clinically, a viability assay would be most useful to monitor treatment or confirm suspected relapse.

O-058

REANALYSIS AND INTEGRATION OF PUBLIC MICROARRAY DATASETS REVEALS NOVEL HOST GENES MODULATED IN LEPROSY

Presenter: Milton Ozório Moraes

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Objective: It is demanding to improve precision in leprosy diagnosis. Reanalysis of gene expression datasets and integration of their results could strengthen the evidence of patwhays and genes differentially expressed across multiple contexts in leprosy.

Methods: Nine microarray datasets publicly available on NCBI's Gene Expression Omnibus (GEO) were retrieved, annotated and re-analyzed in a custom pipeline written in R programming language. Overall, several datasets were created with human leprosy skin lesion samples and some datasets from *in vitro M. leprae* experiments. After individual study pre-processing, statistical analyzes and visualization, differentially expressed genes (DEG) from multiple similar studies were combined according to contexts, e.g., LL vs. BT, and screened by meta-analytical tools (random-effects model [REM], MetaDE R package) and integrative ratio statistics (sdef package) . After comparison of different integrative approaches, upset plots were drawn to visualize the intersection of DEG. Also, over-representation analysis (ORA) was applied to the common list of genes from the top 2 integrative methods to find whether any ontologies are enriched in the selected gene list.

Results: Reanalysis of individual datasets revealed several differentially expressed genes. Then, we tested six integration and meta-analytical methods, both at the P-value and effect size level. Next, we selected sdef as the main method to select differentially expressed genes given the number of selected genes and REM as the secondary one, based on effect size. Overall, we have found various genes that are not considered differentially expressed by all studies, but was depicted in most of them, such as: *LTB, CYBB, UBD, FA2H, SPP1, KLK7, APOE, APOC1, PI3, MPP7, LTF, ACOD1, KRT5, KRT6A, DMKN, SCEL, STAT1, AIM2, GZMA, GBP1*. Nevertheless, several of these genes have already been linked to leprosy pathogenesis and others are so far unrelated or poorly studied in this context. Enrichment analyzes revealed that the combined list of DEG are enriched for biological processes such as epidermal differentiation, innate and adaptive immune response, iron metabolism, lipid metabolism, keratinocyte differentiation, cornification and others.

Conclusion: This study presents and reinforces evidences of differential expression of several genes depicting novel pathways associated with leprosy pathogenesis. Altogether, our data are useful in better understanding host response to the disease and, at the same time, provide a list of potential host biomarkers that could be useful in leprosy diagnosis.

O-072

ANALYSIS OF miRNOME EXPRESSION BRINGS NEW INSIGHTS TO LEPROSY IMMUNE PHYSIOPATHOLOGY

Presenter: Claudio Guedes Salgado

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Objective: Leprosy remains as a public health problem and its physiopathology is still not fully understood. MicroRNAs (miRNA) are small RNA non-coding that can interfere with mRNA to regulate gene expression. A few studies using DNA chip microarrays have explored the expression of miRNA in leprosy patients using a predetermined set of genes as targets, providing interesting findings regarding the regulation of immune genes. However, using a predetermined set of genes restricted the possibility of finding new miRNAs that might be involved in different mechanisms of disease.

Method: miRNome of tuberculoid (TT) and lepromatous (LL) patients was described using both blood and lesional biopsies from classical leprosy patients (LP) who visited the Dr. Marcello Candia Reference Unit in Sanitary Dermatology in the State of Pará, and compared them with healthy subjects. Using a set of tools to correlate significantly differentially expressed miRNAs with their gene targets, possible interactions and networks of miRNAs that might be involved in leprosy immunophysiopathology were identified.

Results: Leprosy miRNA profile in blood is distinct from that in lesional skin as well as that four main groups of genes are the targets of leprosy miRNA: (1) recognition and phagocytosis, with activation of immune effector cells, where the immunosuppressant profile of LL and immunoresponsive profile of TT are clearly affected by miRNA expression; (2) apoptosis, with supportive data for an antiapoptotic leprosy profile based on BCL2, MCL1, and CASP8 expression; (3) Schwann cells (SCs), demyelination and epithelial–mesenchymal transition (EMT), supporting a role for different developmental or differentiation gene families, such as Sox, Zeb, and Hox; and (4) loss of sensation and neuropathic pain, revealing that RHOA, ROCK1, SIGMAR1, and aquaporin-1 (AQP1) may be involved in the loss of sensation or leprosy pain, indicating possible new therapeutic targets. Additionally, AQP1 may also be involved in skin dryness and loss of elasticity, which are well known signs of leprosy but with unrecognized physiopathology.

Conclusion: miRNA expression reveals new aspects of leprosy immunophysiopathology, especially on the regulation of the immune system, apoptosis, SC demyelination, EMT, and neuropathic pain.

O-094

A LARGE-SCALE GENOME-WIDE ASSOCIATION AND META-ANALYSIS IDENTIFIED FOUR NOVEL SUSCEPTIBILITY LOCI FOR LEPROSY

Presenter: Yonghu Sun

Yonghu Sun，Furen Zhang

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Objective: Genome-wide association studies (GWAS) have led to the discovery of several susceptibility loci for leprosy with robust evidence. However, these loci explain only a fraction of the disease risk and it is clear that more genes and loci remain to be discovered.

Method: In this study, we performed a new GWAS analysis including 1197 leprosy cases and 1426 controls by using a population-specific array (illumina Zhonghua Array). Furthermore, we conducted a three -stage GWAS Meta analysis comprising 8,156 cases and 15,750 controls of Chinese ancestry.

Results: Joint association analysis of all the samples of the discovery and two validation stages, totaling 8,156 cases and 15,750 controls, was performed using a fixed-effects meta-analysis. Four novel associations were discovered at genome-wide significance (P<5x10-8), including rs6807915 on 3p25.2 (P=1.94x10-8, OR=0.89), rs4720118 on 7p14.3 (P=3.85x10-10, OR=1.16), rs55894533 on 8p23.1 (P=5.07x10-11, OR=1.15), and rs10100465 on 8q24.11 (P=2.85x10- 11, OR=0.85) [Table 1]. Two novel suggestive associations were also identified at rs72715458 on 4q34.3 (P=2.62x10-7, OR=0.85) and rs34411505 on 16p12.1(P=5.82x10-7, OR=0.86), whose evidence is just below genome-wide significance.We also found that the extensive associations within the MHC region were driven by variants located around the region containing the HLA class II genes, with HLA-DRB1*15:01 identified as the most significant HLA variant (P = 4.21x10-44; OR =2.17). Based on all the findings, we estimate the SNP heritability of leprosy at 0.199 (se=0.01), by using the genotyped autosomal SNPs and assuming a disease risk of 0.0001. In total, all the identified Genome-wide significant variants thus far as being robustly associated with leprosy risk explain approximately h2=13.53% on the liability scale.

Conclusion: Together, these findings significantly expand our understanding of the genetic susceptibility factor and suggest new biological pathways related to leprosy.

O-095

PROFILE OF SNP TYPING AND DNA MUTATION FOR DRUG RESISTANCE IN STRAINS OF *M. LEPRAE* FROM LEPROSY PATIENTS IN PARÁ STATE, NORTHERN BRAZIL, AMAZON REGION

Presenter: Claudio Guedes Salgado

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Objectives: Pará state has one of the highest leprosy new case detection rate in Brazil. Despite MDT efficacy to cure leprosy, some cases do not respond well. Besides, although different strains may respond different to MDT, little is known about *M. leprae* genotyping in Brazil and, especially, on Amazon. The main goals of our work were to define the SNP typing of the strains of patients with leprosy in Pará state, and to analyze those strains for mutation in the drug resistance determining regions (DRDR).

Method: Skin lesional biopsies were taken from 134 new or relapsed leprosy patients. DNA was extracted and molecular screening was done using RLEP PCR. Positive DNA was used for library construction and sequencing on a illumina Nextseq.

Results: PCR was positive for 119 skin samples. Whole genome sequence was obtained from 45/134 of the strains. 44 were characterized as SNP type 4, mainly the subtype 4N (88.8%, 40/45) and 8.8% (4/45) of the 4P subtype. Only 1 strain (2.2% - 1/45) was characterized as 1D. The resistance profile was done in 62.2% (74/119) of the strains. 79.7% (59/74) were new cases and 20.3% (15/74) relapsed leprosy. In the DRDR, 44.6% (33/74) were wild type, 2.7% (2/74) presented a mutation in the folP1 gene (P55A and P55L), conferring resistance to sulfones. In one of these strains, a mutation was detected in the gyrB gene (T503I), conferring resistance to ofloxacin, therefore, a multidrug resistant strain. The percentage of resistance was 6.67% (1/15) in relapse leprosy patients and 1.7% (1/59) among new cases, the multidrug resistant strain. The family of this patient was evaluated, and 14.3% (2/14) of the family members were diagnosed with leprosy, the 4-year-old son, and the patient's wife,

both borderline tuberculoid leprosy. The strain of child's lesion was wild type in DRDR, therefore, without the mutations found on his father strain. Unfortunately, it was not possible to amplify *M. leprae* DNA from wife's biopsy.

Conclusion: 2.7% of the strains showed antimicrobial resistance, with a higher percentage among relapsed cases. Most of the strains were 4N subtype, followed by 4P and a single 1D. We still don't know if there is any influence of those variations on the leprosy endemics dynamic on Amazon or even on the treatment results of the cases, but we do have patients that do not improve with MDT, even with adequate treatment and no mutations in DRDR of *M. leprae*.

O-146

MOLECULAR DYNAMICS OF *MYCOBACTERIUM LEPRAE* GENOTYPES FOR UNDERSTANDING OF STRAIN DISTRIBUTATION AND STRAIN MIGRATION OF LEPROSY IN ENDEMIC PROVINCES OF CHINA

Presenter: Santosh Chokkakula

Santosh Chokkakula and Hongsheng Wang
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Objective: Currently the prevalence of leprosy is not a serious public health concern in China, however endemicity remain observed in some provinces. A detailed genetic characterization of *M. leprae* was performed with variable number tandem repeats (VNTR) and single nucleotide polymorphism (SNP), and those were compared with the epidemiological and migration links of the cases to explore the strain distribution and migration patterns in endemic provinces.

Method: During the study period 2013 to 2017, 290 clinical isolates of *M. leprae* were collected from skin biopsy samples of leprosy, from four endemic provinces namely Guizhou, Hunan, Sichuan and Yunnan. VNTR and SNP typing have performed to examine the genotypic diversity of each isolate. Genotyping information was subjected to molecular cluster analysis and then co-related with epidemiological as well as migration features of the cases at counties level of four provinces to know the distribution and migration of *M. leprae* isolates.

Results: Among 290 recruited cases of leprosy, 270 (93.1%) were newly diagnosed and 20 (6.9%) were relapse. Most of the cases (270, 93. 1%) were MB while remaining were PB (20,6.9%). The predominant VNTR copy numbers 8, 13, 13, 3, 8, 19, 9, 11, 15, 10, 4, 2, 9, 7, 2, 3 and 5 were observed for AC8b, (GTA)9, (AT)17, *rpo*T, (AC)9, (AT)15, (AC)8a, (TA)18, (TTC)21, (TA)10, (GGT)5, 21-3, 6-7, 18-8, 23-3, 12-5 and 27-5 loci respectively. Of 290 isolates tested for SNP, most frequent SNP was 3K (271,93.4%) followed by 1D (12, 4.1%), 3I (4 ,1.3%) and 3J (3 ,1.2%). Molecular epidemiological analysis identified greater number of unique genotypes of *M. leprae*. Very few clusters were identified i.e, Ziyun of Guizhou (1, n=2), Chenxi of Hunan (1, n=2), Qiubei of Yunnan (1,n=2), Zhongfang of Hunnan (1, n=2), Yongding of Hunan (1, n=3), Zhijin of Guizhou(1, n=3), Zixing of Hunan (1, n=3) and Huayuan of Hunan(1,n=6) with clear epidemiolocal as well as migration relation of the cases at village levels.

Conclusion: The 3K is the predominant SNP type in China. Though endemicity of leprosy remain observed in four provinces, strains from most of the counties of these provinces haven't forms more clusters, suggest less migration; which might be bring non endemicity situation of leprosy in endemic provinces in future. Still better interventions are to be implemented for the tracing of household and close contact of leprosy which will prevents the further ongoing transmission of leprosy in endemic provinces of China.

O-154

DEVELOPMENT AND VALIDATION OF A qPCR KIT FOR LEPROSY DIAGNOSIS

Presenter: Milton Moraes

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Objective: The early detection is still a challenge in leprosy diagnosis. Here we developed and validated a qPCR KIT produced with Brazilian reagents under Good Manufacturing Practices (GMP) that have direct applications in patients exhibiting leprosy-like lesions for routine diagnosis in surveillance centers in the country.

Method: Samples of *M. leprae* purified from athymic nude mouse footpads, DNA from 15 different mycobacteria and skin biopsies from leprosy patients and other skin conditions collected at the Ambulatório Souza Araújo-Fiocruz / Brazil were used. DNA was extracted by the DNeasy Blood and Tissue Kit (QIAGEN) and analyzed by qPCR using the NAT-HANS kit, developed by the Institute of Molecular Biology of Paraná (IBMP / Brazil). The developed multiplex system was standardized to simultaneously amplify two specific M. leprae targets: 16SrRNA and RLEP, plus the 18S mammalian gene that serves as internal reaction control. The validation step was composed of intra- and inter-laboratory analyzes from the experiments to determine sensitivity, specificity and reproducibility.

Results: After the development and standardization of the NAT-HANS kit, the concentrations of the reagents that composed the kit, the amount of DNA in the reaction, the threshold of the real-time PCR equipment, and other parameters were established. For reproducibility analysis, DNA dilution curves controls (M. leprae and synthetic DNA) were compared. The intra- and inter-operator reproducibility results for all points of the curve showed a maximum deviation of 25%. The detection limit of system was less than 2.29 copies of DNA, compatible with the limit of the PCR technique (1 to 3 copies of the target per reaction). For analytical specificity analysis, DNA from other 15 mycobacteria isolated from culture or tissue were used and the result indicated no cross-reaction with any of them. As there is currently no gold standard test for leprosy diagnosis, sensitivity and specificity analyzes for patient samples were classified as positive and negative based on histopathology and clinical outcome. Thus, the system achieved sensitivity of 0.89 and 1 for the specificity.

Conclusion: The results obtained in this study suggest that the developed system can effectively contribute to an early and efficient leprosy diagnosis.

O-160

RARE CODING VARIANTS IN THE MITOCHONDRIAL 28S RIBOSOMAL PROTEIN S5 GENE CONFER RISK FOR LEPORSY IN CHINESE

Presenter: Yan Xing

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Objective: Leprosy is an infectious disease caused by *Mycobacterium leprae*, with about 200,000 new cases occurring worldwide each year. Despite numerous risk loci uncovered by genome-wide association studies (GWAS), the effect sizes of common variants are relatively modest. Rare genetic functional variants with large effects on risk for disease, not captured by GWAS, need to be identified.

Method: We report whole exome sequencing (WES) results in 26 people from 8 leprosy-affected families and follow-up genotyping of the candidate variants in larger case-control sample sets.

Result: A rare missense variant in MRPS5 (Mitochondrial 28S Ribosomal Protein S5) was identified and validated in 376 cases and 219 controls of Chinese descent (p = 0.021, odds ratio [OR] = 2.281) as contributing to leprosy risk.

Conclusion: Consistently, mRNA expression level of MRPS5 was significantly changed in Mycobacterium leprae antigen-stimulated Peripheral blood mononuclear cells (PBMC), indicating an active role of MRPS5 in leprosy pathogenesis.

O-171

MYCOBACTERIUM LEPRAE-INDUCED FOAM CELL FORMATION VIA PEROXISOME PROLIFERATOR-ACTIVATED RECEPTOR (PPAR)-γ AND PPAR-δ IN HOST MACROPHAGES

Presenter: Akira Kawashima

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Objective: *Mycobacterium leprae* (*M. leprae*) is a typical intracellular bacterial pathogen. In lepromatous leprosy (LL), skin histiocytes, typically macrophages, harboring extensive bacterial multiplication, gain a distinctive foamy appearance due to an increased intracellular lipid load. *M. leprae* resides and replicates within those enlarged, lipid-filled phagosomes. However, the mechanism that modifies the lipid homeostasis in *M. leprae*-infected host cells was largely unclear.

Methods and Results: In the previous studies, we identified peroxisome proliferator-activated receptors (PPARs) as a key factor that play important roles in intracellular lipid accumulation following *M. leprae* infection. Therefore, we first infected human promonocytic THP-1 cells with *M. leprae* to evaluated mRNA levels of known PPARs target genes by real-time PCR analysis. We showed that a cluster of PPAR target genes including adipocyte differentiation-associated protein (*ADRP*), fatty acid binding protein 4 (*FABP4*), scavenger receptor (*CD36*), apolipoproteins (*APOE*, *APOC*), and acyl-CoA synthetase long chain family (*ACSL*) were significantly induced in live *M. leprae*-infected cells but not dead *M. leprae*-stimulated cells. Among PPAR superfamily members, PPAR-δ and PPAR-γ expressions were induced by *M. leprae* infection in a bacterial burden-dependent manner, and their proteins underwent nuclear translocalization after *M. leprae* infection. The activation of PPAR-δ signaling by a selective agonist raised the gene expressions of *ADRP* to a level comparable to that induced by *M. leprae* infection. Conversely, interference with either PPAR-δ or PPAR-γ signaling by antagonists abolished the effect of *M. leprae* infection to modify host gene expressions, and consequently inhibited the development of foam cell phenotype in *M. leprae*-infected cells. We also demonstrated that mRNA levels of ADRP was significantly decreased in the skin smear samples after completion of MDT.

Conclusion: These results suggest that in response to excess *M. leprae* invasion, host PPAR-δ and PPAR-γ signaling were activated to induce an array of adipocyte differentiation-associated genes, thus tilting the intracellular lipid homeostasis towards built-up and accumulation of intracellular lipid droplets to accommodate *M. leprae* parasitization. As key molecules in host adaptation, certain PPAR target genes in skin lesions may serve as biomarkers for evaluating host response towards MDT and monitoring recurrence of active infection.

O-177

MOLECULAR STUDY OF *MYCOBACTERIUM LEPRAE* GENE RELATED WITH ANTI-MICROBIAL RESISTANCE IN LEPROSY PATIENT OF MALUKU AND PAPUA, INDONESIA 2017-2018

Presenter: Yustinus Maladan

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Objective: Antimicrobial Resistant (AMR) of Multi Drugs Therapy (MDT) of leprosy becomes challenges in leprosy elimination, especially in eastern most part of Indonesia like Papua and Mallucas. The defaulter and relapse cases are reported from many areas in Papua and Mollucas. The objective of the study is to detect the gene mutation of *Mycobacterium leprae* that associated with drugs resistant such as *rpoB* as target of rifampicin, *folP1* as a target of dapsone and *gyrA* as a target of ofloxacin.

Method: The study was carried on during 2 years survey from 2017 to 2019 in main leprosy pocket in Papua and Mollucas. The number of sample that been collected were 289, consist of new patients, relapses and default. The DNA was extracted using Qiagen Mini Column kit. The gene detection base on gene amplification was followed the WHO guideline. Sanger sequencing was perform to sequence the nucleic acid and the polymorphism was analyze using BLAST with sequence reference NC_002677.1

Result: We found gene mutation in 16 samples from Papua and Mollucas consist of 8 nonsense mutation and 8 point mutation. Polymorphism in point mutation is found in kodon T450A of *rpoB* gene. Polymorphism is also find in *folP1* gene in V39I and V48A. According to the previous study mutation V48A in *folP1* direct the weak resistance.

Conclusion: We don't find any mutation that confirmly cause the drugs resistance however some polymorphisms detected in both of *rpoB* and *folP* as a target of rifampicin and dapsone. Despite of the mutations in Papua strain has not been confirmed yet but the present of polymorphism become a sign to improve our awareness of AMR in leprosy.

O-178

CLINICAL AND MOLECULAR BIOLOGICAL RESPONSE TO MULTIDRUG THERAPY IN MULTIBACILLARY LEPROSY AT THE END OF 12 MONTHS: A PROSPECTIVE OBSERVATIONAL STUDY FROM NORTHERN INDIA

Presenter: Madhvi Ahuja

M. Ahuja[1], M. Lavania[1], I. Singh[1], R.P. Turankar[1], V.K. Pathak[1], V. Singh[1], U. Sengupta[1], L. Das[2], A. Kumar[3] and R.J. Nathan[4]
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Objectives: WHO introduced the fixed duration multidrug therapy (FD-MDT) for the treatment of leprosy in 1982, in which treatment is provided for a fixed duration regardless of clearance of skin lesion or bacterial index of patients. It is therefore possible that patients with high bacterial indices harboring live bacilli might infect contacts in the community transmit the disease. The objective of this study was to prospectively observe the effects of MDT on clinical status and molecular biological response and to assess the efficacy of MDT regimen in MB leprosy.

Method: A total of 116 new cases of leprosy were collected from leprosy patients registered at the hospitals of The Leprosy Mission (TLM), Shahadra, TLM, Naini and TLM, Champa. Slit skin smears scrapings were collected at the time of recruitment (0 day), at 6th month of treatment and 12 months at the time of released from treatment (RFT). Among these we were able to followed only 50 patients for six months' treatment duration and 30 for one

year. In our study we performed absolute quantification with two sets of genes; *hsp18 and esxA* to check the efficacy of FD-MDT.

Result: Among these116 new cases 78 were having viable load of bacilli at the time of recruitment. After six months of treatment, we observed 22/50 (44%) positive for *hsp18* and 35/50 (70%) were found positive for *esxA.* After twelve months treatment, only 30 patients were able to follow up and were found 5 (16%) positive for *hsp18* and 4 (13%) positive for *esxA*. In analysis we observed that copy number of *hsp18* has been increased and was found in the range of 105 - 107 at the time of RFT. As per Lini *et al*; 2009, *hsp18* involves in the survival of pathogen under stress conditions which may account for the prolonged stability of *hsp18* RNA even during period of chemotherapy. All these positive patients were histopathological active and had BI range between 4+ to 5+ at the time of RFT.

Conclusion: Patients with increase copy number indicates the presence of live bacilli in patients even after completion of treatment. These patients with viable load may pose a threat to society by their ability in transmitting the infection in the community. There is an immediate need to redesign the regimen so that no viable bacilli are left out at RFT.

O-185

TRANSCRIPTOME PROFILING IN *MYCOBACTERIUM LEPRAE*. INSIGHTS INTO REACTIONAL STATES IN LEPROSY

Presenter: Madhusmita Das

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Objective: The current study examined whole transcriptomic expression profiles of *Mycobacterium leprae* (*M. Leprae*) that differentiate leprosy cases in type 2 (Erythema Nodosum Leprosum (ENL)) reactions with those without reactions in host skin tissue derived *M. leprae* whole RNA.

Method: Post clinical examination, excisional skin biopsy specimens were collected from skin lesions of subjects with and without type 2 reaction. Whole *M. leprae* transcriptome analysis was initiated with a pilot set of 8 skin biopsies (4 with Type 2 Reaction and 4 without any reaction). Total RNA was extracted following the Trizol protocol and bacterial RNA was enriched in the samples. A 2 x 400K gene expression array (whole genome tiling array) was designed with the probes having 60-mer oligonucleotides tiling every 10bp of the genome sequence of *M. leprae* (NC_011896.1). The quality of RNA was estimated using BioAnalyzer (Agilent Technologies) followed by labelling, reverse transcription, amplification and hybridization to the arrays. The hybridized slides were scanned on a G2600D scanner (Agilent Technologies). The data thus acquired is analysed using GeneSpring GX Version 12.1 software. Data was normalized and fold difference in expression was noted from 359,922 probes which include sense and antisense orientations of 179,961 probes. The differentially expressing *M. leprae* genomic regions between type 2 reactions and non-reactional cases were noted.

Results: Considering a statistical cut-off value of 0.6 for fold difference in expression between the test and the control samples, a set of 107 genes indicated statistically significant up-regulation with volcano plot p-values less than 0.05. Functional characterization revealed higher-expression of genes encoding transmembrane proteins (12), regulatory proteins (9), fatty acid biosynthesis (6), amino acid metabolism (13), nucleic acid metabolism (7), DNA replication and repair (7), Secretory proteins (2) Krebs Cycle (1), Glycolysis (1), Drug Efflux Protein (1),Stress Response Protein (1), Energy Metabolism (2), Pantothenate biosynthesis (1), Metalloproteins (3), Hydrolases (1) and Hypothetical Proteins (40). Additionally there are 157 genes that are down regulated in cases with reaction.

Conclusion: Differential expression of genes in the human skin biopsy specimens among leprosy cases with type 2 reaction in contrast to those without reactions suggests the role of pathogen associated gene expression triggers with the aetiology of these reactions. As most of the transmembrane and cell wall proteins possess epitope and surface exposed domains, higher expression levels of genes encoding these proteins may have a possible role in enhancing host immune responses characteristic of type 2 reactions in leprosy.

O-190

TRANSCRIPTOME PROFILING IN DRUG RESISTANT STRAINS OF *MYCOBACTERIUM LEPRAE*

Presenter: Madhusmita Das

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Objective: This study is investigating the whole genome and transcriptome profiles of drug resistant strains of *M. leprae* to identify SNPs and gene expression based molecular signatures that aid as tools for determination of drug resistance in leprosy.

Method: Post clinical examination, excisional skin biopsy specimens were collected from skin lesions of subjects resistant to rifampicin, dapsone and clofaziminie. Whole *M. leprae* Transcriptome analysis was initiated with a set of 8 skin biopsies (with 2 Dapsone resistant, 2 rifamipicin resistant, 2 clofazimine resistant and 2 sensitive strains). Total RNA was extracted following the Trizol protocol and bacterial RNA was enriched in the samples. A 2 x 400K gene expression array (whole genome tiling array) was designed with the probes having 60-mer oligonucleotides tiling every 10bp of the genome sequence of *M. leprae* (NC_011896.1). The quality of RNA was estimated using BioAnalyzer (Agilent Technologies) followed by labelling, reverse transcription, amplification and hybridization to the arrays. The hybridized slides were scanned on a G2600D scanner (Agilent Technologies). Data was normalized and fold difference in expression was noted from 359,922 probes which include sense and antisense orientations of 179,961 probes.

Result: It was noted that 54 genes over expressed in DDS resistant strains when compared to the sensitive strains. Significant overexpression was noted in genes that are involved in the pantothenate synthetase pathway and significantly under-expressed genes in dapsone resistant strains are mainly comprised of transcriptional regulators, few ribosomal and hypothetical proteins. Certain regulatory and hydrogen peroxide scavenging reductases are also under expressed.

While hypothetical proteins with unknown function over-represent the list of 19 significantly upregulated genes in the rifampicin resistant strains, functionally annotated genes like panthothenate synthetase, certain metal reductases, arginine repressors and proteins involved in active transport are also over expressed in these strains. It was noted that 12 genes were significantly repressed in rifampicin resistant strains. It was interesting to identify repression of genes involved in transcriptional regulation and NusG which is involved in transcriptional termination and anti-termination events.

We identified 18 genes that are over expressed in clofazimine resistant strains of *M. leprae*. Most of these genes encode hypothetical proteins whose function is unknown. Interestingly, a cell surface protein involved in determining virulence is overexpressed, indicating the possibility of increased virulence in clofazimine resistant strains.

Conclusion: Gene expression-based signature can be drawn from the above identified over expressing and under expressing genes to further validate and diagnose resistance in leprosy.

O-203

THE IL23R G149R PROMOTES IL-23 UNRESPONSIVENESS IN HUMAN MEMORY TH17 CELLS IN LEPROSY

Presenter: Chuan Wang

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Objective: The SNP (c.445G > A; p. G149R) in IL-23 receptor (IL23R) was found to be association with leprosy by our group. But, the functional consequences of this variant are unclear in the disease pathogenesis.

Method: In this study, functional investigation of the G149R variant in IL23R was performed in independent cohort of healthy individuals. The expression level of Th17 cell relative cytokines were detected by qPCR and Western Blot, and the percentage of memory Th17 cells in CD4+Tcells were analyzed by flow cytometry in G149R carriers and controls.

Results: We found that the expression level of IL-17A, IL-17F, IL-22 and IFN-γ, which are produced by Th17 cells were significantly increased in infection of *Mycobacterium marine* that mimic *M. leprae* infection in vitro. Meanwhile the percentage of circulating IL-17A, IL-17F, IL-22 and IFN-γ-producing T cells did not differ in the isolated memory CD4+T cells of G149R carriers and controls. But, reduced IL-23-induced Th17 response in memory Th cells with decreased IL-17A and IL-17F production of G149R carriers were identified. Moreover, G149R may also attenuated memory Th17 cell survival/expansion.

Conclusion: Taken together, our results demonstrated that IL-23/IL-17 pathway was involved in leprosy pathogenesis. G149R attenuate IL-23 responsiveness in human memory Th 17 cells, although this variant has no biological effect on development of these cells.

O-220

DAPSONE HYPERSENSITIVITY SYNDROME: SCREENING FOR SUSCEPTIBILITY BY QUANTITATIVE PCR DETECTION OF HUMAN LEUCOCYTE ANTIGEN HLA-B*13:01IN THE NEPALESE POPULATION

Presenter: Divya RSJB Rana

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Objective: Although the mechanisms remain poorly understood, 1-2% of dapsone-treated patients worldwide develop drug induced rash, eosinophilia and systemic syndrome (DRESS), also called dapsone hypersensitivity syndrome (DHS). Dapsone is part of multi-drug therapy (MDT); and, therefore, likely 2250-6750 leprosy patients develop DHS annually of which most, if diagnosed properly, will require months of hospitalization and up to 11% will die. Recent molecular studies have reported that human leucocyte antigen HLA-B*13:01 (b1301) is an identifiable risk factor of DHS development in up to 85% of cases in Chinese populations. Previously we reported that 2% of our Nepalese patients developed DHS. Herein, we aim to determine if the allele is a risk factor of DHS in the Nepalese population.

Method: Leprosy cases (N=27) who were found with confirmed DHS as a result of dapsone treatment were enrolled from January 2017-December 2018 for HLA-B*13:01 investigation. Relative controls (n=32) were age, gender and ethnically matched leprosy patients who did not develop DHS after at least 12 weeks of MDT. Blood (<2 mL) was drawn from all cases (n=59) for DNA extraction. Quantitative real-time polymerase chain reaction (qPCR) was performed to detect the presence of the b1301 allele and β-actin was utilized as internal control.

Results: Approximately 85% (23/27) of the DHS patients demonstrated the presence of the b1301 allele. In contrast, 31 out of 32 non-DHS patients were absent of the b1301 allele. Internal control β-actin was found to be amplified from all samples exhibiting dependable integrity of DNA. Sensitivity and specificity of the experiment to predict DHS were 85% and 97% respectively.

Conclusion: There is significantly high correlation ($p<0.005$) between the presence of the b1301 allele and development of DHS in the Nepalese population with sensitivity and specificity similar to other population reports. This technique has potential to identify patients susceptible to DHS before they take dapsone; thereby, reducing risks for morbidity and mortality due to DHS. Further study will be executed to explore the allele frequency and correlation of b1301 in the Nepalese general population alongside more cases and respective controls. Other analyses are ongoing.

O-229

ASSOCIATION OF REAL-TIME PCR AND SEQUENCING ANALYSIS OF DRUG RESISTANCE TARGETS FOR ADEQUATE LEPROSY DETECTION AND TREATMENT

Presenter: Milton Ozório Moraes

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Objective: Multidrug therapy in leprosy is efficient, but *Mycobacterium leprae* resistant strain poses a challenge to control the disease. Here, we tested skin samples the presence of bacterial DNA and polymorphisms in target regions of the pathogen genes that may confer resistance to the drugs used to treat the disease from patients attended at the FIOCRUZ clinic in Rio de Janeiro, Brazil.

Method: A 6 mm-punch skin biopsy was collected from patients suspected of having primary leprosy infection, relapsing or failing to MDT treatment. A PCR was performed, followed by sequencing the rpoB, gyrA and folP regions that may present mutations that knowingly confer resistance to the drugs rifampicin, ofloxacin and dapsone, respectively.

Result: Between the years 2017 and 2018, 87 new confirmed cases of multibacillary infection and 137 patients with suspected relapses or treatment failures were attended at the outpatient unit. Of these, 187 skin samples were evaluated by qPCR, confirming the presence of the 16S target of the bacterium in 158 biopsies. Through sequencing of the rpoB, gyrA and folP regions of those 158 samples, a mutation that leads to amino acid substitution Ser456Met in rpoB gene were found in 4 samples. From these samples, one was a case of multiple relapses for 40 years indicating irregular treatment. The other three samples belonged to a family (father and two sons), the father being identified as an index case of resistance after multiple relapses and both sons presenting primary case of resistance. No other SNPs were found and no primary resistant was detected.

Conclusion: The resistance rates were considered low (2.5%) in two years follow up. Despite the low frequencies found in the analyzed population, the processing of samples by the techniques of molecular biology allows a greater accuracy in the diagnostic confirmation for resistance, although genomic screening should be necessary to unveil novel targets for resistance confirmation allowing suitable treatment for each patient.

O-263

EARLY DIAGNOSIS AND HOUSEHOLD CONTACT SURVEILLANCE FOR LEPROSY BY USING MULTIPLEX PCR

Presenter: Vinay Kumar Pathak

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Objective: Early diagnosis of leprosy is important for onset of an early treatment and limiting the advancement of disease, which may lead to disabilities and deformities if not cured timely. Present study was aimed to develop a multiplex PCR (MPCR) based *M. leprae* detection assay from skin smears, nasal swabs, saliva and blood of leprosy patients and their household contacts (HHCs).

Method: Total of 65 clinically confirmed cases of leprosy patients, 33 PB (Paucibacillary) and 32 MB (Multibacillary) which included both study groups and their 50 HHCs were recruited after taking informed consent from patients at three different centres of The Leprosy Mission (TLM) community hospital, India. Slit skin scrapings, blood, nasal swabs and saliva from PB and MB cases as well as their HHCs were tested by multiplex PCR using three different gene targets namely *rlep, 16SrRNA* and *soda*.

Results: Results showed that by using individual gene PCR, gene target *rlep* is the most suitable gene target in all kind of samples followed by *16Sr RNA* and *soda.* In PB cases, sensitivity and specificity for slit skin smear (SSS) were found 0.9032 and 1 respectively [positive predictive value (PPV) 1; negative predictive value (NPV) 0.909] using multiplex PCR whereas using individual PCR values were 0.6451 and 1 (PPV 1; NPV 0.7317) for *rlep*, 0.5483 and 1 (PPV 1; NPV 0.6818) for *16Sr RNA*, 0.1290 and 1 (PPV 1; NPV 0.5263) for *soda,* respectively. Similar patterns were found in blood samples. In case of nasal swabs using multiplex PCR the sensitivity and specificity were 0.8, 0.6 respectively whereas by individual gene PCR the values were 0.7; 0.9 for *rlep*, 0.7666; 0.96 for *16Sr RNA* and 0.1; 1 for *soda.*

Conclusion: M-PCR can be a better choice of molecular tool for detection of leprosy in clinical samples with higher accuracy than the conventional single gene PCR. Our results showed that in PB cases, M-PCR with SSS is most sensitive (0.9032) and specific (1) test for diagnosing subclinical infection of leprosy followed by blood (sensitivity 0.8666; specificity 1), nasal swab (sensitivity 0.8; specificity 0.6) and saliva (sensitivity 0.5483; specificity 1). Our findings suggest utility of M-PCR using *rlep, soda* and *16SrRNA* genes for early diagnosis and household contact surveillance for leprosy.

O-271

VALIDATION OF HLA B 13:01 AS A BIOMARKER OF DAPSONE HYPERSENSITIVITY SYNDROME IN LEPROSY PATIENTS IN PAPUA ISLAND

Presenter: Hana Krismawati

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Objective: Leprosy is a stigmatizing, chronic infection which degenerates the nervous system and often leads to incapacitation. Multi-drug therapy (MDT) which consists of dapsone, rifampicin and clofazimine has been effective to combat this disease. In Indonesia, especially in Papua Island, Dapsone Hypersensitivity Syndrome

(DHS) becomes a challenge to leprosy elimination due to ineffectiveness of treatment when dapsone is completely removed from leprosy treatment in certain areas like Merdei and Arandai where the ratio of DHS happens in every 4 leprosy patients treated. Globally, DHS has a prevalence rate of 1.4% and a fatality rate up to 13%.

The aim of this study is to validate HLA-B*13:01, a previously discovered biomarker for DHS in the Chinese population, as a biomarker for DHS in the Papua population.

Method: This is the cross sectional study that involved 28 leprosy patients who presented themselves with DHS as case subjects and 41 leprosy patients without DHS as control subjects. Patients were recruited from 5 districts: Jayapura, Sentani, Keerom, Manokwari,

Sorong and Biak. The human DNA was extracted from 3 ml blood specimens. We genotyped the HLA-B alleles with the gold-standard Sequence Based Typing method using TexasBioGene HLA Assure B Locus Kits. Results were then analysed using logistic regression using R statistical program.

Results and Discussion: The results of HLA-typing showed that HLA-B*13:01 was the most significant allele, with odds ratio=26.3 and P-value=7.17×10^{-7}, confirming the strong association of HLA-B*13:01 to DHS in the Papua population. The sensitivity of this biomarker is 78.6% and specificity is 87.8%.

Conclusion: HLA-B*13:01 is validated as a biomarker for DHS in leprosy patients in Papua and can potentially be a good predictor of DHS to help prevent this condition in the future.

O-274

FINE MAPPING OF THE TRANSCRIBED SEQUENCES OF GENES ASSOCIATED WITH HOST SUSCEPTIBILITY TO LEPROSY

Presenter: Priscila Verchai Uaska Sartori

Priscila Verchai Uaska Sartori[1]; Monica Dallmann-Sauer [2]; Helena Regina Salomé D'Espindula[1]; Erwin Schurr[2]; Vinicius Medeiros Fava[2]; Marcelo Távora Mira[1]

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Objective: Susceptibility to leprosy depends of host genetic risk factors and several candidate genes have been identified. However, a typical genetic association study is not suited to identify the true causal variants underlying the observed associations. Our goal was to identify potential causal variants in 39 genes previously associated with host susceptibility to leprosy.

Method: The population sample was composed by 177 individuals distributed in 40 pedigrees recruited at the Vila Santo Antônio do Prata, located in the state of Pará, Brazil. The Prata Village is a former leprosy colony founded in 1920 with the objective to isolate leprosy individuals. Today, the village is composed of approximately 3000 residents, several of them active or former leprosy patients, their families and descendants. Moreover, leprosy is still highly endemic within the Village and previous studies suggests that genetic risk factors are enriched in this population. DNA samples were extracted from peripheral blood by salting-out. Genes associated with leprosy in at least two independent population samples were selected for sequencing of their transcribed regions using the Illumina MiSeq platform. Variant calling was performed using an adaptation of GATK pipeline; variants were filtered using GATK and vcftools. Association was tested using the Transmission Disequilibrium Test as implemented in FBAT; linkage disequilibrium (LD) was analysed using Haploview. Functional impact was predicted *in-silico* using Polyphen, CADD, LRT, *MutationTaste*r and SIFT.

Results: A total of 19 variants distributed in 13 out of 39 genes selected for the study were found associated with leprosy *per se* in the Prata sample. Linkage disequilibrium analysis suggest independence of 16 out of the 19 association signals detected. Six variants lead to amino acid changes and two were considered damaging by *in-silico* analysis. Haplotypic association was detected for *NOD2* and *IL1LR1* genes; additional analysis involving variants located in the same chromosome identified haplotypes associated with leprosy on chromosomes 1 and 6. The variants associated in this study partially explain the previously intronic associations in *LTA*, *IL1RL1*, *IL12RB2* and *NOD2* genes.

Conclusion: Our study resulted in the identification of 19 genetic variants located on the transcribed sequences of 13 out of 39 leprosy candidate genes, two of them with in silico evidence of functional impact.

O-323

GENETIC TOOL TO PREDICT HOUSEHOLD CONTACT PROGRESSION TO LEPROSY

Presenter: Milton O. Moraes

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Objectives: Early detection is crucial to avoid disability caused by leprosy. Therefore, we aim to develop a genetic tool capable to predict progression towards disease

Methods: Household contacts were defined as individuals co-habiting in the same residence in direct contact with a leprosy patients for a period of time of at least 5 years. Contacts were followed up for at least 2 years. In a previous study of our group 385 contacts were submitted to GWAS analysis using the Illumina GT HumanCore-12 Beadchip. In this study, 13 SNPs were classified as associated with illness and used to construct a Polygenic genetic score (PRS). PRS calculation was performed using PredictABEL R package

Results: The PRS generated vary between 0.00014 and 0.99 being ill contacts those with biggers scores ($p = 2.2x10^{-16}$). The PRS for ill contacts had median and extreme values equals 0.50 (0.003 – 0.99) whereas healthy contacts had 0.037 (0.00014 – 0.85). To assess PRS accuracy a ROC curve was performed and the AUC was 0.893 (0.847 – 0.939). Aiming the of this score in clinical practice we choose as cut-off the point of the curve closest to coordinates (0,1). This cut-off presented a sensitivity of 0.788 and specificity of 0.868. To investigate which non-genetic variables could influence the outcome a correspondence analysis was made using gender, age, BCG vaccine status and clinical manifestation of index case. The false positive and false negative classification were those who didn't take BCG vaccine, who are children and elderly, gender and clinical manifestation did not influence the classification.

Conclusion: We produced a PRS with a good general accuracy (0.893) however for elder and children the approach must be improved. Furthermore the present PRS must be validated in a independent

ILC-4: EPIDEMIOLOGY and CONTROL:

4.1 Epidemiology

O-006

LEPROSY RELAPSE: A RETROSPECTIVE STUDY ON EPIDEMIOLOGICAL, CLINICAL AND THERAPEUTICS ASPECTS IN A BRASILIAN REFERENCE CENTER OF LEPROSY

Presenter: Isabela Maria Bernardes Goulart

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Objective: The definition of relapse in leprosy corresponds to all patients treated with standardized schemes of multidrug therapy, discharged for cure, but who returns to present new clinical signs/symptoms of disease. This study aims to characterize the epidemiological and clinical aspects of leprosy relapse, including the multidrug resistance cases.

Method: This transversal descriptive study included a total of 126 patients diagnosed with relapse from 2013 to 2018 in a national reference center in Brazil. Relapse was defined by the presence of clinical activity (skin/nerve lesion), bacilloscopy, histopathology (skin/nerve), qPCR for detection *M. leprae* DNA, ELISA IgM anti-PGL1 and electroneuromyography abnormalities, considering a time equal or more than 5 years after the previous drug regimen ending. The epidemiological, clinical and laboratorial data of each patient were analyzed.

Results: The relapse cases corresponded to 11,8% (126/1059) of all cases of leprosy reported in the period. It showed increased rates through the years, with higher percentage in 2018 (13,48% of all the cases in this year). The 126 relapse patients had a mean age of 49,2 years (±14,31); 54% (68/126) patients were male (51,47±13,8 years) and 46% (58/126) were female (46,52±14,5 years). At the first treatment (T1), 88% (111/126) of patients were classified as multibacillaries (MB), versus 12% (15/126) paucibacillaries (PB). At the second treatment (T2), 96% (121/126) were classified as MB patients versus 4% (5/126) as PB. The drug regimen most commonly associated with the relapse was MDT 12 doses (31,7%; 40/126). The most prevalent clinical form at T1 in the relapse patients was lepromatous-leprosy (29,4%; 37/126). At T2, borderline-tuberculoid corresponded to the majority of the cases (40,5%; 51/126). The mean time between the end of the previous treatment and the beginning of the relapse symptoms was 146,6 months (± 79,3): 105 months (± 55,6) for the PB patients and 140,3 months (±72,2) for the MB. Disability grade (DG) was also evaluated, with 46,8% (59/126) considered DG=0, 26,2% (33/126) with DGI and 25,2% with DGII at T2. Twelve patients (9.5%) confirmed resistant to one or more drugs of WHO–MDT through molecular tests.

Conclusion: This study has shown that leprosy relapse is an important and prevalent condition, also with long periods between the end of the previous treatment and the beginning of the relapse symptoms. Periodic follow up with molecular, serological and electroneuromyographyc exams should be considered for an accurate diagnosis. Recognizing and treating properly this condition should contribute positively to leprosy control worldwide.

O-021

EVIDENCE OF ZOONOTIC LEPROSY IN PARÁ, BRAZILIAN AMAZON, AND RISKS ASSOCIATED WITH HUMAN CONTACT OR CONSUMPTION OF ARMADILLOS

Presenter: John Stewart Spencer

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Objective: Liver and spleen samples taken from wild armadillos captured for food in the town of Belterra, Pará state, Brazil, were examined for infection with *M. leprae*. The anti-PGL-I titer was assessed in residents of this town to determine if there was any risk associated with activities related to hunting, handling and consumption of armadillo meat in these residents.

Method: With informed consent, 146 residents participated in a survey of whether they hunted armadillos; prepared armadillo meat for food; or consumed armadillo meat as part of their diet. A blood sample from each person was obtained to determine the PGL-I antibody titer by ELISA assay, a positive titer being a known biomarker of *M. leprae* infection. Total DNA was extracted from 16 armadillo spleen and liver samples, followed by amplification of *M. leprae*-specific RLEP sequence using PCR. Tissue sections of spleen were examined histologically for *M. leprae* cell wall components, DNA, and the *M. leprae*-specific PGL-I antigen. Acid fast bacilli (AFB) were detected using the Fite Faraco technique.

Results: Of the sixteen armadillos sampled, ten were positive for RLEP by PCR (62%) in both liver and spleen; animals that were negative were negative in both tissues. Examination of spleen sections showed positive staining of cell wall and DNA using auramine-rhodamine and SYBR Gold methods, respectively, and PGL-I antigen was detected within the tissues of infected armadillos. Fite Faraco staining revealed the presence of AFB in infected wild armadillos but not in uninfected control animals. Among the 146 individuals surveyed, around 65% ate armadillo at least once a year. There was no statistical relationship between anti-PGL-I serum titers in residents with hunting, handling or cleaning or moderate consumption of armadillo meat. However, individuals who consumed armadillos more than once per month had a 50% higher anti-PGL-I titer and had an almost two-fold higher risk of developing disease (OR 1.77, 95% CI 0.64 - 4.89) than those who consumed armadillos less than once per month.

Conclusion: The high rate of infection of armadillos by *M. leprae* in this area in western Pará (62%) is much higher than the rate of infection of armadillos in the Southern U.S (~20%). Individuals who ate armadillos more than once per month had a much higher risk of developing disease. It would be advisable to educate people to limit their exposure to armadillos and to take precautions not to be exposed to blood, tissues or bodily fluids.

O-022

GENOTYPING OF *MYCOBACTERIUM LEPRAE* STRAINS FROM BRAZIL: A WHOLE-GENOME SEQUENCING APPROACH

Presenter: Charlotte Avanzi

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Objective: Brazil has the second highest number of new cases of leprosy per year in the world. However, the disease has a heterogeneous spatial distribution between the different regions with different levels of endemicity: the highest in states in the west, north and northeast and lower in the south and southeast. However, little is known about the genetic variability of clinical isolates of *M. leprae* in these areas. This project aimed to obtain the whole genome sequence of *M. leprae* from different areas in Brazil to correlate the genetic diversity of the strains with their spatial distribution.

Method: Since 2016, positive DNA extract for *M. leprae* was obtained from 199 human skin biopsies and used for library construction. Enrichment was done during DNA extraction or after library preparation. Libraries were then multiplexed and sequenced on an Illumina HiSeq, and reads were analyzed using an in-house pipeline.

Results: Whole genome sequences with >5X coverage were obtained for 135/199 samples (coverage ranged from 5X to 174X). The 135 samples originated from 112 patients from four different geographic areas in Brazil: 54 from Rio de Janeiro (southeast), 46 from Pará (north), nine from São Paulo (southeast) and three from Ceara (northeast). The strains from Rio de Janeiro harbored the genotypes 3I (n=49), 4N (n=9), 4P (n=7) and 1D (n=6). In Pará, the genotype 4N (n=41) is predominant followed by 4P (n=4) and 1D (n=1) while The genotype 3I is absent. Interestingly, one of the 3I strains from São Paulo branched between two medieval 3I strains from Denmark and clustered close to the *M. leprae* strains isolated from red squirrels in England. Such a tight association between a modern strain and the medieval European strains has never been observed outside Europe. Interestingly, no other strain from this clade was found elsewhere suggesting that it is a rare genotype in Brazil.

Conclusion: This preliminary dataset of 135 genomes shows a correlation between the *M. leprae* genotypes and their spatial distributions in Brazil. The SNP genotype 4 is mainly found in the north while the 3I is predominant in the south. The genotype 1D is scarcely found in both areas of the country and, some rare genotypes are found occasionally in Brazil. Additional sequencing from other states in Brazil should help to refine the *M. leprae* strain distribution and develop specific primers for the strains from each part of the country.

O-065

CLASSIFICATION OF ENDEMICITY AND DISEASE BURDEN OF LEPROSY

Presenter: Vivek Lal

Vivek Lal[1], Karl Puchner[2], Dorcas Fadugba Ogunsumi[3], Wim van Brakel[4], Eva-Maria Schwienhorst-Stich[2], Christa Kasang[2], Sandra Parisi[2], Joseph Chukwu[5], David J. Blok[3]

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Objectives: Currently, endemicity classifications in leprosy or the characterization of leprosy disease burden lacks a standardized approach. As a result, the assessment of leprosy endemicity or disease burden is not comparable

over time, and between countries or regions, making program evaluation problematic. A standardized approach is important for allowing effective communication, creating a standardized monitoring framework and ultimately assessing elimination of leprosy. The objectives of the study is to identify relevant metrics for classification of leprosy endemicity and disease burden at subnational level using routine programmatic data and to formulate a standardized approach to score endemicity.

Method: A literature search was conducted to identify which frameworks, leprosy indicators, levels and cut-off values have been used to determine leprosy endemicity. In addition, we started a Delphi study to reach consensus about the method and indicators used to classify leprosy endemicity. We invited experts in the field of leprosy including researchers, policy-makers and program managers working at (sub)national or global level representing different areas in the world. The Delphi survey comprises of three rounds. In the first round the panelist were asked to identify relevant leprosy indicators and to quantify cut-off values for relevant levels of leprosy endemicity. In the subsequent rounds, they will be asked to rate the importance for each identified indicator and scoring method of classifying leprosy endemicity.

Result: The literature review indicates great variation of indicators, levels and cut-off values to determine the endemicity of leprosy. The most used indicators include: new case detection rate, new cases among children, and new cases with grade 2 disability. These indicators were primarily scored for the levels: high and low. Forty-three experts have been invited to participate in an online Delphi questionnaire. The results of the first round will be available by March and a final consensus on endemicity and disease burden by June-July 2019.

Conclusion: This work contributes to establishing a standardized approach to classify leprosy endemicity and disease burden at a subnational level, which is essential to understand as much as possible the 'true' leprosy situation upon which we could tailor leprosy control activities.

O-080

CLUSTER OF RECENT LEPROSY TRANSMISSION IN A FORMER LEPROSARIUM IN BRAZIL

Presenter: Josafá Gonçalves Barreto

Josafá Gonçalves Barreto[1,2], Bárbara Lopes Paiva[1], Francisco Eguinaldo de Albuquerque Félix Junior[2], Pedro Igor Oliveira Carvalho[2], Moises Batista da Silva[1], Claudio Guedes Salgado[1].

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Objective: We applied spatial analysis tools to better understand leprosy transmission in the municipality of Marituba, a former leprosarium in the state of Pará, Brazilian Amazon Region, where leprosy continues to be hyperendemic 38 years after the leprosarium was deactivated.

Method: We geocoded the residences of the leprosy cases reported from 2004-2016. Using Geographic Information System (GIS) and spatial statistics (Moran's I, Kulldorff spatial scan statistics and Knox statistics for space-time clustering) we identified the spatial-temporal distribution pattern of the disease in the study setting in a very fine spatial scale (census tract and individual level).

Results: From 2004 to 2016, Marituba reported 953 leprosy cases, 97.5% of them were in the urban area, 805 were mapped (84.5%). Spatial analysis revealed a significant clustering pattern of leprosy distribution (Moran's I *p*=0,002; I=0,28; Z-score=5,2; Kulldorff *p*=0,001). The main cluster of cases was found to be placed exactly at the same area of the former leprosy colony, which remained in quarantine from 1942-1980, and that is still home to several of the people who were exiled there through this period. From those mapped cases, 545 cases (67.7%) were clustered in space and time, considering 100 meters of distance and three years between diagnosis. Currently,

about 11,000 people live in this specific neighborhood (10% of the total population of Marituba and 23.5% of all registered leprosy cases from 2004-2016), most of them are relatives of the formers exiled leprosy patients.

Conclusion: Spatial analysis of leprosy distribution identified a clustering pattern, indicating the most at risk and priority area for interventions. The chain of transmission in this former leprosarium continues uninterrupted, indicating active foci of infection in the community. More resources are needed for a qualified evaluation of all household contacts of leprosy cases and to extend contact tracing to a wider network of people at higher risk of leprosy in a sustainable manner. Besides, it is necessary to have a better understanding of what is sustaining the *M. leprae* transmission in this former leprosarium, 39 years after its lifting.

O-097

CAUSES OF DEATH AMONG FORMER LEPROSY PATIENTS IN KOREA, 2010-2013

Presenter: Minwoo Lee

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Objective: In South Korea, there are over 10,000 persons affected by leprosy(PALs). Now they are suffering not only from leprosy related complications but also from chronic diseases like hypertension, diabetes, viral hepatitis, cirrhosis and malignant tumors. Thus, it is crucial to clarify the pattern of causes of deaths in PALs for effective general management. In this context, this study was carried out to investigate the characteristics of mortality and causes of deaths in PALs.

Method: We analyzed death certificate data of PALs who died from 2010 through 2013. In 2010, there were 13,316 (male 7,152 and female 6,164) PALs registered in the Korean Hansen Welfare Association. Total of 1,770 deaths were identified during the four years. Death was confirmed by the linkage to death certification database of Korean National Statistics Office (NSO). Age-adjusted mortality rate, indirect method, and standardized mortality ratio (SMR) were calculated based on age-specific death rate in Korean population according to each cause of death.

Results: In the group of PALs, indirect age-adjusted death rates per 100,000 population were highest in hepatic cancer (83.2 deaths) followed by lung cancer (51 deaths), colon cancer (19.6 deaths) and stomach cancer (16 deaths). There were statistically significant differences in mortality from hepatic cancer between standard population and ex-leprosy population, but not in other malignancies. The indirect age-adjusted mortality rates for cardiovascular disease and respiratory disease was 115 deaths (95% CI ; 103-127) and 131 deaths (95% CI ; 119-161), respectively.

Conclusion: PALs seem to have a similar mortality pattern to the general population. However, they showed a distinctive pattern of mortality from malignant tumors, especially from hepatic cancer. It may be attributed to higher prevalence of hepatitis C virus among the PALs. Therefore, it is necessary to pay attention to these differences when applying health care programs for PALs.

O-101

SITUATION OF THE NOTIFIED CASES IN A NATIONAL REFERENCE CENTER FOR LEPROSY OF BRAZIL FROM 2013 TO 2018 : DEFINITION OF TREATMENT FAILURE, INSUFFICIENCY AND RELAPSE

Presenter: Isabela Maria Bernardes Goulart

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Objective: To demonstrate the protocol used in a National Reference Center for Leprosy to define treatment failure, insufficiency and relapse among the cases reported from 2013 to 2018.

Method: Survey of leprosy cases reported in the National Reference Center software and National System of Notifiable Diseases, according to paucibacilary/PB and multibacillary/MB treatment, clinical forms and mode of entry: "new case", "relapse" and "other re-entry", where are included treatment failure and insufficiency cases. According to clinical and laboratory criteria (slit skin smears from seven sites and skin biopsy for bacilloscopy and qPCR for *M.leprae* DNA detection and anti-PGL-I ELISA) and electroneuromyography, were defined: relapse - case with ≥5 years of time discharge from previous treatment; treatment failure - case with <5 years of time discharge from previous treatment of 12 doses MDT/MB for BT and 24 doses MDT/MB for BB/BL/LL; treatment insufficient - case with time <5 years, which at the end of 12 doses MDT/MB for BB/BL/LL needs 12 additional doses, and classification error of BT/BB treated with 6 doses MDT/PB.

Results: 1029 cases were reported: 17.3% (178/1029) PB and 82.7% (851/1029) MB.
Clinical forms: indeterminate (I=3.2%; 32/1029), tuberculoid (TT=2.4%; 25/1029), borderline-tuberculoid (BT=57.6%; 593/1029); borderline-borderline (BB=9.2%; 94/1029), borderline-lepromatous (BL=8.2%, 85/1029) and lepromatous (LL=19.4%; 200/1029). Mode of entry: 75.4% (776/1029) new cases; 12.8% (131/1029) relapses; 5.9% (61/1029) treatment failure and 5.9% (61/1029) treatment insufficient. Among the relapses, 49.6% (65/131) were BT, 56.9% (37/65) of these treated previously with 12 doses MDT/MB; 34.3% (45/131) were LL, 51.2% (23/45) of these received previous 24 doses MDT/MB and 44.4% (20/45) of 12 to 18 doses. Of the treatment failure, 72.2% (44/61) were LL, 63.6% (28/44) of these treated previously with 24 doses MDT/MB and 20.4% (9/44) with 12 to 18 doses. In the treatment insufficient, 36.0% (22/61) were LL, 90.9% (20/22) of these treated with previous 12 doses MDT/MB; 29.5% (18/61) were BL, 100% treated previously with 12 doses MDT/MB; and 24.5% (15/61) were BT, 73.3% (11/15) of these treated with 6 doses MDT/PB and 26.6% (4/15) with 12 doses MDT/MB.

Conclusion: Relapse and failure of treatment in MB patients are of high magnitude. The difficulty in recognizing these cases and demonstrating that they exist is due to the lack of disclosure that this fact occurs, as in any other infectious disease; to the insidious clinic and the very variable symptomatology, and the lack of laboratory tests in the routine of the reference centers.

O-126

PATIENTS WITH SMEAR POSITIVE LEPROSY IN BANGLADESH ARE THE MAIN RISK FACTORS FOR LEPROSY DEVELOPMENT: 21-YEAR FOLLOW-UP IN THE HOUSEHOLD CONTACT STUDY (COCOA)

Presenter: Emily Quilter

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Objective: The COCOA (Contact Cohort Analysis) study is the largest, most comprehensive study of development of leprosy in household contacts conducted in recent years. The resulting data tested the hypothesis that risk of household contacts developing leprosy is associated with characteristics of the index case.

Method: Data was available on 9527 index cases and 38303 HH contacts. Risk factors for development of leprosy amongst HH contacts were identified using Cox proportional hazard regression. Variables found to be significant in univariate analysis were included in additional multivariate analysis and stepwise analysis procedure.

Results: Data on 38303 HH contacts of known leprosy index cases, who were initially leprosy free at the start of the study, were analysed. A total of 666 household contacts were diagnosed with leprosy throughout the follow-up. The main risk factor for household contacts was having a multibacillary/ smear positive index case as a household member. As the initial smear of the index case increases from negative to low positive (1-3) to high positive (4-6), the hazard of their associated household contacts developing leprosy increases by 1.57 times ($p<0.001$). 20% of all index cases who had MB leprosy produced 45% of all new cases found within first 24 months of routine surveillance. Being a blood relative was not a risk factor, no gender differences were found.

Conclusion: We found a single variable predicting risk for leprosy transmission – multibacillary/ smear positive, despite Bangladesh having a very high PB rate. A small number of patients are maintaining leprosy infection – this simplifies contact tracing and allows the direction of prophylactic interventions. Focus should be on performing HH contact examinations on these HHs and detecting new multibacillary/ smear positive index cases. Performing skin smears on new cases is needed for predicting risk; such services need to be supported with adequate resources. If MB patients are predominantly sustaining leprosy infection within the HH setting, the prophylactic intervention of administering SDR to contacts is not likely to succeed because SDR was found to interrupt transmission amongst PB index cases only.

O-130

NEW LEPROSY CASES AMONG CHILDREN UNDER 15 YEARS WITH VISIBLE DEFORMITIES IN BRAZIL FROM 2008 TO 2017

Presenter: Elaine da Rós Oliveira

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Objective: To characterize the new cases of leprosy among children under 15 years with visual deformities in Brazil in the period of 2008 to 2017.

Method: We conducted a descriptive study of new leprosy cases in children under 15 years old with visible deformities diagnosed in Brazil, from 2008 to 2017. The following variables were used: age group, gender, ethnic

group, clinical form, detection mode. We calculate absolute and relative frequencies and the rate of new cases under 15 years old with visible deformities by 1 million inhabitants. The trends analysis was performed by linear regression, using the Prais-Winsten technique in order to correct the serial autocorrelation. We calculated the annual percentage change of the rate of new cases under 15 years old with visible deformities and their respective 95% confidence intervals.

Results: From 2008 to 2017, Brazil detected 23,379 new leprosy cases among children under 15 years old, representing 7% of all new cases in Brazil. Among these, 626 cases were identified with visible deformities, of which 77% were between 10 to 14 years old and 62.9% were male. Additionally, 75.7% were black, 58.9% presented dimorphic form and 85.6% were detected by physician routing and spontaneous demand. Of all cases, 57.5% (360) were diagnosed in primary care and 49.4% (309) were resident the Northeast Region at moment of diagnosis. The rate of new cases under 15 years old with visible deformities showed a decreasing trend (APC = -6.21%; 95%CI -8.56 to - 3.8). The maximum rate was in 2008 (1.70) and minimum was in 2016 (0,77).

Conclusion: Despite reduction of rate of new cases under 15 years old with visible deformities rate, the occurrence of cases in children is worrying. This may affect student performance at school, social and emotional life. The predominance of cases in dimorphic form reflects the higher risk of neural damage related to immunological instability. Further studies are needed to elucidate the prevalence of males among children with deformities. Therefore, strategies of surveillance addressed to this population, especially in the Northeast Region it is necessary. These actions might support effective decision making for early diagnosis and properly plan of care in order to reach the goal of zero cases in children with visible deformities, proposed in the Global Strategy for Leprosy 2016-2020.

O-137

TEMPORAL AND SPATIAL ANALYSIS OF LEPROSY GRADE 2 DISABILITY IN MINAS GERAIS, BRAZIL

Presenter: Jessica Fairley

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Objective: High rates of grade 2 disability (G2D) indicate delayed diagnosis of leprosy and can represent ongoing, unrecognized transmission. In Brazil, the average proportion of G2D at diagnosis was 6.9% in 2016. To better understand the picture of leprosy in Minas Gerais, Brazil and identify clusters of G2D, we conducted an analysis of all new cases from 2002-2017 through SINAN (Sistema de Informação de Agravos de Notificação) with a special focus on the presence G2D at diagnosis.

Method: The SINAN database was queried for newly diagnosed cases of leprosy from 2002 through 2017 for the state of Minas Gerais (MG). Epidemiologic markers of leprosy (new case detection rate, pediatric new cases, and proportion of G2D) were described and analyzed in aggregate and over time. Descriptive statistics were tabulated and mapping of cases and G2D undertaken. Demographic variables related to G2D were analyzed in more detail for three years (2002, 2009, and 2016).

Results: During the 15-year study period, 31,961 cases of newly diagnosed leprosy were reported in MG. Annual incidence decreased from 18.2 per 100,000 to 5.7 100,000. Children under 15 years of age represented 5.1% of the overall cases reported. The proportion of patients with G2D at diagnosis remained the same to slightly increased over the study period (on average 10-11% and translated to 5.9 cases per million inhabitants in 2017). A significant portion of the reduction in leprosy incidence appeared to be in people who identified as white (as compared to black,

mixed race, Asian, or indigenous). Those with G2D had an older age than the mean for all leprosy cases. Mapping showed clusters of G2D in the far northeast, northwest, and west of the state.

Conclusions: The WHO considers the presence of G2D in over 5% of newly diagnosed cases as too high and a sign of late diagnosis. We found more than double that rate, even in more recent years, thus raising the question whether the incidence reduction over the study period is accurate or could be a sign of missed cases. Our data also suggest racial disparities in the reduction of new leprosy cases. Lastly, while it appears that G2D is more common in regions farthest from the capital, further spatial analyses will better define these clusters and identify areas for more intensive public health efforts.

O-141

IMPLEMENTATION OF THE SURVEILLANCE OF LEPROSY REACTIONS IN BRAZIL: THE EXPERIENCE FROM A STATE OF THE NORTHERN REGION

Presenter: Carmelita Ribeiro Filha Coriolano

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Objective: To describe the process of implementation of clinical and epidemiological surveillance of leprosy reactions in the State of Rondônia, Northern Brazil, from 2007 to 2018.

Method: A descriptive study on the implementation and implementation of the surveillance system of reactional episodes in the State of Rondônia.

Result: In 2007 Rondônia implemented a system of clinical-epidemiological surveillance of leprosy reactions as an event of interest to public health. The definition of official instruments, the information system to notification, and data flows was constructed from pilots in reference units such as the key actors partnership. In 2012, this process was expanded by linking to a permanent education program for health professionals in the management of reactional episodes. The notification form was updated, the information system (SISREATION) was updated to a web version and the training of technicians was developed for its use. A great state mobilization and technical-political articulation with managers and health professionals were carried out, which enabled the publication of Administrative Rule 58 (DOE 2422, March 20, 2014), which regulated the compulsory notification of leprosy reactions as an event of State interest. The utilization of SISREATION in the public health services of Rondônia allowed the re-adaptation of strategies for professional training and anti-reaction pharmaceutical assistance, as well as more efficient planning of inputs for the prevention of physical disability and rehabilitation.

Conclusion: This initiative is unprecedented in Brazil at the state level, which reinforces the necessary prioritization of reactions in leprosy as a public health problem. The process of implementation in a hyperendemic state showed technical and political feasibility when considering the State perspective, but also for the continental size reality of the Country. This 12-year experience also demonstrated the need to extend surveillance for events throughout the MDT and especially at the time of post-discharge as a way of qualifying the comprehensive health care for people affected, and of sustaining permanent educational strategies and insertion of the theme into political agendas. The current challenge is to broaden this process, aiming at greater coverage and qualification of integral care.

O-144

NATIONAL STRATEGY FOR LEPROSY CONTROL 2019-2022: METHODOLOGY OF MUNICIPALITIES ALLOCATION ACCORDING TO THEIR PROFILE

Presenter: Mábia Milhomem Bastos

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Objective: To define municipalities groups for leprosy by epidemiological and operational indicators, in order to develop strategies to reduce the disease burden in Brazil considering the local diversity.

Method: We performed a cross-sectional study using 5565 Brazilian municipalities as the unit of analysis. The average leprosy detection rate was calculated for the period from 2013 to 2017 and it was used for definition of epidemiological and operational groups (EOG). The municipalities were allocated in three EOG: group 1: municipalities without leprosy cases in the period; group 2: municipalities with a detection rate <10 cases/100,000 inhabitants and group 3: municipalities with a detection rate ≥10 cases/100,000 inhabitants. Operational subgroups were also defined, based on the following criteria: subgroup 1: municipalities that evaluated less than 75% of cases regarding the grade of physical disability in diagnosis; subgroup 2: municipalities that evaluated more than 75% of cases regarding the grade of physical disability in diagnosis and did not have cases with grade 2 of disability; subgroup 3: Municipalities that evaluated more than 75% of cases regarding the grade of physical disability in diagnosis, which had cases with grade of disability 2 and evaluated more than 80% of the contacts of new cases.

Result: Municipalities were distributed in groups according to different profiles, considering epidemiological and operational indicators. Group 1 was composed of 1118 (20%) municipalities without leprosy cases. Of those who had cases (80%), group 2 comprised 2,228 municipalities (50.1%). Within this group 435 (19.5%) were allocated in subgroup 2.1; 1,122 (50.4%) in the 2.2, 458 (20.5%) in the 2.3 and 213 (9.6%) in the 2.4. Group 3 included 2,219 municipalities with cases (49.9%) divided into four subgroups: 3.1, which comprised 403 (18,2%) municipalities; 3.2, which presented 631 (28.4%) municipalities; subgroup 3.3 and 3.4 are composed of 763 (34.4%) and 422 (19%) municipalities, respectively. The subgroup 2.1 corresponds to the most unfavorable situation while 2.2 presents the best situation in groups 2 and 3.

Conclusion: The municipalities allocation considering the local reality allows the definition of specific actions/activities to improve different scenarios. In addition, for each scenario will be possible to develop work plans in order to optimize the available resources and to detect operational problems. Consequently, it will help to reduce the leprosy burden in Brazil, considering the local response capacity.

O-159

THE NATIONAL LEPROSY CONTROL PROGRAM POST ELIMINATION PHASE: MONITORING, VALIDATION AND SUBNATIONAL STRATIFICATION TOWARDS LEPROSY FREE ZONES

Presenter: Maribec Campos

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Objectives: The following objectives of the project were accomplished: (1) assisted in the dissemination of the Operational Guidelines for Stratification of Sub-national Areas towards Leprosy Free Zones, (2) conducted review and validation of data/records/reports and process in the diagnosis and treatment of leprosy, in identified areas for sub-national stratification towards Leprosy Free Zones, (3) identified the areas included or known as Leprosy Free

Zones, (4) create a Technical Review Team (TRT)/Stratification Teams at national and regional levels, respectively, (5) collected and reviewed data for the past 10 years (2003-2012), (6) conducted validation of data in the identified areas, and (7) conducted stratification of the identified areas based on the parameters stipulated in the operational guidelines.

Methods: The project used the consultative and participatory approach. Purposive sampling was used to identify the sample survey sites consisting of City Health Offices (CHOs), Municipal Health Offices (MHOs) and Sanitaria. The sampling criteria were: (1) 17 CHOs/MHOs with high prevalence rate in the 2010 Official WHO-NLCP Prevalence Map, (2) 8 Sanitaria in the Sanitaria Map of the Leprosy Control in the Philippines Report, 2006, and (3) 17 other sites. The sanitaria were later replaced with CHOs/MHOs since most of their patients come from other localities. The final list was limited to 34 sample sites due to adverse weather conditions, security threats, and conflict in the schedules and plans of the stakeholders.

The research instruments were approved by CFI and NLCP for the monitoring, validation and of data collected from the study sites from June 2013-January 2014 through the created Technical Working Group. The parameters for declaring Leprosy Free Zones were used as basis for gathering data. These include prevalence rate (PR), case detection rate (CDR), and sustainable quality leprosy services. Each leprosy service was scored as either 1.00 if leprosy services are available with added services more than the required service, 0.75 if available, 0.50 if insufficient, and 0 if no information/none.

Using Multicriteria Decision Analysis (MCDA), weights (also called percentage distribution) were assigned to each of the listed leprosy services, which can also be referred to as indicators or criteria in MCDA. In the absence of a Leprosy Expert in the team, equal weights of 20% each were given to each of the major five items: health education and advocacy, case management, case finding/case holding, referral network and capacity building.

Results: Results show that, 32 out of the 34 CHOs/MHOs surveyed can be classified as LFZs, based on the first indicator, PR/CDR levels. However, none in the selected areas can be declared as LFZ using the second indicator, sustainable quality leprosy services (health education and advocacy, case management, case finding/case holding, referral network and capacity building) since these are either insufficient or available, but not sustainable and/or having more than the basic requirements in 2013.

Conclusion: Using PR/CDR as LFZ indicator, 32 out of the 34 selected sites qualified. The challenge now is how to maintain this level. Sustainable quality leprosy services is the LFZ indicator where none of the selected areas qualified. The gaps declared by the MHOs/CHOs under leprosy services should be addressed if the objective of DOH NLCP is to have LFZs. The draft Operational Guidelines for Stratification of Sub-national Areas towards LFZs is the basis at the moment for declaration of LFZs. However, to date, it is still undergoing review. Classification of LFZs in the selected areas will remain as such, until the Operational Guidelines has been approved.

O-170

OCCURRENCE OF CLINICAL EVENTS AMONG LEPROSY PATIENTS AFTER RELEASE FROM TREATMENT, UNIFORM MULTI-DRUG THERAPY TRIAL, 2003-2014

Presenter: Prabu Rajkuma

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Objective: To describe the clinical events reported during the conduct of trial on 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 in India and China

Method: ICMR-National Institute of Epidemiology coordinated a single-arm open field-based clinical trial of U-MDT for all newly detected and treatment-naive leprosy patients in six districts in India and two provinces in China. The trial participants completed six doses of MB-MDT and were followed up monthly until release from treatment (RFT) and then followed-up annually for five years post-RFT. We documented relapse as the primary outcome and recorded clinical events like reactions, neuritis and adverse drug reactions (ADR) during each follow-up. We calculated frequencies of each event by age, gender and type of leprosy. We documented repeat and combination of multiple events. We calculated event rates per 1000 person years (PY). The study was approved by ethics committees of respective collaborating organizations (Clinical Trials Registry of India: 2012/05/002696).

Results: We recruited a total of 3359 leprosy patients and 2071 (62%) had pauci-bacillary (PB) leprosy. Totally 1281 (PB=50%; MB=50%) events were observed among 829 participants (PB=21%; MB=30%). We observed more events in men than women (27% vs. 21%). Totally we recorded 440 clinical events and 316 (72%) were from MB group. Among the clinical events, rate of type 1 reaction (T1R) was highest (9.8/1000 PY) and relapse rates were lowest (0.4/1000 PY). The overall rate of occurrence of clinical events was higher among men except ADR that was similar across both genders. Overall the clinical event rates were higher in MB group. We observed a declining rate of occurrence of events over five years of follow-up. No relapses occurred after three years. There were no ADRs at the end of first year and most the reported ADRs were due to dapsone. Though the rates of neuritis, T1R and Type 2 reaction (T2R) were declining at the end of five years, the rates were higher in MB than PB group. We observed repeated reactions in 31 patients (T1R=26, T2R=2 and initially T1R – later T2R=3).

Conclusion: The observed clinical events have implications to the leprosy control programmes. Though the clinical events rates are very low at the end of five years, the patients with MB leprosy should be educated for reporting the symptoms of reactions to the nearest health facilities for management and prevention of deformities.

O-208

MINIMAL DISTANCE FOR OPTIMAL CASE FINDING IN A NEIGHBORHOOD CONTACT SURVEY IN BANGLADESH

Presenter: Mizanur Rahaman

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Objective: Surveillance of leprosy through active case finding among neighborhood contacts is a major component of leprosy elimination. The aim of this study was to find out the minimal distance for finding an optimal number of new cases while conducting a neighborhood contact survey surrounding an index case in a highly endemic leprosy area in northwest Bangladesh

Method: A retrospective study based on focal surveys of cohorts of index cases diagnosed in 1995 and 2000 to 2008; totaling 10 years. A total of 150 index cases were selected; 50 were MB BI positive, 50 were MB BI negative, and 50 were PB cases. Among them, 15 index cases were selected in each year (first 5 patients from each category). We returned to these cases in 2018 and newly examined the people present at the time for leprosy living within 200 meter of the index case's house; household contacts of that index case were excluded. We obtained data from six sub-districts under Nilphamari district from our database and from patient's leprosy cards. Collected data were analyzed using SPSS.

Results: A total of 13,514 people were examined for leprosy. We found 118 patients; 86 were historical (diagnosed before the index case) and 32 were new cases. All 32 new cases were PB; the 33 MB cases were found among the 86 historical cases. The minimal distance of a contact's house from the house of index case was 4 m

and the maximal distance was 200 m. We found 22 new cases (69%) within 75 m of index case's houses; and 49 historical cases (57%) within 75 m of index case's houses.

Conclusion: More than two thirds of the new cases were diagnosed within 75 m of the index case's house. In the context of Bangladesh villages, it a appears that contact surveys around newly diagnosed leprosy patients can be limited to a perimeter of no more than 100 m for an optimal case finding result among contacts. Adding another 100 m would not yield many more new cases.

O-212

FOOD FOR THOUGHT: NUTRITION AND LEPROSY

Presenter: Natalie Gibbs

N. Gibbs
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Objectives: This review compared the current literature that described the possible links between leprosy and nutrition in order to understand the impact of nutrition on the susceptibility to and treatment of leprosy, and identify current gaps in knowledge.

Methods: A systematic search process to undertake a literature review identified published papers (dated 2000 onwards) relating to the impact of nutrients and nutritional status on leprosy.

Results: Sixteen studies, from 5 countries spanning Asia and South America, were included which were grouped into the following five areas: Anthropometrical assessments of current patients, dietary habits, micronutrient concentrations, supplementation trials, post-treatment assessment. Multiple studies found that people affected by leprosy and their household contacts had a lower Body Mass Index than control groups, and that this association was increased if the patient also had a disability. Gender links were also prominent in a few studies – with one study finding that women had significantly greater undernutrition than their male counterparts and another suggesting there is a greater impact on the nutritional status of child household contacts if the index case is female. Food shortage and high Household Food Insecurity Access Scale scores was found to be linked to an increased risk of leprosy, with recently diagnosed leprosy patients found to be consuming significantly less food items from 'meat and fish' and 'other fruits and vegetables' categories. Vitamin E, vitamin A, vitamin C levels were found to be reduced in those with leprosy compared to control populations. One study found that 42% of people with leprosy had anaemia and another highlighted that transferrin depletion was more common in those with plantar ulcers than those without. Two studies looked at the co-administration of vitamins alongside MDT treatment and found a positive impact on serum nutrient levels and lowering oxidative stress.

Conclusion: The limited literature relating to the impact of nutrition in the fight against leprosy constrains our ability to make specific recommendations. The role of nutrition, and particularly specific nutrients in the epidemiology of leprosy needs to be investigated further, particularly their effects on both paucibacillary and multibacillary leprosy, and its impact on the prevalence of ulcers and their healing process. There is also a distinct lack of longitudinal studies as most of the current studies are cross-sectional studies and therefore do not assess the long-term impact on patients. Supplementation studies look promising and it would be worthwhile expanding these trials with a larger study group.

O-237

INCIDENCE OF REACTION AND/OR NEURITIS AFTER RELEASED FROM TREATMENT FOR LEPROSY: EXPERIENCE FROM A REFERRAL HOSPITAL FOR LEPROSY IN NORTHERN INDIA

Presenter: Ruby Marshala

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Objective: To determine the incidence of lepra reactions and/or neuritis after released from multi-drug therapy in leprosy and to explore the factors associated with it.

Method: This is a quantitative study involving collection of retrospective data from electronic patient records of those patients who are newly diagnosed and registered during the period between January 2014 to January 2015 and completed treatment at The Leprosy Mission Hospital Naini, Uttar Pradesh, an unit of The Leprosy Mission Trust India. Those received treatment elsewhere and did not complete MDT were excluded from the analysis. The data collection included, demographic data, clinical details at diagnosis, incidence of reaction and/or neuritis during and after MDT. The data was extracted to excel and analyzed using SPSS version 24. Descriptive statistics were used to describe the findings and appropriate statistical methods were used to study the factors associated with reaction and/or neuritis after completion of MDT.

Results: A total of 2415 records were screened and patients who received treatment elsewhere and who did not complete MDT were excluded, 476 patients were included for analysis. Of 476 patients, 305 (64.1%) were male and 322 (67.6%) were multibacillary cases. At diagnosis, 155 (32.6%) of patients presented with reaction and/or neuritis at diagnosis. Of the 476 patients who completed MDT, 152 (31.9%) had follow-up up for at least 24 months after diagnosis. Of them, 17.1% (26) of the patients developed T1R, T2R or neuritis after completion of MDT.

Conclusion: The considerable number patients continue to develop deleterious events after completion of MDT which require medical treatment. In the absence of surveillance system in the national program or in the treatment centres, patients are at high risk of developing permanent disabilities post RFT.

O-266

SPATIAL EPIDEMIOLOGY OF LEPROSY IN A HYPERENDEMIC CITY OF THE BRAZILIAN AMAZON REGION: CLUSTERING OF DISEASE AND POVERTY

Presenter: Josafá Gonçalves Barreto

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Objective: The spatial epidemiology of leprosy contributes to increase the early detection of new cases, guiding active case finding strategies to most at-risk areas of *M. leprae* transmission. Forty three out of 144 (30%) municipalities of Pará State in the Brazilian Amazon Region are considered hyperendemic for leprosy, represented by an annual new case detection rate (NCDR) of ≥40/100,000 population. This is the case of Paragominas, that had a NCDR of 58/100,000 inhabitants in 2017. Thus, the objective of this study was to identify the spatial and temporal distribution of leprosy cases in this hyperendemic city.

Method: Paragominas is placed 300km from the state capital city of Belém, with a population of about 110,000 inhabitants. We geocoded the residences of the leprosy cases reported during 2004-2010 by field work with a

handheld GPS receptor device. Using Geographic Information System (GIS) and spatial statistics (Moran's I, Kulldorff spatial scan statistics and Knox statistics for space-time clustering) we identified the spatial-temporal distribution pattern of the disease in the study setting in a very fine spatial scale (census tract and individual level). Using census data from the Brazilian Institute of Geography and Statistics (IBGE), we analyzed the average income per capita per census tract and compared with the spatial distribution of leprosy.

Results: From 2004 to 2010, Paragominas reported 1047 new leprosy cases; 791 (75.5%) of them were in the urban area, 720 were mapped in the urban area (91%). Spatial analysis revealed a significant clustering pattern of leprosy distribution (Moran's I *p*=0,001; Kulldorff *p*=0,001; knox *p*=0,001). The main cluster of cases was found to be placed in the south area of the city. This area has the lowest income per capita in the urban zone. From those mapped cases, 598 (83%) were clustered in space and time, considering 100 meters of distance from at least another case and diagnosis up to three years apart.

Conclusion: The spatial-temporal distribution of leprosy cases in Paragominas is heterogeneous, shaping statistically significant clusters. Additionally, we identified an overlying relationship among the most likely cluster of leprosy and the cluster of poverty. These findings contribute to improve the understanding of the transmission dynamics in this study setting and provide further and new elements for disease control activities. It is necessary extra-efforts to fight against leprosy in such endemic cities, especially in most at-risk areas, including local socioeconomic development strategies.

O-275

LEPROSY IN THE ELDERLY IN BRAZIL: CHARACTERISTICS OF NEW CASES DETECTED IN PEOPLE AGED OVER 60, 2014-2016

Presenter: Margarida Cristiana Napoleão Rocha

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Objective: To describe the epidemiological and clinical characteristics of new leprosy cases detected among elderly people in Brazil, comparing them with other age groups.

Method: We conducted a descriptive study of new leprosy cases detected in Brazil (2014-2016) and reported on the Ministry of Health's Notifiable Diseases Information System (SINAN). We calculated the indicators by age group (60 years or over, 40-59, 15-39 and those aged under 15) for Brazil, its macroregions and federative units. We used Microsoft Excel 2013 and Stata version 15.0 to assist with the analyses. Pearson's chi-squared test was used to test differences between the groups taking a 5% significance level.

Results: Between 2014-2016, 86,104 new leprosy cases were reported in Brazil. Of these, 19,460 (22.6%) occurred in elderly people, 31,342 (36.4%) among people aged 40-59, 29,068 (33.8%) among those aged 15-39 and 6,234 (7.2%) in those aged under 15 years old. The mean detection rate and the mean rate of new cases with grade 2 disability at diagnosis were higher among the elderly (27.1/100,000 inhabitants and 29.1/1,000,000 inhabitants, respectively) in comparison to other age groups, in Brazil as a whole, its macroregions and its federative units. Among the elderly, cases predominated among males (59.7%) and cases classified as multibacillary (77.7%), with significantly greater proportions ($p<0.05$) than in the other age groups. The proportion of degree 2 disability (12.3%) among the elderly was some 1.6 times higher than that found in the 40-59 age group (7.6%), twice that

found in the 15-39 age group (5.8%) and five times (2.5%) that found in the under 15 age group. On the other hand, the percentage of new cases detected by contact examination was lower among the elderly (4.5%) compared to the other groups (40-59 years; 6.2%, 15-59 years: 9.0% and <15 years: 15.9%).

Conclusion: The results indicate the need for special control of leprosy among the elderly, both in relation to health care and to strengthening of contact surveillance, with the aim of achieving early diagnosis and preventing physical disabilities. We highlight the importance of greater integration between the Brazilian Ministry of Health's technical leprosy and elderly health areas.

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FACIES EPIDEMIOLOGIQUE DE LA LEPRE AU BENIN DE 2006 A 2018

Presenter: Ronald Sètondji Gnimavo

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Objectifs: Cette étude a pour objectif de décrire les caractéristiques épidémiologiques de la lèpre au Bénin de 2006 à 2018.

Méthode: Il s'agit d'une étude rétrospective descriptive. Les données démographiques et cliniques de tous patients pris en charge dans les Centres de Traitement Anti Lèpre (CTAL) de la République du Bénin et par les Infirmiers Superviseurs Lèpre (ISL) entre 2006 et 2018 ont été collectées dans les registres. Ces données ont été analysées avec le logiciel Stata/SE 11.0. Le logiciel QGIS version 2.18.23 a été utilisé pour la cartographie. Les principaux indicateurs de la lèpre ont été calculés selon les recommandations de l'OMS.

Résultats: Au total 2785 nouveaux cas de lèpres ont été diagnostiqués entre 2006 et 2018 (moyenne annuelle de 214 cas). L'âge médian des patients était de 38 ans avec des extrêmes allant de 6 à 88 ans. Le sexe ratio (H/F) était de 1,18 (1509/1276). Les départements de l'Atacora (19,17%), du Zou (18,8%) et du Plateau (17,2%) sont les plus endémiques. Le taux de détection variait de 3,8 à 1,32 pour 100.000 habitants entre 2006 et 2018. La proportion des cas pédiatriques avait varié de 8,56% à 2,67% et celle des formes multibacillaires, de 72,95% à 90% entre 2006 et 2018. La proportion des incapacités de degré 2 était passée de 8 à 5 cas pour 1.000.000 d'habitants entre 2006 et 2018. Le taux d'achèvement de la polychimiothérapie était passé de 90,53% à 94,12% entre 2006 à 2018.

Conclusion: Au Bénin, la lèpre reste un problème de santé publique pour lequel, il est important de redynamiser le système de surveillance épidémiologique afin de parvenir d'ici 2020 à son élimination.

O-287

DÉPISTAGE DE LA LÈPRE EN STRATÉGIE AVANCÉE DANS LA RÉGION DU CENTRE OUEST ET DU CENTRE NORD DU BURKINA FASO.

Presenter: Amina Nomtondo Ouedraogo

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Introduction: Maladie, longtemps endémique au Burkina Faso, la lèpre est éliminée en tant que problème de santé publique depuis 1994. La baisse progressive du nombre de nouveaux cas peut induire une perte de l'expertise des agents de santé à la reconnaissance de la maladie. Le but de cette campagne était de contribuer à l'amélioration de la détection précoce des cas de lèpre et permettre ainsi la reduction du taux d'infirmité chez les nouveaux cas.

Méthode et patients: Une étude transversale à visée descriptive, était menée dans deux régions du Burkina Faso du 24 au 28 septembre 2018.

Les régions ayant notifiés le plus de cas de lèpre en 2017 étaient retenues. Deux districts sanitaires (DS) choisis dans chaque région: DS de Kaya, et de Tougouri dans la région sanitaire du Centre-Nord, DS de Koudougou et Sabou choisies dans la région sanitaire du Centre-Ouest.

Des consultations de dermatologie étaient organisées dans chaque village, précédées d'une séance de sensibilisation sur les pathologies de la peau en general et sur la lèpre en particulier. Les équipes de consultation comprenaient au moins un dermatologue.

Résultats: Un total de 798 personnes était examiné durant cette étude, dont 63,41% de sexe féminin et 36,59% de sexe masculin. La moyenne d'âge était de 32,92 ans avec des extrêmes de 87 ans et 6 mois. Il y avait 28,36 % d'enfants de moins de 15 ans. Le tableau I nous renseigne sur le détail des données selon les districts sanitaires. Le nombre de personnes examinées était supérieur à 200 dans tous les DS sauf celui de Kaya qui était de 91. Nous avons dépistés 9 cas de lèpre dont 3 anciens cas et 6 nouveaux cas. Il y avait 5 MB et un PB parmi les nouveaux cas. Parmi les 6 nouveaux cas, il y avait des patients âgés de 11, 15 et 16 ans. Tous les nouveaux cas provenaient du DS de Koudougou. Les sujets contacts des nouveaux cas étaient les grands parents.

Conclusion: La découverte de nouveaux cas parmi les enfants dénote de la continuité de la transmission dans ces régions du pays.

O-304

DETERMINANTS OF TREATMENT COMPLETION AND DEFAULT AMONG NEWLY-DIAGNOSED MULTIBACILLARY LEPROSY PATIENTS IN METRO MANILA, PHILIPPINES: A RETROSPECTIVE COHORT STUDY

Presenter: Veincent Christian Pepito

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Objectives: This retrospective cohort study investigated some factors associated with treatment completion and default among newly-diagnosed multibacillary leprosy patients receiving Multiple Drug Therapy (MDT) in selected hospitals in Metro Manila, Philippines.

Methods: We reviewed records of multibacillary leprosy patients receiving MDT from January 2007 to December 2013 at selected hospitals in Metro Manila, Philippines. From the patient records, we collected the following data: hospital where they got treatment; age, sex, and place of residence of patient; estimated treatment duration, treatment outcome, and bacterial index data. We performed Cox proportional hazards regression to determine the association of the aforementioned variables with treatment completion and default.

Results: We reviewed 1,034 patient records, with a total follow-up time of 12,287 person-months. From this, 590 (57.1%) patients completed treatment, 383 (37.0%) dropped out from treatment, and 61 (5.9%) experienced other outcomes, such as death, and transfer to other treatment facilities. Controlling for potential confounders, only the variables hospital [Hazard Ratio ($HR_{Hospital\ B\ vs\ A}$): 0.61 (95%CI: 0.34-1.08); $HR_{Hospital\ C\ vs\ A}$: 0.72 (95% CI: 0.59-0.87)]; initial BI [HR_{common}: 0.93 (95%CI: 0.89-0.98)]; and treatment extension [$HR_{extended\ vs\ not\ extended}$: 0.02 (95%CI: 0.01-0.04)] were found to be associated with treatment completion. The effect of hospital and treatment extension on treatment default varied with time, thus, the duration of follow-up was stratified into less than six months of follow-up and beyond six months of follow-up. For the first six months, only age [$HR_{30-44\ vs\ 15-29}$: 0.72 (95%CI: 0.53-0.99); $HR_{45+\ vs\ 15-29}$: 0.94 (95%CI: 0.68-1.30)] was found to be associated with treatment default. In the latter months of follow-up, the variables hospital [$HR_{Hospital\ B\ vs\ A}$: 2.80 (95%CI: 1.08-7.30)], initial BI [HR_{common}: 1.15 (95%CI: 1.03-1.29)], and treatment extension were all found to be associated with treatment default [$HR_{extended\ vs\ not\ extended}$: 0.19 (95%CI: 0.10-0.36)].

Conclusion: These findings highlight the need to re-evaluate current measures on treatment adherence, which will contribute to effective leprosy control efforts in the country.

O-306

THE EMERGENCE OF LEPROSY IN KIRIBATI

Presenter: Stephen Chambers

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Objectives: Kiribati, formerly the Gilbert Islands, is a country of 33 atolls, 21 of which are inhabited, spread over more than 1 million square miles of ocean. There were 28 known cases in 1925, when the population was about 31,000 people. A systematic population survey in 1997 identified 135 new cases which was followed by mass chemoprophylaxis in the main population areas (South Tarawa, and Betio; an islet connected to South Tarawa by a causeway) and Christmas Island. The objective was to describe the epidemiology of leprosy in Kiribati from 2011 to 2017

Methods: Population statistics were obtained from 5 yearly Census data from 1990 to 2015 from the National Statistics office of the Government of Kiribati. Case information was available from a National leprosy Unit (NLU) Register at the Nawerewere hospital in Kiribati for 1983 to 2010 and from an electronic data base for 2011 to 2017.

Results: The population of Kiribati has increased by 57% since 1990. South Tarawa and Betio grew 13.5% and 10% respectively over the 5 year period up to 2015, compared with 7% for Kiribati as a whole. The mean population density in South Tarawa increased from 1,106/km^2 (1988-1992) to 2,772/km^2 (2013-2017), and in Betio the population densities are 5,555/km^2 and 10,377/km^2 for the same time periods, but numbers per household remain

essentially unchanged over this time period (7-8/household).

In Kiribati 2259 new cases were reported from 1988 to 2017; (54%) were male, 751 (33%) were multibacillary and 732 (32%) were under 15 years of age. Grade 2 disability was found in 46 (3%) of the 1338 cases from 2009-2017. The national mean annual incidence rate per 10,000 population has risen from 6.1 (1988-1992) to 15.2 (2013-2017). In Betio, the mean rates /10,000 population were 7.8 (1987-1992) and 23.1 (2012-2017) and in South Tarawa were 6.5 and 22.2 for the same periods. From 2012-2017 Betio and South Tarawa reported 87% of all cases.

Conclusion: Despite the availability of multi-drug therapy and efforts to improve case finding and management leprosy has continued to spread. This is expected to continue in areas where crowding and poor socioeconomic conditions exist and may accelerate with inundation caused by climate change. New initiatives to improve social conditions, and efforts to prevent spread such as sustained post exposure chemoprophylaxis, should be considered.

O-329

STRONG DEGREES OF SPATIAL CLUSTERING OF LEPROSY AT SUB-VILLAGE LEVEL ON THE COMOROS

Presenter: Nimer Ortuno-Gutierrez

Nimer Ortuno-Gutierrez[1], Abdallah Baco[2], Younoussa Assoumani [2], Aboubacar Mzembaba[2],Zahara Salim[2], Mohamed Amidy[2], Saverio Grillone[2], Jan Hendrik Richardus[3], Sofie Braet[4,5,6],Bouke C. de Jong[4], Epco Hasker[4]

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Objectives: The PEOPLE project is a community intervention trial on post-exposure prophylaxis (PEP) for leprosy on the Comoros and Madagascar. As a secondary objective we study spatial clustering of leprosy. This work builds on results from the ComLep study that started in 2017 and is now in its final year.

Methods: Villages have been selected based on reported leprosy incidence for the period 2013-2017. All villages will be screened door-to-door for four years in a row, all leprosy patients detected will be treated in accordance with WHO guidelines. For recording screening results, we use an Android app that allows to also record geographic coordinates. We used preliminary data from two villages to calculate for each person screened the distance to the nearest leprosy patient reported in 2017 or 2018. Subjects were then sub divided into 5 groups according to distance: household contacts, non-household contacts at less than 25 meters, neighborhood contacts between 25 and 50 meters, neighborhood contacts between 50 and 75 meters and those beyond 75 meters. We fitted a Poisson model to compare incidence rates for leprosy in these five groups, using those living at more than 75 meters as reference category. Village of residence was included as a fixed effect.

Results: Screening started mid-January 2019. Data on 3,964 persons screened in a two-week period in two villages show very strong geographical associations with a clear gradient. Incidence rate ratios range from 5.2 (95% confidence interval (CI) 1.4-19.2) for household contacts to 4.3 (95% CI 1.4-13.4) for neighbors living within 25 meters, 1.8 (95% CI 0.5-6.0) for those living at 25-50 meters to 0.6 (95% CI 0.1-3.3) for those living 50-75 meters away, always comparing to those living at more than 75 meters. By September 2019, we expect to have data on approximately 80,000 persons screened.

Conclusion: Preliminary results from the baseline survey of the PEOPLE trial show very strong degrees of clustering of leprosy not only at household level but also among neighbors living within 25 meters. Results so far show a strong rationale in favor of expanding leprosy control activities such as active case finding and post exposure prophylaxis beyond the household level.

ILC-4: EPIDEMIOLOGY and CONTROL:

4.2 Leprosy Control

O-023

SUSTAINED ACCEPTABILITY OF USE OF RAPID DIAGNOSTIC TESTS AMONG PATIENTS AND THEIR CONTACTS IN THE PHILIPPINES

Presenter: Malcolm S. Duthie

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Objective: To determine the long term acceptability of an immunologic, lateral flow-based rapid diagnostic test (RDT) among leprosy patients and their household contacts (HC).

Method: With the approval of an Institutional Ethics Committee, study volunteers were interviewed on their level of acceptance of an immunologic, lateral flow-based RDT as a serodiagnostic, treatment monitoring and seroprognostic tool for leprosy. Interviews were conducted among newly diagnosed multibacillary (MB) and paucibacillary (PB) leprosy patients attending the Leonard Wood Memorial Center for Leprosy Research. Those residing in the same dwelling with the index case for at least 6 months were then qualified as healthy household and were also asked to respond to a questionnaire. A total of 168 patients (156 (93%) were MB and 12 (7%) were PB) and 297 household contacts (HHC) were recruited. Each participant provided standardized responses from multiple choice options in relation to their perception of how leprosy was impacting their lives; the benefits and importance of RDT; and their preferred frequency of testing using the tool. Initial surveys were conducted in 2015 and have been repeated among the same participants on a regular basis over the ensuing 4 years.

Results: At intake 94% of 200 patients and 93% of 600 HHC were in favor of using RDT as a diagnostic, prognostic and treatment monitoring device for leprosy. RDT were perceived positively by both groups with the majority (87% patients and 71% HHC respectively) considering the tool as “very important”, while fewer perceiving it as “slightly” to “moderately important”. No patients, and only 0.8% HHC, considered that tests would be of no benefit. These positive responses were substantiated by 99% of patients and 98% of HHC being willing to be tested using RDT. However, patients generally preferred that RDT testing be confined among HHC rather than being extended to their larger community. Slightly over half of the patients preferred an extensive RDT monitoring schedule from the time of diagnosis through the end of treatment. Most HC were also in favor of RDT monitoring when needed. Annual follow up among 130 of the intake patients indicated a retained enthusiasm for testing and, importantly, a marked increase from 58.5% to 89.4% indicating that they would like testing among household members on a yearly basis. This increased enthusiasm for testing was also evident within the HHC group.

Conclusion: The routine and regular use of RDT is widely acceptable among patients and their household contacts alike, with the enthusiasm for testing actually strengthening over time.

O-024

EMERGING AND TRANSMISSION OF DRUG/MULTIDRUG RESISTANT *Mycobacterium leprae* IN A FORMER LEPROSY COLONY LOCATED IN THE BRAZILIAN AMAZON

Presenter: Marcelo T. Mira

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Objective: Leprosy has been treated with multidrug therapy (MDT) distributed for free across the globe and regarded as highly efficient. However, the impossibility to grow *M. leprae* in axenic media has historically impaired assessment of *M. leprae* resistance, a critical parameter only recently more accessible through molecular methods. Our objective was to describe the status of *M. leprae* resistance to the components of MDT through a systematic, population-based, long-term follow-up study of an isolated Brazilian village still hyper-endemic for leprosy.

Method: A systematic search for *M. leprae* resistance in suspected leprosy relapse cases and contacts was performed in the Prata Village, a hyper-endemic, former leprosy colony located in the outskirts of the Amazon forest, north of Brazil. Results led to an extended active search involving the entire Prata population. Confirmed leprosy cases were investigated for bacterial resistance using a combination of *in vivo* and direct sequencing of PCR products of *M. leprae* resistance genes *folP1*, *rpoB* and *gyrA*. Molecular epidemiology analysis was performed by combining data from 17 variable number tandem repeats (VNTR).

Results: A total of 758 individuals were examined and *M. leprae* was obtained from biopsies of 37 confirmed leprosy cases – 18 relapses and 19 new –, 16 (43.24%) of them displayed drug-resistance variants. Multi-drug resistance to rifampicin and dapsone was observed in eight relapses and four new cases. Single resistance to rifampicin was detected in one new case. Resistance to dapsone was present in two relapses and one new case. Combined molecular resistance and VNTR data revealed evidence of intra-familial primary transmission of resistant *M. leprae*.

Conclusion: A comprehensive, population-based systematic approach to investigate *M. leprae* resistance in a hyper-endemic, isolated population revealed an alarming scenario of emergence and transmission of resistant strains. These findings may be used as a model for the development of new strategies for surveillance of drug resistance in other populations.

O-059

LEPROSY NEURAL RELAPSE: ARE WE RECOGNIZING THIS CONDITION?

Presenter: Diogo Fernandes dos Santos

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Objective: The definition of relapse in leprosy corresponds to all patients treated with standardized schemes of multidrug therapy, discharged for cure, but who returns to present new clinical signs/symptoms of disease. There

are still no clear and well-defined criteria for the diagnosis of leprosy relapse in its primary neural form, when there are clinical evidence of peripheral neuropathy, but with the absence of new skin lesions and negative slit skin smear bacilloscopy. This study aims to characterize the epidemiological, clinical, neurophysiological and laboratorial aspects of neural relapse in leprosy.

Methodology: This study presentes a serie of cases that characterizes 12 patients with the diagnosis of leprosy relapse in its neural form, assisted in a national reference center in Brazil from 2012-2017. All individuals were submitted to a clinical, serological, molecular and neurophysiological evaluation.

Results: 90 cases of leprosy relapse were reported, 13.3%(12/90) in a neural form. The average age was 52.5(±11.9) years, and 66.7%(8/12) were female. The time between the end of the previous treatment and the relapse diagnosis was 11.3(±7.1) years; 75%(9/12) were multibacillary at initial diagnosis. All patients reported adherence to the first treatment and only 16.7%(2/12) presented reactional episodes after discharge. All patients presented an asymmetric neural impairment, with a predominance of sensory symptoms (91.7%; 11/12), while 66.6%(8/12) complained of muscular weakness and/or amyotrophy. Neural thickening was observed in 83.3%(10/12). Electroneuromyography showed a pattern of mononeuropathy in 8.3%(1/12), while 91.7%(11/12) presented an multiple mononeuropathy. ELISA anti-PGL1 was positive in 33.3%(4/12) and qPCR DNA *M. leprae* test in slit skin smears in 50.0%(6/12); slit skin smears bacilloscopy was negative in all cases. 75.0%(9/12) were submitted to nerve biopsy. 44.4%(4/9) presented histopathological alterations suggestive of leprosy, one case (11.1%; 1/9) presented positive bacilloscopy and qPCR test was positive in 88.9%(8/9) of the nerves.

Conclusion: This study reinforces the fact that neural relapse is underdiagnosed, favoring a hidden prevalence and the maintenance of the disease transmission chain. Considering that leprosy remains a public heatlh problem, the development and implementation of new tools for the detection of *M. leprae* and its neural impairment is mandatory.

O-060

IDENTIFICATION OF HIGH-RISK AREAS OF LEPROSY IN NORTHWEST BANGLADESH – A GEOSPATIAL MODELLING AND ECOLOGICAL STUDY

Presenter: David Blok

Caroline Bulstra[1,2], C. Ruth Butlin[3], Khorshed Alam[4], David Blok[1], Bob Bowers[5], Johan Chandra Roy[4], Kallyan Kundu[4], Peter Nicholls, Epke Le Rutte[1,6], Sake de Vlas[1], Jan Hendrik Richardus[1]

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Objectives: Countries often have difficulty to localise focal high-risk areas or ‘hotspots’ of leprosy. Geospatial tools seem promising to support the “final push” towards zero leprosy, to strengthen capacities in surveillance and to monitor new cases. The objective of this study is to geospatially visualize leprosy incidence trends in order to identify the potential presence of high-risk areas or ‘hotspots’ of leprosy in Bangladesh over the past two decades, and to explore possible environmental predictors of leprosy.

Method: Data come from four districts in northwest Bangladesh, where a total of ~10 000 cases were included between 2000 and 2018. GPS coordinates of the house of each leprosy patient at time of diagnosis were collected retrospectively. A Poisson model was used through spatial statistics scan to detect spatiotemporal hotspots of high incidence among the population. Furthermore, hotspots among children under 15 years of age and early stage MB cases (characterized by grade 0 disability and positive skin smear) were identified, indicating active foci of leprosy transmission. For the ecological analysis we utilize open-source environmental and location data (UN, NASA,

Google) to explore possible predictors of leprosy hotspots: population density, landcover, and proximity to water bodies, clinics or towns.

Results: Preliminary results show that incidence levels dropped from ~3.3 to ~1.2 cases per 10,000 capita during the study period; the number of MB cases (a quarter of all cases) remained relatively stable. Over 10% of the cases were below 15 years of age at time of diagnosis, which is above the reported mean global estimate (7.5%). Of all MB cases, 30% were detected during the early stage of disease. Statistically significant hotspots of both incidence and transmission were identified. Hotspots largely varied in size (2-40 km radius), and captured 150 to up to 10.000 people. The relative risk of having leprosy was always around two times higher for inhabitants of hotspots, compared to those living outside hotspots. Hotspots of active transmission – characterized by large numbers of patients under the age of 15 years and early MB patients – appear to be located in areas with high population densities.

Conclusion: Comparable to other endemic pockets across the world, leprosy shows a heterogenous distribution with clear hotspots in northwest Bangladesh. Identifying such high-risk areas can help to geographically target active case-finding strategies towards achieving the WHO global leprosy goals.

O-066

IDENTIFYING RESEARCH PRIORITIES FOR LEPROSY: A MIXED-METHOD APPROACH

Presenter: Nienke Veldhuijzen

Nienke Veldhuijzen[1], Zahra Khazai[2], Wim H. van Brakel[3], Dirk Essink[2], Tom Gillis[4], Christa Kasang[5], Pim Kuipers[6], Paul Saunderson[7], David Scollard[1].
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Objective: Despite remarkable reductions in leprosy prevalence since the introduction of multiple drug treatment (MDT) – the incidence has plateaued in the past decade. Each year over 200,000 persons are newly diagnosed with leprosy and many more suffer from long-term consequences, such as disabilities. Moreover stigma, discrimination and social exclusion are still a reality for many persons affected by leprosy. Health research is considered to be an essential tool for addressing health challenges and improving public health and health equity in low and middle-income countries. To target health research effectively, research priorities need to be defined. Since 2013, the Leprosy Research Initiative (LRI) has been an important funder of leprosy-related research. Five years after its launch the LRI conducted a stakeholders' consultation to evaluate its research priorities and to contribute to a wider research agenda.

Method: A mixed methods approach was used in which qualitative methods (enquiry panel, focus group discussions (FGD) and key informant interviews) were followed by quantitative methods (e-survey and Delphi process). The Delphi process was the final phase of the study with the aim to reach consensus on the priority ranking of the research topics.

Results: In total, 124 persons contributed to the study. Stakeholders consulted included leprosy-affected persons, researchers, health professionals, NGO staff and policy makers. Overall, fifty percent of the participants came from endemic areas. This proportion was highest among participants in the FGD (62%) and the e-survey (53%) as compared to the enquiry panel (35%), the key informant interviews (17%) and the Delphi panel (26%). Eighty-four research topics were identified. The Delphi process resulted in three top five lists of research topics in the categories Zero Transmission, Zero Disability and Zero Discrimination.

Conclusion: We successfully engaged a broad range of stakeholders, resulting in fifteen prioritized research topics categorized in Zero Transmission, Zero Disabilities and Zero Discrimination. The priorities will be presented.

When comparing the prioritized topics with the current LRI research priorities one new topic was evident, namely, research into mental health of persons affected by leprosy. In addition, stakeholders advocated for enhancing the participation of persons affected by leprosy in research and exploring the effect of such participation. These findings are not only relevant for the LRI, but may also contribute to research agenda setting by others. Most notably, alignment will be sought with the Research Agenda of the Global Partnership for Zero Leprosy.

O-073

SEARCH FOR RELAPSES AND NEW LEPROSY CASES IN EX-COLONY AREA IN THE STATE OF SÃO PAULO, BRAZIL

Presenter: Patricia Sammarco Rosa

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Introduction: Leprosy is an insidious chronic infectious disease of high endemicity in Brazil. Colonies where patients in the past were sent during compulsory hospitalization have been deactivated, but serve, still today as residence for many treated patients and their household contacts. Despite the proved efficacy of multidrugtherapy (MDT) for leprosy, studies in ex-colony have diagnosed relapse cases, new cases and reported drug resistance among the residents of those areas. Therefore, active search of new cases for prompt treatment and the vigilance of resistance are priorities to control the disease in this population.

Objective: To identify active leprosy cases in residents of the ex-colony Pirapitingui located in the interior of São Paulo State, BR.

Method: A systematic search, door to door, for new leprosy cases was carried out among 217 residents (119 ex-patients and 98 contacts) between May and September of 2018. A multidisciplinary team was responsible for dermato-neurological examination, collecting blood for serological screening (anti Lid-NDO and anti-NDO-BSA) and collecting epidemiological data. All patients who presented any dermato-neurological symptom, and/or positive serological test, were re-evaluated by the multidisciplinary team at the local ambulatory and material collected for complementary laboratory exams: slit skin smear, PCR for the RLEP gene, histopathology and drug resistance testing at Lauro de Souza Lima Institute, Bauru-São Paulo, Brazil.

Results: 69 out of the 217 evaluated individuals presented clinical signs or symptoms of leprosy (suspected active disease). Among those, 50 had complementary exams performed and in the remaining 19 disease was discarded and patients were oriented to be evaluated at time intervals in the future. Among the 50, four had positive slit skin smear (1+), four had positive serology for the anti Lid-NDO and anti-NDO-BSA; 34 had positive PCR but with very low M. leprae DNA copies. No mutations associated with drug resistance were detected in the evaluated samples. Histopathology was not conclusive in any of the examined samples. Five individuals were confirmed with active leprosy (three relapses and two new cases). MDT was prescribed to the five cases.

Conclusion: Results reveal a worrying scenario on emergence of relapse and new cases in an ex-colony area and show the importance of the use of complementary exams that helped the team in identifying active leprosy cases (relapses and new cases) and in the differentiation of active disease from sequels. In addition, the strategy of search door to door was welcome by all the residents.

O-076

INTERVENTION OPTIONS TO ACCELERATE REACHING ZERO LEPROSY: A MODELING STUDY

Presenter: David J. Blok

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Objective: Leprosy is at a critical point in terms of global and national programs. The current strategy seems to be insufficient to further curb the trend of the number of newly detected cases, as this number has stagnated since leprosy was declared to be eliminated as a public health problem in the year 2000. In 2017, the number of new cases detected is 210,671. It is unknown how long it will take to reach zero leprosy and how existing and/or novel interventions could speed this up. The aim of this study is to estimate the impact of various intervention strategies to accelerate reaching zero leprosy using mathematical modeling.

Method: We used the individual-based model SIMCOLEP to model the leprosy trend in the three most endemic countries: India, Brazil and Indonesia. These three countries have combined around 150,000 new cases annually. We used previous published model quantifications of these countries. The routine program consisted of treatment with multidrug therapy (MDT) of clinically diagnosed leprosy cases and passive case detection. We examined the impact of the following strategies: 1) Post exposure prophylaxis (PEP) in contacts (assuming 50% effectiveness); 2) Enhanced PEP regimen in contacts (assuming 90% effectiveness); 3) PEP and a diagnostic test for subclinical leprosy in contacts; 4) Blanket PEP (25% coverage) followed by PEP in contacts; 5) PEP and a diagnostic test for subclinical leprosy in a population survey (75% coverage). All strategies were modelled separately for each country and pooled afterwards. Simulations were run until 2070.

Results: Leprosy incidence show a downward trend under the routine program but reaching zero leprosy will not be possible within the modelled time frame. All suggested options would accelerate the decline in incidence. Administering PEP to contacts would bring forward the time until reaching 10,000 cases to 2057. An enhanced PEP regimen or PEP in combination with a diagnostic test in contacts would further accelerate reaching 10,000 cases to 2052. Strategies targeting the population at large, including blanket PEP and PEP and a diagnostic test in a population survey would bring the time until lower numbers further forward to 2032 and 2035, respectively.

Conclusion: Achieving ‘zero leprosy’ will realistically take many decades. Available and novel tools can accelerate reaching zero leprosy. However, the effect depends on the chosen strategy (i.e. contacts *vs*. population-wide approach)

O-081

PROGRAM INITIATIVES TOWARDS ATTAINING A DECREASED LEPROSY PREVALENCE IN THE CORDILLERA ADMINISTRATIVE REGION

Presenter: Clint Gil Ildefonso

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Objective: Advocacy, Communication and Social Mobilization is an essential tool in increasing both demand and supply of Leprosy services- the important pillars in achieving Leprosy Control Program targets. The study aimed to improve Leprosy Case Detection and Treatment Completion rates through mobilizing positive multi-sectoral commitment to sustain adequate resources, minimizing stigma and discrimination brought about by the disease.

The implementation of Kilatis Kutis Caravan as a strategy in delivering dermatological services as well as information dissemination to the far-flung areas in the different provinces of Cordillera Administrative Region proved to be an effective approach in case finding, prevention, management, and treatment of skin disorders, and increased public awareness on the disease process.

A notable good practice is the Yearly "**TARIPNONG"** (Hansenites' Gathering) conducted by the Province of Abra in collaboration with DOH-CHD-CAR. This activity is attended by our friends afflicted with Leprosy together with their family, stakeholders, the church, media, benefactors, private sector and the society as a whole. Such activity provides emotional, social, spiritual upliftment and gives chance to explore on possibilities of engaging on a livelihood project that could help in their sustenance and productivity.

Method: A qualitative type of study where the documents submitted by the different City/Provincial NLCP Coordinators for the period of 2014-2018 served as the bases of the results.

Results: For years of implementing the KKC, Cordillera has eliminated Leprosy as a Public Health problem even surpassing the National Prevalence Rate target of less than 1 per 10,000 populations. Statistics show that PRs are decreasing even more after sustained implementation of the strategies starting with 0.06 in 2014 up to 0.08 in 2018. Likewise, people with skin problems come for consultation and are given appropriate medication and the more serious ones are referred accordingly for further management. **Abra's "Taripnong"** on the other hand was a venue for interaction for all people from all walks of life. Former patients regained their self-esteem, worth and realized that they could still become productive part of the society.

Conclusion: A great improvement in the Case Detection and Treatment Completion Rates as more hidden cases are seen and treated on time thus markedly reducing the Prevalence Rates over the years. Stigma is now a thing of the past as more and more patients come out, striving to be productive and taking back their rightful place in the society.

O-136

CONTRIBUTIONS OF LEPROSY DETECTION INTENSIFICATION PROJECT IN THE DRC FROM 2015 TO 2018 IN THE CONTEXT OF THE 2013 BANGKOK DECLARATION

Presenter: Florent Ngondu

Florent Ngondu[1], Jeanine Itamba[1], Jean Norbert Mputu[1],Jean Ngoy[1], Ebeja Kadima.[2], Alexandre Tiendrebeogo[2]

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Objectives: Overall objective: contribute to reducing the burden of leprosy in 63 health zones;

Specific objectives: increase detection of new cases of leprosy by more than 50% compared to 2013; treat 100% of detected leprosy cases; and manage all cases with leprosy-related disabilities.

Methods: The activities were carried out by eight provincial leprosy coordination offices in Bas-Uele, Equateur, Haut-Katanga, Haut-Uele, Maindombe, Tanganyika, Tshopo and Tshuapa; 63 health zones were targeted with the support of the National Leprosy Elimination Programme and in collaboration with WHO and the NGO Action Damien. Conducted activities were as follows:

• Allocation of financial resources, IEC materials and medicines;
• Sensitization of political and administrative authorities of the provinces;

- Organization of an information meeting with the Provincial Leprosy Programme Coordination and Health Zone Management Teams
- Training of health workers and community relays;
- Awareness sessions for village populations;
- Selection of suspected patients; diagnosis of leprosy by active case search during visits of villages and households of former leprosy patients;
- Prescription of MDT for leprosy cases;
- Treatment of other cases of skin conditions;
- Case management of patients with leprosy complications.

Results: During the three years of the project, 3,794 new cases of leprosy were detected, compared to 2,214 new cases in 2013 in the targeted 8 provinces and 63 health zones, out of the 26 Provinces and 516 health zones in the DRC. This represents an increase of 71% compared to the detection of the same health zones in 2013. The detection of the country for the 3 years was 11,649 new cases, the project having contributed with 3794 new cases or 32.5%. After a peak of increase in detection and prevalence in 2015, attributable to the project, these indicators have been decreasing in the following years (2016 to 2018).

Conclusion: This project has improved the detection of hidden leprosy cases by capacity building of actors, strengthening of social mobilization, awakening of consciousness and appropriation of the elimination of leprosy by programme managers and community leaders and members. The objectives (general and specific) of the project have been fully achieved.

O-150

ILEP IN INDIA'S PARTNERSHIP WITH THE NATIONAL LEPROSY ERADICATION PROGRAME (NLEP) IN INDIA

Presenter: Jose K Kurian

Jose K Kurian[1], John Kurian George[2]
ILEP, India

Objectives: ILEP in India is a group of 9 organisations who implementing their respective leprosy programs across India. It also extends technical support to Central Leprosy Division's (CLD) NLEP initiatives such as Leprosy Case Detection Campaign(LCDC), SPARSH Leprosy awareness campaign(SLAC), chemoprophylaxis, disability prevention, specialized leprosy services including Reconstructive Surgery (RCS) and associated field based programs.

Methods:

- Coordination among 9 international organisations under the banner of ILEP in India.
- Memorandum of Understanding signed between Government of India and ILEP in India as formal framework of collaboration. 17 NLEP Consultants providing support to 23 states in planning and implementation of NLEP activities with an aim of enhancing its effectiveness.
- ILEP in India members working together with various stakeholders including WHO, APAL & other disability people's organizations and leprosy NGOs and hospitals.

Results: 80,513 stakeholders including medical officers, surgeons, primary health care staff, district leprosy officers, technicians and nursing staff were capacitated through various trainings organised by ILEP members in 2017. ILEP in India supports tertiary, secondary and primary care services including skin smears and other dermatological services across 23 states in India. It undertook health camps along with providing outreach services

to 622,228 people in same year. 174,144 persons received Disability Prevention and Medical Rehabilitation (DPMR) services which includes RCS for 3,597 persons and MCR footwear for 32,370 people. DPMR services also includes self-care training for 50,902 persons and physiotherapy services for 45,780 people. ILEP in India members continued implementing its 27 CBR projects during the year 2017 focusing social rehabilitation for persons affected by leprosy and their families. These CBR projects provided education support for 5,314 children and vocational training for 4,912 persons. 125,235 IEC activities were carried out focusing on reducing stigma & discrimination. ILEP in India was part of joint monitoring team and developing guidelines for NLEP. ILEP representatives are validating LCDC and monitoring SLAC which are the key initiatives from CLD.

Conclusion: It's evident that ILEP in India members significantly compliment the NLEP program in India. Its mandate is leprosy with a focus on social & medical rehabilitation of people, investing INR 500 Million annually through hospitals & direct projects. ILEP organizations provide technical assistance in designing and implementing new NLEP activities including the early case detection and ensuring the treatment in respective states. ILEP in India is committed to collaborate with Government of India`s NLEP program to bring down the new case with Grade 2 disability less than 1/million population.

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1 Jose K Kurian, Deputy ILEP in India Coordinator
2 John Kurian George, ILEP in India Coordinator

O-187

THE DERMLEP SURVEY: EVALUATING THE ROLE OF DERMATOLOGISTS IN THE MANAGEMENT OF LEPROSY IN INDIA

Presenter: P Narasimha Rao

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Objectives: With the integration of leprosy into general health care system, patients with signs and symptoms of leprosy are presenting to private dermatologists and dermatology departments for diagnosis and management of their disease. Some of these patients could be the 'missing numbers (unregistered with government registries) in India. The objective of the part 1 of the study was to to determine the access to leprosy services and patient registration available to Dermatologists in India. Objective of Part 2 was to determine the patient profile seen by these dermatologists.

Method: The study was an open, prospective, questionnaire-based survey. The survey tool comprised of two parts; Part 1 containing information of the participating dermatologist and availability of leprosy care services; and, Part 2 comprising of patient's demographic details, classification and disease related information. Members of the professional body of Indian Association of Dermatologists, Venereologists and Leprologists (IADVL) were given the opportunity to participate in the survey between August 2017 to October 2018. Survey booklets were provided and the participants recorded the number and profile of leprosy patients seen in their clinics or departments **over a 3 month period.** Ethical clearance was obtained for the study and written informed consent from each patient was recorded.

Results: Here we are presenting results of Part 1 of survey. A total of 199 dermatologist participated in the survey. This included 104 dermatologists from private practice and 95 from medical colleges/district hospitals. Dermatologists from 17/29 states were represented in this survey. Of these, 186 had access to skin biopsy services, 165 to skin smear services,164 to physiotherapy services and 127 to thalidomide and 98 to referral centres for

reconstructive corrective surgery. Out of 199 dermatologists only 11 stated that they do not treat leprosy patients, while rest 188 dermatologists treat and manage leprosy patients in their clinics. Out 114/188 stated that patients seen by them were notified to Government agencies (NLEP) while rest of 74 could not inform due to lack of proper access. While all dermatologists were prescribing WHO MDT therapy, 147/188 stated that they extend the therapy beyond WHO recommended duration based on need of the case.

Conclusion: Dermatologists are currently recognized as key stakeholders and play in the diagnosis and management of leprosy in India, which include newly diagnosed patients and post RFT patients. However, they have limited access to skin smear services, thalidomide, splints and corrective surgery. There is a need to include all newly diagnosed patients identified by dermatologists in national registers.

O-191

PERSISTENCE OF LEPROSY IN THE HOME-CONTACT NETWORKS: ANALYSIS IN DIFFERENT CONTEXTS OF ENDEMICITY IN THE NORTH AND NORTHEAST OF BRAZIL

Presenter: Eliana Amorim Souza

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Objective: To analyze the magnitude of the occurrence and sociodemographic, economic and clinical profiles of leprosy cases linked to home-contact networks (HCN) with overlapping of the disease in municipalities of the states of Bahia, Piauí and Rondônia from 2001 to 2014.

Method: This is a cross-sectional study, with primary and secondary data from new cases (NC) of leprosy reported in the reporting system of notification (SINAN) and resident in the study municipalities: Vitória da Conquista and Tremedal, Bahia State; Floriano, Piaui State; Cacoal and Rolim de Moura, Rondônia. A standardized instrument was applied to the NC and the review of data in medical records and at the base of the SINAN state. We included the analysis of sociodemographic, economic and clinical variables. In this study, reference case (RC) was considered as the first case of leprosy reported in an HCN. In addition to cases of leprosy, the HCN includes all household and social contacts, as defined by Brazilian MoH.

Results: From a total of 3,483 reported cases of leprosy we analyse 1,032 (29.6%), 538 (52.1%) had more than one case in their HCN. Higher frequency was verified in females (292, 54.3%), aged 41-60 years (240, 44.6%), with elementary education (272, 50.6%), income less than minimum wage (265, 49.3%), and residing with five persons or more (265, 49.3%). Dimorphic form (341; 37.2%), multibacillary operational classification (506; 54.2%), and absence leprosy reaction (327; 60.8%) prevailed. The municipalities of the state of Rondônia had a higher risk associated with the occurrence of case-overlap in HCN (PR 1.23, 95% CI 1.07–1.43, p = 0.003), as well as residing with more than five persons (PR 1.27, 95% CI 1.02–1.57, p = 0.017), and had leprosy reaction (PR 1.15, 95% CI 1.02–1.29, p = 0.018).

Conclusion: The repetition of cases of leprosy in the same HCN represents a frequent event in the addressed scenarios. Its occurrence should be consulted as an indicator of greater epidemiological severity for surveillance in primary health care network. The vulnerability of the affected families is highlighted. This scenario demands the

incorporation of new strategies to carry out the systematic and quality surveillance of the network of contacts of the diagnosed cases, surpassing the exclusive and limited approach of the contact coverage evaluated.

O-200

LEPROSY SCREENING CAMPAIGN ON BELEP ISLAND (NEW-CALEDONIA)

Presenter: Emmanuelle Cambau

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Objective: Leprosy has been reported in New-Caledonia since the 19th century and still persists today. The discovery of new cases is based on passive screening, by community or dispensary doctors, of patients who are then sent to the Territorial Hospital Center and on active detection of contacts of new cases who are regularly monitored for 5 years. Leprosy surveillance in this area over the last 6 years shows an overall incidence rate below the threshold set by the WHO (1 / 10,000 population). However, there is an endemic area on a small isolated archipelago: Belep location of the first leprosarium in New-Caledonia, where the incidence is 16.1 / 10 000. In this commune, between 2015 and 2017, 4 children including one of 2 years were diagnosed, which demonstrates an active circulation of the disease.

Method: The investigation targeted the entire population of this archipelago (843 inhabitants), including those present on the island at the time of the screening campaign. After signing the consent form, data were collected on a standardized survey of socio-demographic characteristics (age, sex, address), history of leprosy or contact with a leprosy patient and possible symptoms. Participants underwent a clinical examination and three samples were taken at the end of the interview: smear from the 2 ear lobes, nasal mucosa smear for microbiological analysis and PCR and a capillary blood sample for immunological test.

Results: In total, 621 people participated in screening (74% of the global population). Of the 621, 597 had a smear from the 2 ear lobes, 610 nasal mucus, 610 capillary blood. At the end of the clinical screening, 8 probable cases of leprosy were diagnosed (presence of hypochromic and hypoesthesic spots) having each had 1 biopsy, including 5 aged under 18 years. Five of these 8 suspected cases require treatment (leprosy paucibacillary). Three hundred and one people reported having or having had a case of leprosy in their environment, ie 48.5% of the population.

Conclusion: For the first time, a comprehensive survey of leprosy in an isolated population was conducted in New Caledonia. This survey was a success and confirmed the active and recent circulation of the disease, especially among young people. It has also highlighted the need for active case finding. Finally, the exposure of almost half of the population to the disease leads health authorities to consider treatment of the entire island population.

O-235

NEW CASE WITH GRADE-II DEFORMITY (G2D) IS A MARKER OF DISEASE BURDEN - A RETROSPECTIVE ANALYSIS

Presenter: K. Eswar Rao

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Objective: Prevalence rate (Number of new cases per 10,000 population) was being considered as indicator of Leprosy burden of a particular area for more than two decades.As the leprosy load decreased to the level of elimination, the Annual new case detection rate (ANCDR) replaced the PR. In recent times, due to increase awareness of the affected community, G2D becoming a sensitive issue.

The objective of this study is to conduct a retrospective analysis to validate the significance of G2D with regards to new case detection.

Method: The data of Anti-Leprosy programme is being preserved systematically in different levels. The last 4 years data of Odisha state regarding new case detection, new case with G2D, child percentage and MB percentage is compiled.

Results: It has been observed that in (2014-15)-the total new case detection was 8004 with 404- G2D, 8.9% Child case and 52.3% MB case. Likewise in (2015-16) - 10174 New case with 593- G2D, 8.5% child and 49.1% MB, in (2016-17)-10045 New case with 527- G2D, 7.8% child and 48.2 % MB, in (2017-18)-9576 New case with 466-G2D, 7.8% child and 48.2% MB recorded. The overall data shows a plateau trend of the disease.

Conclusion: The elevated child case with consistent MB percentage indicates active ongoing transmission of Leprosy in the community, which resulted in the detection of good number of new cases. At the same time, the detection of new case with Grade-II deformity and disability also maintained coherently, which indicates late diagnosis and missing or mismanaged reaction & neuritis cases. So, it is clearly evident that G2D has a significant relationship with new case detection.

Therefore to achieve “zero leprosy” the community should be highly aware and the health system need to be highly sensitive to pick up every new case of Leprosy and strongly vigilant to detect every case of reaction and neuritis with timely and appropriate management.

O-253

ACCELERATING TOWARDS LEPROSY FREE INDIA THROUGH INNOVATIVE APPROACHES IN NATIONAL LEPROSY ERADICATION PROGRAMME

Presenter: Anil Kumar

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Objectives:
i. To detect cases early in the community through active case search and enhanced early case reporting.
ii. To prevent leprosy and interrupt transmission of disease agent in the community.
iii. To overall strengthen the National Leprosy Eradication Programme, India.

Methods: NLEP, India achieved goal of leprosy elimination i.e., Prevalence Rate (PR) < 1 case/ 10,000 population at National level in December 2005. Afterward focus shifted from active case detection to passive case detection. However, it was observed that trend of two important indicators i.e. Annual New Case Detection Rate (ANCDR) and PR (Prevalence Rate) are almost static since 2005 – 2006 and Grade II disability (G2D) increased from 3015 (1.87%) in 2005-06 to 5852 (4.60%) in 2015-16, indicating large number of undetected cases and continued transmission of the disease agent in community.

In view of the above mentioned trend, in addition to the routine activities, several innovations introduced in phase wise manner from year 2016 onward, to address the issues being faced by the programme for

I. Early case detection: Three pronged strategy i.e., i) Leprosy Case Detection Campaign (LCDC) (specific for high endemic districts), ii) Focussed Leprosy Campaign (for hot spots i.e., rural and urban areas where G2D is detected), iii) Special plan for case detection in hard to reach areas

II. Enhanced early case reporting: i) Sparsh Leprosy Awareness Campaign (SLAC) ii) ASHA based Surveillance for Leprosy Suspects (ABSULS)

III. Prevention of leprosy / Interrupt transmission: Post Exposure Prophylaxis administration to close contacts of new cases detected

IV. Overall strengthening of the programme: i) Nikushth an online reporting system with Patient tracking mechanism, ii) Grade II disability case investigation

Result: G2D per million which was 4.48/ million population as on 31st March, 2015 decreased to 3.34/ million population as on 31st March, 2018 and 2.48/ million in October 2018 (Annualized).

Conclusion: Strengthened implementation of various innovations introduced in the NLEP, India are effective in detection of leprosy cases early enough before onset of disability.

O-258

HIGH DISABILITY RELATION: HIGH PREVALENCE, DISTANT REGISTRATION & AVAILABILITY OF LEPROSY SERVICE

Presenter: Alex Frank Raulim

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Objective: To assess the level of distance registration and its relation to high disability proportion at the Vital Leprosy Service Center in Dhaka City.

Method: As part of a larger study on internal migration among leprosy affected people in Bangladesh, we have analyzed verified data of all leprosy patients who had been registered at the Vital Leprosy Service Center in Dhaka City from 1st January 2016 to 30th June 2018. Data was collected retrospectively from the management system of Vital Leprosy Service Center in Dhaka City. We compared operational indicators for the local and “out of area” cases, and utilized data on DG1 as well as DG2.

In Bangladesh, districts are classified as strata 1-4 according to their registered prevalence rates (RPR): stratum 1 is highest RPR and stratum 4 is officially zero RPR. Stratum-1: ≥5 cases/100,000 Population, S-2: 2-<5 case/100,000 Population, Stratum-3: <2 case/100,000 Population and Stratum-4: “zero” reported leprosy cases

Results: Data of 626 patients were analyzed for this study. 63.26% out of all registered cases were from out of Dhaka (according to their address – permanent) and 14.14% were from districts which currently report no locally registered cases.

We also found that disability proportion (DG1 and DG2) were high 62.38% among patients from out of Dhaka compared to national data of average yearly 10.68% by National Leprosy Program (NLP). Again the DG2 proportion in strata 4 was higher (19.64%) than of strata 1 (2.86%). The MB proportion of 87.50% in strata 4 was also higher compared to 51.43% in stratum 1.

In patients from any district, the female proportion and child proportion was low compared with national figures.

Conclusion: There appears to be an unrecognized group of leprosy cases resident in low prevalence districts (87.12% from strata 3 and 4) who are diagnosed late when they voluntarily seek treatment in Dhaka City. Results show that, percentage of disability is also high among the low prevalence districts (D2G 33.14% from strata 3 and 4) seeking treatment from the service point. These may represent a much larger group who are as yet undiagnosed and suffering with disability, living in districts where leprosy services are not well resourced. This issue requires further study.

O-265

A STUDY OF CHILDREN WITH LEPROSY REPORTING FOR THE FIRST TIME AT A REFERRAL CENTRE IN SOUTHERN NEPAL

Presenter: Krishna Prasad Subedi

Prakriti Subedi, Krishna Prasad Subedi
Leprosy Trust (NLT), Lalgadh Leprosy Hospital & Services Centre

Objectives: The general objective of this study is to assess the problem of disability among children with Leprosy reporting to a tertiary referral centre in southern Nepal.

The specific objectives are -

- to quantify the problem of leprosy related disability in children
- to describe the presentation of children with disabilities
- to identify the causes of late reporting leading to disability
- to identify the barriers to early detection among these children

Method: This cross-sectional study is being carried out at Nepal Leprosy Trust- Lalgadh Leprosy Hospital & Services Centre (LLHSC), in southern Nepal, which see approximately 1200 new leprosy patients, including child cases with deformities, annually.

The sample comprises 50 children under 15 years of age, diagnosed as new cases of leprosy with and without disabilities, presenting for the first time between January and June 2019. The children are selected on the basis of routine examination done according to LLHSC's protocol for the confirmation of leprosy, which includes full body examination for skin lesions, sensory testing (ST), voluntary muscle testing (VMT) and slit skin smear for bacteriological index (BI). After obtaining an informed, written consent from the participants (and/or parents where appropriate), semi-structured interviews are taken with both the children and their parents, to inquire regarding initial symptoms, first actions taken and delay, if any. The factors contributing to delay in diagnosis and barriers to treatment are also ascertained specially focusing on those with existing deformities.

This data will be tabulated on EXEL and the results analyzed.

Result: After the completion of study the results will be shared in the International Leprosy Congress, Manila, if this abstract is accepted. The results are expected to bring to light the individual, socio-economical & health system factors responsible for delay in diagnosis, prevailing in this part of Nepal.

Conclusion: The findings from this study will support the government's leprosy control efforts, and contribute to improvement of strategies and tools for early case detection and care for existing disabilities among children with leprosy.

O-267

ACTION RESEARCH ON PREVENTIVE MULTIBACILLARY MULTIPLE DRUG THERAPY IN HOUSEHOLD CONTACTS OF MULTIBACILLARY CASES OF LEPROSY IN THE HEALTH ZONE OF MOBA IN THE DEMOCRATIC REPUBLIC OF THE CONGO

Presenter: Jean Norbert Mputu

Jean Norbert Mputu [1] , Florent Ngondu [1],Jeannine Itamba[1], Jean Ngoy[1], Ebeja Kadima.[2] , Alexandre Tiendrebeogo .[2] Paul Kapami[3]
[1]National Leprosy Elimination Programme, Democratic Republic of Congo; [2]WHO Country and Regional Offices; [3]Freelance Consultant, Province of Tanganyika, Democratic Republic of Congo

General Objective: Accelerate the elimination of leprosy as a public health problem in the health zone of Moba

Specific objectives:

1. Improve the quality of leprosy elimination activities through training of health staff, organization of active screening around multibacillary (MB) patients, application of flexible, accompanied or community-based MDT

2. Reduce the detection rate of leprosy among contacts of MB leprosy cases by preventive administration of a MB MDT blister-pack to non-sick household contacts.

Methods:

- Capacity building of health workers of five health catchment areas of the health zone of Moba,
- Leprosy Elimination Monitoring (in 2011 and 2015)
- Recruitment of index MB leprosy cases from 2010 to 2014 and listing of their household contacts,
- Contact tracing, clinical examination, treatment with MDT of contacts with leprosy clinical signs, administration of one MB MDT blister pack to household contacts without leprosy signs with their consent,
- Follow-up of contacts for five years after Preventive MB MDT

Results:

- Out of the 471 expected index cases, 458 were actually found or located (97.2%).
- Of the 458 found or localized, 361 (78.8%) were retained for the study because they had contacts that could be retrieved for the study.
- These 361 index cases enabled us to count 1,272 household contacts.
- Of these 1,272, the staff from Moba Health Zone found and examined 1,013 persons (79.6%).
- Of the 1013 contacts found:
    - 931 (92%) agreed to take the MB MDT blister pack o
      73 (7.4%) refused to take the blister pack
    - A pregnant woman and a case of tuberculosis in treatment, ineligible, have been excluded
    - 7 cases of leprosy were detected during contact tracing and received who recommended curative MDT
- The first household contacts received the preventive MB MDT in January 2016 and the last ones in March 2017, giving by the end of 2018 a follow-up period ranging from 21 to 35 months
- No cases of leprosy were found during this follow-up period among contacts who received preventive MB MDT

Conclusion: A MB MDT blister pack given to household contacts of MB leprosy cases appears to have a protective effect against leprosy for a follow-up period of 21 to 35 months. These promising preliminary results must be confirmed by a follow-up of 5 years of all the household contacts included in the study.

O-270

HIGH QUALITY LEPROSY CASE DETECTION CAMPAIGN (LCDC) AS AN APPROACH TO ACHIEVE LEPROSY FREE WORLD

Presenter: Deepika Karotia

Ms. Deepika Karotia, National Consultant (Public Health), National Leprosy Eradication Programme[1], Dr. Anil Kumar, Deputy Director General (Leprosy)[2]
[1&2] Central Leprosy Division, Directorate General of Health Services, Ministry of Health & Family Welfare, Government of India

Objectives:
i. To detect hidden leprosy cases at early stage.
ii. To increase awareness regarding leprosy in community.

Method: During situation analysis in year 2016, it was observed that trend of two important indicators Annual New Case Detection Rate (ANCDR) and Prevalence Rate (PR) are almost static since 2005 – 2006 and Grade II disability (G2D) increased from 3015 (1.87%) in 2005-06 to 5852 (4.60%) in 2015-16, indicating large number of undetected cases and continued transmission of the disease agent in community. Hence, Leprosy Case Detection Campaign (LCDC) a unique strategy for early case detection was introduced in high endemic districts of India. Operational Guidelines for Leprosy Case Detection Campaign (LCDC) including monitoring formats for State, District and Field level workers were formulated in National level workshop. As per guidelines, three committees formed at State, District, Block level for effective planning and implementation. Training/sensitization sessions for State Leprosy Officers, District Leprosy Officers, Block Medical Officers, Supervisors and Search teams were organized. Intensive IEC activities conducted 2 days, 1 day before and 5th, 6th and 9th day during LCDC. During LCDC house to house visits for 14 days was conducted by trained search teams composed of one female and one male volunteer to do physical examination of each and every person, under minimal clothing in well lighted area inside house in 163 districts of 20 States/Union Territory (UT) in 2016 and 255 districts of 25 States/UT in 2017. Identified suspects referred to Medical Officer (PHC) for confirmation & treatment. Systematic collection of reports followed during/after the LCDC. Post LCDC evaluation conducted after campaign.

Results: Around 68,000 hidden leprosy cases detected in high endemic districts through 14 days search during each LCDC, 2016 & 2017. Inter personal IEC activities done at doorstep of around 720 lakh households by average 8.6 lakhs trained Male and Female field volunteers. Google trend of web search, a proxy indicator of awareness being generated in the community shows surge for search of key word ‘leprosy’ on google search engine during LCDC. LCDC along with other innovations, lead to reduction of new G2D cases per million population from 4.48 (31st March, 2015) to 3.34 (31st March, 2018) in India.

Conclusion: Implementation of high quality LCDC is effective in detection of leprosy cases early enough before onset of disability and interrupts the transmission of disease in community. Increased awareness and capacity building of the manpower are added benefits.

O-272

DEVELOPMENT OF A PROTOCOL TO DETERMINE THE CASE DETECTION DELAY OF LEPROSY IN THE CULTURAL CONTEXT OF EAST HARARGHE ZONE, ETHIOPIA – A CROSS-SECTIONAL MIXED-METHODS CULTURAL VALIDATION STUDY

Presenter: Naomi Daniëlle de Bruijne

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Objective: Ethiopia has the second highest prevalence of leprosy in Sub-Saharan Africa. Every year, approximately 3,000 new patients are diagnosed with leprosy, of whom 12.9% present with grade II disabilities. A risk factor for development of impairments is delay in case detection. However, tools to determine the extent of and reasons for case detection delay in the context of Ethiopia are outdated. Therefore, the objective of this study was to develop a tool that could be used to determine the case detection delay of leprosy, calculated in the numbers of months, in the cultural context of East Hararghe Zone, Ethiopia.

Method: A literature review was conducted and leprosy research experts were consulted. The conceptual understanding, item relevance, and operational suitability were discussed in semi-structured interviews with health professionals in the East Hararghe Zone (n=6). The first version of the tool was piloted with recently diagnosed patients (n=8) in Bisidimo Hospital, a leprosy specialized hospital in Harar. During the pilot project, structural overt observations were made to assess the patient's comfort during the interview. Afterwards, the tool was evaluated with health professionals from the hospital (n=4). To further elaborate on the conceptual understanding and item relevance, two focus group discussions were organized with health professionals with experience in leprosy (n=6), and people affected by leprosy (n=7). In addition, a small expert panel of leprosy research experts (n=4) was asked to provide feedback on the tool. The informed consent form and relevant questions were translated to the local language and back translated to ensure semantic understanding. The tool was finalized and distributed in Bisidimo Hospital and at two health facilities in East Hararghe Zone to test for inter-rater reliability.

Results: A protocol was developed that includes a questionnaire comprising (1) data collector information, (2) a format to collect patient socio-demographic characteristics, (3) five questions to determine the case detection delay, and (4) two questions to identify the reasons for delayed diagnosis. Additionally, two aids were designed for ease of administration: a calendar to translate the patient's indication of time to number of months, and a set of pictures of the symptoms of leprosy. Interrater reliability testing is ongoing.

Conclusion: Preliminary findings revealed that the tool was fast and easy to use, and does not inconvenience the patient. Although it is recommended to ensure cultural validity before use in other regions or countries, the developed tool is promising for usage in future leprosy research.

O-276

IMPLEMENTATION OF THE NATIONAL LEPROSY STRATEGY 2016-2020 OF NEPAL: LEPROSY ELIMINATION CAMPAIGN IN FOUR DISTRICTS

Presenter: Rabindra Baskota

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Objectives: Leprosy Elimination Campaign is one of the active case finding modalities of leprosy control strategy. The primary objective of this campaign was to achieve sub-national elimination of leprosy in Nepal. The secondary objectives were to raise community awareness, to strengthen the capacity of health workers and to prevent disability by early detection of leprosy cases and enrolling them in treatment.

Methods: Annual data on leprosy was reviewed and four endemic districts were selected for the campaign. Leprosy elimination campaign guideline was followed to conduct the campaign. A one day orientation on signs and symptoms of leprosy was given to Female Community Health Volunteers (FCHV), Health Workers (HW) and persons affected by leprosy. Community awareness and publicity was created through radio, newspapers, flex and poster display in health facilities, public announcements and education in the community. Gender balanced search teams including the trained HW, FCHV and persons affected by leprosy were mobilized. Search teams were provided with pictorial IEC materials, search card, and referral slips. House to house search was done for 5 days. Suspected cases were referred to the nearest health facility where confirmation was done. Confirmed cases were started MDT and, recording and reporting was maintained. Clinical experts on leprosy and dermatologists validated a sample of confirmed cases. Supervision and monitoring of the campaign was done by Leprosy Control Division, Ministry of Health and Population, Government of Nepal.

Results: Search team visited 224399 households and 24 schools in four districts. This accounted for the screening of 61% of the targeted population. Through screening, 3775 people were suspected of having leprosy by the search team. Among them 259 were confirmed to have leprosy by the confirmation team. Almost half (49.3%) of them were female and 43.6% had multi bacillary leprosy. The child proportion was 5.79%, alarming the occurrence of active transmission of leprosy in the community. A delay in diagnosis was indicated by the presence of Grade II disability in 14.28% of the patients at the time of diagnosis.

Conclusion: This intervention explores the hidden cases of leprosy in the community by a 5-day campaign. A significant number of cases are still being missed under passive detection modalities. So, although elimination status is achieved, awareness and active case detection campaigns are required for leprosy control. Leprosy elimination campaigns should be continued in districts with high prevalence of leprosy.

O-283

AVANTAGES COMPARES DE DEUX STRATEGIES DE DEPISTAGE AVANCE DE LA LEPRE A MADAGASCAR

Presenter: Bertrand Cauchoix

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Objectifs: A Madagascar le seuil d'élimination de la lèpre a été atteint depuis quelques années mais la persistance de districts hyper endémiques, la faible accessibilité au système de soin et les taux importants

d'invalidité de grade 2, relativisent les résultats du dépistage passif. Aussi le Programme National de Lutte contre la Lèpre priorise des stratégies de dépistage actif. Nous étudierons ici l'efficacité et l'efficience comparées :

- D'une stratégie de dépistage dite semi actif basée sur des consultations avancées de dermatologie auprès des populations et
- D'une stratégie de dépistage porte à porte organisée au sein de villages hyper endémiques dans le cadre d'une étude randomisée visant plus tard des objectifs de chimio prophylaxie

Méthodes: Analyse comparative (observation) de deux stratégies :

- Dépistage porte à porte dans des villages à forte endémicité pour une population totale d'environ 20 000 habitants durant l'année 2019
- Dépistages multiples sur 2017,2018, 2019 sur la base de consultations gratuites volontaires de dermatologie in situ, après sensibilisation des populations des villages ciblés et référence par des agents communautaires.

Les coûts observés des deux stratégies et les résultats seront discutés ainsi que, l'acceptabilité par les populations, le poids de la mise en oeuvre pour un programme faiblement financé, le risque de stigmatisation et les avantages en terme de formations continue des personnels.

Résultats: La stratégie de dépistage sur base de consultation dermatologique est éprouvée depuis quelques années tandis que le dépistage de masse a débuté en janvier 2019 et des résultats significatifs seront connus d'ici septembre 2019

On note selon les deux stratégies, des différences en terme : de coût (matériel et ressources humaines), d'amélioration des connaissances sur la prévalence réelle de la maladie, du taux de dépistage, de précocité et d'exhaustivité du dépistage**,** de capacité de prise en charge des réactions et invalidités, d'impact sur la formation continue, d'éducation et d'adhésion des populations et la stigmatisation**.**

Conclusion: Le taux de prévalence attendu joue un rôle majeur dans le choix décisionnel de la stratégie compte tenu des différences de coûts.

Le choix devra être adapté selon les zones, la prévalence attendue et surtout l'étendue du territoire à couvrir. La comparaison avec une même méthode de dépistage de masse en vigueur aux Comores tend à montrer que le dépistage de masse doit être privilégié dans des zones de très forte prévalence avec des objectifs secondaires en terme de prévention voire d'éradication à long terme

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O-296

BCG VACCINE AND LEPROSY HOUSEHOLD CONTACTS: PROTECTIVE EFFECT AND PROBABILITY TO BECOMING SICK DURING FOLLOW-UP

Presenter: Isabela Maria Bernardes Goulart

Douglas Eulálio Antunes[1], Rafaela Resende Gomes[1], Diogo Fernandes dos Santos[1], Elaine Fávaro Pípi Sabino[1,2], Dulcinéia Bernardes Oliveira[1], Isabela Maria Bernardes Goulart[1,2]

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Objectives: This study aims to demonstrate the protective effect of the BCG vaccine and the probability to becoming sick, for each year, during the follow-up of leprosy HHCs.

Methods: Cross-sectional study using data from 5.061 HHCs for a period of 16 years (follow-up of 7 years per leprosy HHCs), evaluating the occurrence of disease as the main outcome and the presence or absence of BCG scars inspected in the first evaluation. Statistical analyzes were performed using the prevalence ratio and the Kaplan-Meier test.

Results: A total of 92 contacts sickened, of which 41.4% (38/92) in the first year and 58.6% (54/92) in the course of the other years of follow-up. Of those who became sick 62% (57/92) developed BT, with BT/PB representing 41.4% (38/92) and BT/MB 20.6% (19/92). The prevalence of disease in those contacts with 1 and 2 BCG scars in the first evaluation were 1.47% and 1.01% respectively, while in those with no BCG scar the prevalence of disease was 2.49%. The prevalence ratio (PR) demonstrated protective effect of BCG for 1 (PR=0.58; p=0.011) and 2 scars (PR=0.40; p=0.008). The Kaplan-Meier showed the probability to becoming sick per year, thus, to the first year was 1.10% (CI=0.986-0.991), decreasing to 0.19% (CI=0.984-0.990) in the second year.

Conclusion: The vaccination of healthy individuals without signs and symptoms of leprosy is extremely important because the high probability to becoming sick in the first year was associated to cases without vaccine scar. The probability reduction to becoming sick over the years is related to preventive actions as immunoprophylaxis and treatment of the index case, the most effective actions to control the disease.

O-301

YIELD OF A CONTACT EXAMINATION CLINIC IN LEPROSY IN SUBURBAN SRI LANKA

Presenter: Indira Kahawita

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Objectives: Examination of household and other close contacts of index cases is a method of leprosy control that helps in early detection of cases. We have conducted a contact screening clinic at the Dermatology Clinic, Base Hospital Homagama, Sri Lanka. Our objectives were to identify the rate of positive new case detection from household contact examination and to compare the findings with available data.

Methods: The details of household contact examination in leprosy are recorded in the Leprosy Contact Register. A retrospective analysis of entries for a period of 36 months from February 2016 to January 2019 was performed.

Results: There were 87 index cases with 7 (8.04%) children below 15 years. There was a male preponderance with M: F 3:2. The ages ranged from 3 years to 82 with the mean age being 39.24 years. Multibacillary (MB) type predominated (72.4%).

There were 315 household contacts registered for 87 index cases and 222 (70.48%) contacts for 73 index cases (83.9%) were examined. The average number of household contacts per index cases was 3.62. Seven of the index cases had contact with a known case of leprosy; 4 relatives and 3 neighbours.

16 new cases (7.2% of contacts examined) belonging to 9 index cases were identified. The relationship to index case were: child - 8, parent - 3, sibling – 2, grandchild - 1 and nephew - 2. When we considered the history of a known contact there was a total of 23 positive contacts for 12 index cases. Four index cases had history of both known contact and new cases being identified. When both types of contacts were considered the chance of an index case having one or more positive contacts is 16.43%.

Conclusion: Examination of household contacts is an effective method of new case detection in leprosy. The positivity rate in our study is comparable to the findings from other clinic based contact screening programmes in Sri Lanka.

O-307

CAPACITY BUILDING OF PRIMARY CARE PROFESSIONALS BY IN-SERVICE IN A MULTIDISCIPLINARY APPROACH INVOLVING CLINICAL LEPROSY, DISABILITY PREVENTION AND SOCIAL MOBILIZATION – BANGKOK DECLARATION SPECIAL FUND PROJECT BRAZIL

Presenter: Carmelita R Filha Coriolano

C. R. F. Coriolano[1], J. S. Silva[1], M. Virmond[2], V. L. G. Andrade[3]
[1]Secretary of Health Surveillance / General Coordination of Leprosy and Diseases in Elimination / Ministry of Health of Brazil; [2]Lauro de Souza Lima Institute – Bauru; [3]Pan American Health Organization (PAHO) Brazil

Objectives: To report the experience of an innovative approach to train primary care professional in municipalities of the Project "Innovative Approaches to Strengthen Efforts for a Leprosy-free Brazil". The main goal of the project is to reduce the burden of leprosy in 20 municipalities in 6 Brazilian states.

Methods: In-service training was carried out in basic health units focused on the integration of actions of clinical diagnosis, evaluation of neurological damage, prevention of stigma and discrimination, aiming to strengthen Basic Health Units (BHU) to detect new cases, reducing the proportion of D2G at the time of diagnosis and to increase awareness on the disease. Training was conducted by a leprologist, a specialist in disability prevention and a social mobilizer, that for the most part, was a former leprosy patient. A theoretical exposition was held followed by a practical training with patients in the consultation rooms of the health unit. At the weekend a mini leprosy campaign was conducted in a public place in the community.

Results: A total of 5651 professionals were trained in 19 municipalities: 834 doctors, 1348 disability prevention professionals and 3469 Community Health Agents participated in this activity. 207 new cases were diagnosed: 141 during the training and 66 during the mini campaign. 36 new cases (17.6%) were paucibacillary and 168 (82.4%) multibacillary. Among 138 patients assessed 80 (58%) showed G0D, 44 (31.9%) G1D and 14 (10.1%) G2D. Children under 15 years old totaled 42 new cases, 22 (52.4%) had the operational classification performed, 8 (36.4%) paucibacillary and 14 (63.6%) multibacillary. Regarding disability grade, 18 children were classified: 14 (77.8%) in G0D 0; 3 (16.7%) with G1D and 1 (5.5%) with G2D. In brief, newly diagnosed cases of all ages were predominantly multibacillary and 10% had G2D. Only one child was diagnosed with G2D.

Conclusion: It was observed that the multi and interdisciplinary approach, involving at the same moment clinical, disability prevention, social mobilization aspects was the major strength of the project. This was achieved through the participation of ex-patients, in-training approach, neurological evaluation and contact examination, training of community health agents in Human Rights and Health. It should be noted the special focus of the proposal on basic care, which aims to act as "gateway" to patients for early diagnose and proper treatment to guarantee their citizenship. This view was strategic for the project and this focus should be continued.

O-318

CONTACT SCREENING AS A METHOD OF LEPROSY CASE DETECTION IN THE NATIONAL TUBERCULOSIS AND LEPROSY PROGRAMME, UGANDA: LESSONS LEARNT FROM REVIEW OF ROUTINE PROGRAMMATIC DATA.

Presenter: Herman -Joseph Kawuma

H.J.S. Kawuma[1], M. G. Nabukenya-Mudiope[2], R. Majwala[3]
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Objectives: To determine the contribution of contact examination to the overall leprosy case detection in Uganda in order to inform future implementation of preventive strategies.

Methods: A retrospective review of district quarterly leprosy case finding data submitted to National Tuberculosis and Leprosy Program (NTLP) from 2006 to 2017. Contribution of the four case finding options to new leprosy cases notified was calculated using proportions. Leprosy case finding methods included: examination of general suspects, special surveys, contact surveillance and unknown method.

Microsoft Excel was used to calculate proportional contribution of each method to the overall number of leprosy cases notified. Yield of each leprosy case finding method was also calculated to identify the most effective method of case finding.

Results: Between 2006 and 2017, a total of 3639 new leprosy cases were reported to NTLP. Of these 372 (10%) new leprosy cases were identified through examination of contacts of known leprosy patients, 2655 (73%) by examination of general leprosy suspects, 172 (5%) through special surveys and 440(12%) identified through unknown methods. Contact examination yielded 14.6 patients per 1000 contacts, followed by examination of general suspects (9.2 per 1000persons screened) and general surveys at 1.6 cases per 1000 persons screened.

Conclusion: The study underlines the importance of contact examination as a case-detection method for leprosy control in relatively low burden countries like Uganda. In preparation for implementation of preventive interventions like Post Exposure Prophylaxis which target contacts of known patients, it would be advisable to conduct a prospective study taking into account the observed deficiencies.

O-324

"THE FORGOTTEN EPIDEMIC" – ARE WE DOING ENOUGH FOR OUR YOUNGER GENERATION?

Presenter: Nayani Suriyarachchi

N.D. Suriyarachchi[1], T.M.E. Dabrera[2]
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Objectives: Lack of awareness about the disease contributes to the continuing transmission of leprosy in Sri Lanka. When providing services to the affected people in the community it is necessary to gain an understanding regarding the level of knowledge, attitude and believes regarding leprosy in the community. A needs assessment survey was conducted to identify the gap and the need to plan targeted interventions for young people in the country was identified based on their existing knowledge, attitudes and beliefs.

Methods: A survey was carried out among the community in five districts supported by FAIRMED with the objective of gaining an understanding about the knowledge, attitude and believes on leprosy with a special emphasis on youth aged between the ages of 18 – 25 years.

An interviewer-administered structured questionnaire consisting of 85 questions was used as the data collection instrument and the survey format was designed to capture the knowledge, attitudes and beliefs with regard to leprosy.

The District Project officers attached to FAIRMED visited the households with the Public Health Inspectors and met 300 respondents to complete the survey. There were 50 each of diagnosed patients with leprosy, contacts of diagnosed patients, community leaders, healthcare workers, community members and youth.

Data were collected, entered and analyzed using Microsoft Excel (version 13) and SPSS Version 16.0. The knowledge score was computed from the responses given and categorized as poor (<25%), moderate (26-75%) and excellent (<75%).

Results: The mean age of the 50 youth was 20.6. Only 26% of them, scored more than 75% on the knowledge score regarding leprosy transmission, symptoms and signs and treatment.

Among the youth, 12% did not know that there is treatment available and 60% were unaware that leprosy can lead to deformity and disfigurement. Only 70% of the them knew that leprosy can present as skin patches. Compared to the other categories, only 32% of youth responded that 'If they see a person affected with leprosy they will accept the person as it is' and 16% mentioned that they would avoid due to fear. 24% of the youth believe that leprosy can be transmitted by sexual contact with a patient and 58% believe that it can be transmitted by sharing towels and clothes with a patient.

Conclusion: This survey illustrates that continued health education is needed to keep leprosy at bay as the younger generation's knowledge regarding leprosy is poor and programmes need to be tailored to address this gap.

ILC-4: EPIDEMIOLOGY and CONTROL:

4.3 Prevention - Prophylaxis

O-001

A GLOBAL ESTIMATION OF THE POPULATION AT RISK IN THE CONTEXT OF LEPROSY: A MODELING STUDY

Presenter: Anna Theodore Taal

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Objective: Despite an effective multidrug treatment, around 210,000 new leprosy cases are detected worldwide annually. To reduce this number additional interventions such as contact tracing and preventive treatment are required. Preferably, these interventions should target those that are at risk of developing leprosy, the so-called 'population at risk'. However, the population at risk in the context of leprosy has never been defined or estimated. This study aims to estimate the number of people needing preventive treatment, as a proxy of the population at risk, in order to reduce the number of leprosy cases.

Methods: The SIMCOLEP model simulates the spread of *M. leprae* in a population structured by households. We used leprosy data of 110 countries that reported new cases to the WHO in 2016. These 110 countries were divided into 3 groups: 1) three most endemic countries; 2) 19 WHO priority countries; and 3) remaining 88 countries. We modelled seven typical leprosy situations based on the level of endemicity and MB proportion, and categorized each country into one of these situations. For each country we predicted the impact of contact tracing and administering a single dose of rifampicin (SDR) to about 25 contacts on the annual number of new cases until 2040. The number of contacts needed to treat was estimated until a 50% and a 90% reduction in new case detection (NCD) was achieved.

Results: The NCD trends show an increase in the number of new cases in the first year (i.e. backlog cases) followed by a significant decrease afterwards. Worldwide, a reduction of NCD by 50% and 90% would be achieved in 5 years and 22 years, respectively. For group 1, a total of 16.7 million people need preventive treatment to achieve a 50% reduction in 5 years. For group 2 and 3 this is 3.1 and 1.0 million people in 6 years, respectively. An additional 16.1 million people need preventive treatment in group 1, 2.3 and 0.8 million people in group 2 and 3, respectively to reduce the global number of new cases with 90% in 22 years for group 1 and in 21 years for group 2 and 3.

Conclusion: The number needed to treat with preventive treatment is 20.4 million up to 5 years to achieve a 50% reduction in the global NCD and 40.1 million people to achieve a 90% reduction in 22 years. This estimate could be interpreted as a practical proxy of the population at risk worldwide for leprosy.

O-016

EFFECTIVENESS OF SINGLE DOSE RIFAMPICIN GIVEN AFTER BCG VACCINATION IN PREVENTING LEPROSY IN CLOSE CONTACTS OF PATIENTS WITH NEWLY DIAGNOSED LEPROSY: A CLUSTER RANDOMIZED CONTROLLED TRIAL

Presenter: Renate Alicia Verbiest-Richardus

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Objectives: To assess the effectiveness of single dose rifampicin (SDR) given after BCG vaccination in preventing leprosy in close contacts of patients with newly diagnosed leprosy, and specifically to determine whether possible excess cases in the first year after immunoprophylaxis can be prevented by chemoprophylaxis.

Method: A single centre, cluster randomized controlled trial in a leprosy control programme in four districts of northwest Bangladesh. Study participants were close contacts of newly diagnosed leprosy patients (index patient). Randomization of contacts was at the level of the index patient. The intervention group received BCG vaccination followed by SDR 8-12 weeks later (SDR+ arm). The control group received BCG only (SDR- arm). Follow-up was at one and two years after intake. The primary outcome measure was the occurrence of clinical leprosy among the contacts within two years.

Results: Contacts of 1,553 patients were included, of which 7,379 contacts were randomized in the SDR- arm and 7,609 in the SDR+ arm. A total of 27 of the contacts in the SDR- arm, and 19 of the contacts in the SDR+ arm had developed leprosy after one year. At two years, 24 of the contacts in the SDR- arm and 29 of the contacts in the SDR+ arm had developed leprosy. The incidence rate per 10,000 person years at risk was 44 PYAR in the SDR- arm, and 31 PYAR in the SDR+ at 1 year, and 34 PYAR in the SDR- arm and 41 PYAR in the SDR+ arm at 2 years. Although there was an 30% reduction in the SDR+ arm at 1 year, this finding did not reach statistical significance at the P=0.05 level.

Conclusion: The results of the trial are difficult to interpret. The objective was to determine whether SDR would suppress excess leprosy cases among contacts in the year after BCG vaccination. However, most new cases had already appeared within 8-12 weeks after vaccination, the window period between vaccination and provision of SDR. The 30% reduction in new leprosy cases in the first year after SDR is in line with a previous trial in the same area, considering that the current trial included more household contacts and less distant contacts than the previous one.

O-028

INITIATION OF POST EXPOSURE CHEMOPROPHYLAXIS FOR LEPROSY IN KIRIBATI

Presenter: Stephen T. Chambers

Stephen T. Chambers[1,2,3,] Nabura Ioteba[2,4], Eretii Timeon[5] Erei Rimon[6], Helen Murdoch[7], Arturo Cunanan[8], Patricia Priest[9,2].

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Objective: Kiribati, formerly the Gilbert Islands, is a country of 33 atolls, 21 of which are inhabited, spread over more than 1 million square miles of the Pacific Ocean. Despite the use of multidrug therapy for treatment, the

number of new cases have increased over the last 10 years with 187 new cases (rate:16/100,000 population) diagnosed in 2017. Control of leprosy is one of the priorities in the Government of Kiribati Strategic Health Plan 2016 - 2019. The objective is to describe the initial roll out of post exposure chemoprophylaxis to household contacts (HC) of index cases (IC).

Method: All households and their occupants are registered at their local health centre. Trained medical assistants (MA) and nurses implemented a two-pronged post exposure chemoprophylaxis programme of single dose rifampicin (SDR) in 2018. Retrospective (6 years) and prospective HC of all known and registered cases were given adult (600mg) or child doses as per schedule / protocol. The programme commenced on the main island of Tarawa with a view for outer islands roll-out and completion of the first round by early 2019, followed by a second round in the same year.

Results: As of 1 October 2018, preliminary results were available for 17 health centers from South Tarawa including Betio, North Tarawa, Onotoa, Arorae, and Aranuka. 1011 IC were identified in the database from 1 Jan 2010 to June 2017. Overall household visits identified 845 (84%) of all recorded IC with 6608 HC (mean 7.6 / household). After screening, 5851 (89%) HC were eligible for SDR and of these 5558 (95%) received SDR. The commonest exclusions were age < 2 years and pregnancy.

The outcome of activities varied between individual health centres. The number of IC that could be traced ranged from 71%-100%. The range of eligible HC identified was 72-98%, and the proportion receiving SDR 83%-100%.

Conclusion: The implementation of the first retrospective stage of SDR prophylaxis shows high acceptability of screening and acceptance of SDR. The main limitation in finding IC and HC was people moving islands or to another country. This barrier will be reduced in the prospective study. Monitoring of health centres is necessary to ensure adherence to the protocol. With the Ministry of Health and Medical Services support it is feasible to incorporate a post-exposure SDR chemoprophylaxis strategy into existing national control programmes.

O-074

EFFICACY OF ANTI-LEPROSY VACCINES AFTER TEN-YEARS OF VACCINATION: COMPARATIVE LEPROSY VACCINE TRIAL IN SOUTH INDIA

Presenter: Manickam P

Gupte MD[1] on behalf of Comparative Leprosy Vaccine Trial Team

[1]ICMR-National Institute of Epidemiology

Objective: In view of renewed interest based on anti-leprosy vaccines, we report efficacy estimates after ten-years follow-up from the controlled, double-blind, randomized, prophylactic leprosy vaccine trial in a high leprosy endemic area in South India.

Method: The objective of the trial was to assess the prophylactic efficacy of then available four candidate vaccines against progressive and serious forms of leprosy among population from 264 contiguous villages in Chingelput district, Tamil Nadu, India. We randomized 171,400 (59% of the total population) to receive anyone of the four vaccines [BCG + Killed M. leprae (KML), BCG, ICRC, Mycobacterium. w (M.w)] or placebo (normal saline) during 1991-93. Trained field investigators blinded to prior clinical or vaccination status did the examinations. During first resurvey conducted during 1993-95, we removed missed prevalent cases during intake. In this survey, we documented statistically insignificant negative effect of the vaccines. Second re-survey was conducted during 1997-98 [Efficacy levels based on second resurvey had been published (Gupte et al, 1998)]. A third re-survey was conducted during 1999-2002 to assess the protective efficacy of candidate leprosy vaccines after 10 years. Final decoding was done in 2003. We estimated 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. This evidence may be useful for settings with persisting leprosy burden and for stakeholders considering anti-leprosy vaccines as well.

O-075

LEPROSY CONTROL INVIGORATED THROUGH THE LEPROSY POST-EXPOSURE PROPHYLAXIS (LPEP) PROGRAM IN TANZANIA

Presenter: Blasdus Njako

C. Kasang[1], B. Njako[2], Arielle Cavaliero[3], Beatrice Mutayoba[4], J.H. Richardus[5], Peter Steinmann[6, 7], D. Kamara[4]

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Objective: Post-exposure prophylaxis (PEP) with single dose rifampicin (SDR) for close contacts of leprosy patients is among the most promising new tools to control leprosy. Tanzania is a leprosy high-burden country with around 2,000 new patients detected annually. . The most common method of case finding is passive; in a few instances, active approaches are employed. To date around 15-20 district councils in 10 different regions remain which have not attained the elimination targets.

In 2015, Tanzania joined as the only African country in the Leprosy Post-Exposure Prophylaxis (LPEP) program to evaluate the feasibility, effectiveness and impact of contract tracing and PEP with SDR in select areas.

Method: Contact tracing was established across the selected areas.. The household and close neighbors of recently diagnosed leprosy patients across three districts were traced by village health volunteers, screened for signs of leprosy and assessed for exclusion criteria. Eligible contacts, if not symptomatic, were offered an age/weight-adjusted dose of rifampicin. Multidrug therapy (MDT) is provided to contacts diagnosed with Leprosy symptoms. The intervention was maintained for three years. The program was implemented by the National TB and Leprosy Program (NTLP) Tanzania, technically supported by the German Leprosy and Tuberculosis Relief Association (GLRA) and the Swiss Tropical and Public Health and coordinated and funded by Novartis Foundation.

Results: Out of the total number of index patients listed (n=827) across the project districts, the program included 617 after excluding 210 due to: refusal to participate due to fear of disclosure (n=3); living outside the LPEP districts (n=59), and having no eligible contacts (n=150). In total, 5,894 contacts were listed, 5,807 were screened (98.5%), and 4,691 (80.8%) received SDR after the application of the exclusion criteria. The contact screening resulted in the detection of 93 new leprosy patients.

Conclusion: Active leprosy case finding through contact tracing was catalyzed in Tanzania by the LPEP program. It could be shown that contact tracing and PEP administration in this setting are feasible, and the national leprosy control activities could be invigorated. The acceptance of patients to participate in the program was high. The

detection of 93 new leprosy patients underlines the high number of unreported cases as by screening 63 contacts one new leprosy patient was detected.

Motivated by the success of the LPEP program, two PEP projects will continue in the country: (1) active case finding funded by Bangkok Declaration Special funds (2017-2020) in three districts, and

(2) the PEP4LEP study funded by EDCTP. SDR PEP will be included as a routine approach into the Tanzanian national strategic plan 2021-2025 for tuberculosis and leprosy control.

O-077

CHEMOPROPHYLAXIS FOR LEPROSY CONTROL AND ELIMINATION: ONGOING RESEARCH AND EXPECTED IMPACT

Presenter: Jan Hendrik Richardus

J.H. Richardus[1], D.J. Blok[1], A. Cavaliero[2], P. Steinmann[3;4], LPEP Study Group

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Objective: Contacts of leprosy patients have an elevated risk of developing leprosy themselves. Chemoprophylaxis reduces this risk but might not be sufficient to break the transmission of *M. leprae*. The Leprosy Post-Exposure Prophylaxis (LPEP) program demonstrated the feasibility and impact of contact tracing and single dose of rifampicin (SDR). Several ongoing research projects building on this evidence aim to further improving the approach.

Method: Post-exposure (chemo)prophylaxis (PEP) with SDR for household, neighbour and social contacts of newly diagnosed leprosy patients has demonstrated, by the LPEP program, to be well-accepted by most leprosy patients and their contacts across different socio-epidemiological and health system settings. However, challenges remain. Innovative approaches to improve the efficacy of chemoprophylaxis and to improve the effectiveness of such interventions in the face of weak and diverse health systems are currently underway. As studies focusing on leprosy prophylaxis tend to be long-term, expensive and logistically challenging, and have different designs and outcomes, depending on the setting, there is considerable scope for mathematical modeling to try and predict their long-term effects.

Results: Three large-scale studies have recently started to optimize the efficacy and effectiveness of contact tracing and PEP: a) the PEP++ study in Brazil, India and Indonesia, which will use multiple doses of rifampicin and moxifloxacin, as well as a transmission focus-based “blanket” approach; b) the PEOPLE trial, a cluster-randomized trial in the Comoros and Madagascar that will compare three approaches to PEP, and assess cost, effectiveness, feasibility, and geospatial clustering; and c) the PEP4LEP trial that aims to identify the most effective and feasible method for screening contacts and administering SDR in Ethiopia, Tanzania and Mozambique. Mathematical modeling suggests that the long-term effects of chemoprophylaxis has a considerable impact on *M. leprae* transmission in a population, and reduces the number of new leprosy patients.

Conclusions: Efforts to improve the efficacy and effectiveness of chemoprophylaxis should be coordinated and avenues to further improve the impact of the intervention should be explored, e.g. by combining chemo- with immunoprophylaxis. This will require the development of novel vaccines such as the LepVax and MIP vaccine, the development and standardization of PCR-based and other rapid diagnostics, and improved mapping, monitoring and quality control routines. The standard SDR-PEP approach established by the LPEP program and recommended by WHO should be implemented by national leprosy programs to already benefit the population and prepare health systems for the advent of the innovations currently under development. Modeling should be used to evaluate the relative benefits of the different approaches to improve the quality of ongoing and future interventions.

O-082

LEPROSY SERVICES IN PRIMARY HEALTH CARE IN INDIA: COMPARATIVE ECONOMIC COST ANALYSIS OF TWO PUBLIC HEALTH SETTINGS

Presenter: Anuj Tiwari

Anuj Tiwari[1], David J. Blok[1], Pramilesh Suryawanshi[2], Akash Raikwar[2], Mohammad Arif[2] and Jan Hendrik Richardus[1]

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Objective: Leprosy is caused by *M. leprae.* It is strongly associated with poverty and stigma and may lead to permanent disability. The WHO recommends inclusion of post-exposure chemoprophylaxis with single-dose rifampicin (SDR) in national leprosy control programmes. The objective of this study was to estimate the cost of leprosy services at primary care level in two different public health settings.

Method: Ingredient-based costing was performed in eight primary health centres (PHCs), purposively selected in the Union Territory of Dadra and Nagar Haveli (DNH) and the Umbergaon block of Valsad district, Gujarat, India. We focused on primary care level and covered expenditure by national leprosy programme, local public health system and Leprosy Post-Exposure Prophylaxis project. The international and national level leprosy costs were excluded from the study. The shared costs other than HR were apportioned on the bases of leprosy prevalence, that is, the number of patients on the treatment register. The HR cost was apportioned based on HR interviews. The cost data were bootstrapped with 999 iterations to estimate the confidence intervals. To estimate the variation in total cost under uncertainty, we performed a univariate sensitivity analysis.

Results: The mean annual cost of providing leprosy services was USD 29 072 in the DNH PHC (95% CI: 22 125–36 020) and USD 11 082 in Umbergaon (95% CI: 8334–13 830). The single largest cost component was human resources: 79% in DNH and 83% in Umbergaon. The unit cost for screening per contact was USD 1 in DNH (95% CI: 0.8–1.2) and USD 0.3 in Umbergaon (95% CI: 0.2–0.4). In DNH, the unit cost of delivering SDR as chemoprophylaxis for contacts was USD 2.9 (95% CI: 2.5–3.7).

Conclusion: Due to the differences in public health system financing and structure, the annual leprosy cost at primary care level varies even between areas of comparable epidemiology. Both enhanced and routine systems invest mainly in human resources. The unit cost of contact screening and SDR is not high, favouring its sustainability in the National Leprosy Eradication Programme of India.

O-083

ACCEPTABILITY OF CONTACT SCREENING AND SINGLE DOSE RIFAMPICIN AS CHEMOPROPHYLAXIS FOR LEPROSYIN DADRA AND NAGAR HAVELI, INDIA

Presenter: Liesbeth Mieras

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Objectives: Single-dose rifampicin as post-exposure prophylaxis (SDR-PEP) against leprosy given to contacts of leprosy patients was proven to reduce their risk to develop leprosy by 57% in a double-blind, cluster-randomized, placebo-controlled trial in Bangladesh. The Leprosy Post-Exposure Prophylaxis (LPEP) program assessed the feasibility of integrating contact examination and SDR-PEP distribution into leprosy control programmes in eight leprosy endemic countries, including India. This acceptability study was carried out in the Union Territory of Dadra and Nagar Haveli (DNH) in India, where the LPEP project was implemented from 2015 to 2018. The objectives

were 1) to assess the acceptability of contact screening and SDR-PEP administration by the main stakeholders and 2) to identify actionable factors that influence the uptake of SDR PEP.

Method: The acceptability of the implementation of the LPEP project was assessed in DNH, India, in the period April to August 2017, while the project was still ongoing. This was done using a qualitative, cross-sectional study design. Semi-structured interviews and focus group discussions were held with the main stakeholders of the intervention: leprosy patients, contacts, key informants from the community, health workers and project supervisors. Contacts were defined as household contacts, sharing the same roof and kitchen, and neighbours. Key informants were: religious leaders, community elders and accredited social health activists (ASHA). A quantitative component of the study was the compliance rate of index patients for consent to include their contacts, and of contacts for screening and SDR-PEP administration.

Results: The intervention was generally well accepted and regarded beneficial by all stakeholder groups. Participants understood that SDR-PEP was distributed to prevent the development of leprosy. Disclosure of the leprosy status of a patient was needed because the intervention was aimed at close contacts, but this was not a barrier for the implementation of contact screening and SDR-PEP distribution in DNH. The trust in the health services and the health staff in DNH and the gender-sensitive approach contributed importantly to the high level of acceptance. The compliance rate was 99.0% among leprosy patients and 98.6% among contacts.

Conclusion: Contact screening and SDR-PEP distribution in DNH, India, has been very well accepted by the main stakeholders: index patients and their contacts, health workers and their supervisors and the community.

O-084

MASS ADMINISTRATION OF SINGLE DOSE RIFAMPICIN AS CHEMOPROPHYLAXIS FOR LEPROSY IN AN ISOLATED COMMUNITY IN INDONESIA: A FOUR YEAR FOLLOW - UP FEASIBILITY STUDY

Presenter: Liesbeth Mieras

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Objective: Post-exposure Prophylaxis (PEP) with single-dose rifampicin (SDR) is effective in reducing the risk of developing leprosy among contacts. A 'blanket approach' is an operational strategy for mass administration of SDR-PEP including all members of a community high endemic for leprosy. A blanket approach was used in Lingat village, Selaru Island, Maluku province, Indonesia, as part of the LPEP program. The objective was to assess the operational feasibility of a population-wide administration of SDR-PEP in an isolated community on a remote island.

Method: A prospective follow-up study was conducted in 2014, 2015, 2016 and 2018 in Lingat village, with gaps of around 12 months. All community members were screened and given SDR-PEP in the absence of signs and symptoms of leprosy and other exclusion criteria. During the first two visits, community members were screened and SDR-PEP was provided with the aim to include as many community members as possible. Only screening was conducted during the third and fourth visit. Newly detected cases were put on treatment. The demographic and clinical data were used for a descriptive analysis of the project coverage and leprosy epidemiology.

Results: An intensive preparatory phase was needed, including meetings with stakeholders and organizing logistics. The remote location of the village required for the visits to be conducted during a window of suitable weather enabling transportation by boat. The visiting team comprised around 10 staff, including leprosy experts, government staff and health workers. During the first two visits, 1,671 persons (88%) were screened, 1,499 (79%)

received SDR-PEP, and 213 (11%) were excluded because they did not meet the eligibility criteria. Among all persons screened, 43 (2.6%) cases were diagnosed with leprosy, which is a prevalence rate of 2,573 per 100,000 population. During the follow-up visits, 10 new leprosy cases were found in 2016 among 1,481 persons screened, which is a new case detection rate (NCDR) of 484 cases per 100,000 population, and 5 new leprosy patients were found in 2018 among 1,805 persons screened; an NCDR of 277 per 100,000.

Conclusion: With adequate planning and resources, it is operationally feasible to implement a blanket approach using PEP-SDR as chemoprophylaxis on a remote island. The downward trend in the NCDR is encouraging. Active follow-up of the leprosy incidence is required to decide upon the optimal approach to stop the transmission of leprosy in Lingat village: Repetition of the blanket administration or setting-up routine PEP-SDR administration for contacts of leprosy patients.

O-098

LEPROSY POST-EXPOSURE PROPHYLAXIS (LPEP) PROJECT: OPERATIONALIZATION OF THE CONTACT CHEMOPROPHYLAXIS WITH SPECIAL CONSIDERATION OF THE PRIMARY CARE NETWORK IN THE HEALTH SYSTEM

Presenter: Carmelita Ribeiro Filha Coriolano

C R F Coriolano[1], F F R da Silva[1], E C de Almeida[1], E Ignotti[2], A Cavaliero[3], P Steinmann[4]

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Objective: The Leprosy Post-Exposure Prophylaxis (LPEP) program explores the feasibility and impact of single dose rifampicin (SDR) administered to eligible contacts of newly diagnosed leprosy cases. Household and other contacts are systematically traced, screened for leprosy and given SDR if not symptomatic and meet eligibility criteria. Multidrug therapy (MDT) is provided to contacts diagnosed with Leprosy symptoms. The Brazilian LPEP pilot started in 2016 and was integrated in the primary care service. We highlight the role of the primary healthcare system in the LPEP success, and how its central role could be further strengthened.

Method: We analyzed the LPEP field experience, lessons learned and the current steps to include this intervention into the Brazilian health system.

Results: Over 32 months, 24,282 contacts from 2,106 index cases were evaluated (average number of contacts per index case = 11.5, range 10.6 – 15.6), leveraging a network of 235 primary care centers and involving 235 clinicians, 235 nurses and more than 1500 community health workers. The SDR coverage was excellent, with an overall 4% refusal rate. 240 new leprosy patients were also detected. The protective effect of SDR motivated the health workers towards improving the quality of contact tracing and screening. On average, less than 5 new leprosy patients were diagnosed in each LPEP pilot health center, requiring an active search of under 100 contact; this highlights the feasibility of the LPEP approach. As a next step, LPEP results will be presented to the scientific community and stakeholders in Brazil, including the Technical Advisory Group of the national program. To consider approval, this innovation should pass through all-legal steps, risk populations and priority areas will be defined, and the routine surveillance protocol updated.

Conclusion: The project highlighted the value of the primary health system for the proper functioning of the leprosy program.

O-138

COST-EFFECTIVENESS ANALYSIS OF LEPROSY POST-EXPOSURE PROPHYLAXIS IN INDIAN HEALTH SYSTEMS

Presenter: Anuj Tiwari

Anuj Tiwari[1], David J. Blok[1], Pramilesh Suryawanshi[2], Akash Raikwar[2], Mohammad Arif[2] and Jan Hendrik Richardus[1]
[1] Department of Public Health, Erasmus MC, University Medical Center Rotterdam, Rotterdam, The Netherlands
[2] NLR India, India Country Office, New Delhi, India

Objective: Leprosy is caused by *M. leprae.* It is strongly associated with poverty and stigma and may lead to permanent disability. The WHO recommends inclusion of post-exposure chemoprophylaxis with single-dose rifampicin (SDR) in national leprosy control programmes. The objective of this study was to estimate the cost-effectiveness of the Leprosy Post Exposure Prophylaxis (LPEP) program implemented in the Union Territory of Dadra and Nagar Haveli (DNH) in comparison to the routine National Leprosy Eradication Programme (NLEP) of the adjoining Umbergaon block of Valsad district, Gujarat.

Method: We simulated trends in the number of new cases in DNH and Umbergaon using the individual-based model SIMCOLEP, and estimated the number of prevented cases due to LPEP. Costs were assessed from a societal perspective, which covered public health system and patient's out-of-pocket costs. The cost and epidemiological data were collected and published as part of the LPEP programme. We estimated the Incremental Cost Effectiveness Ratio (ICER), i.e., the incremental cost per new case in DNH. We assumed that the interventions were continued from 2015 until 2040.

Results: In the first year, the leprosy programme in DNH had additional cost of USD 23,958 and 9 additional new cases compared to Umbergaon. In the tenth year, the additional cost in DNH increases to USD 29,175, but would have 30 less new cases compared to Umbergaon. The ICER was USD 2,602 in the first year, which increases to USD 119,761 by the fifth year. In the tenth year, the ICER will drop to USD –4,324 indicating cost saving, which will continue until the 20th year (USD - 1,415) and 26th year (USD - 938).

Conclusion: SDR is a cost-effective intervention in the long term, and will be most cost-effective in its 10th year of implementation. We, therefore, recommend continuing the intervention for at least 10 years. SDR will remain cost-effectiveness for many more years, but savings will reduce due to low diseases burden. The first five years should be seen as an investment period.

O-142

THE ESTIMATED FUTURE IMPACT OF THE LEPROSY POST-EXPOSURE PROPHYLAXIS PROGRAM ON LEPROSY INCIDENCE

Presenter: David J Blok

David J Blok[1], Anuj Tiwari[1], Peter Steinman[2], Tanja Barth-Jaeggi[2], Arielle Cavaliero[3], Jan Hendrik Richardus[1] on behalf of the LPEP team
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Objective: The Leprosy Post-Exposure Prophylaxis (LPEP) program explores the feasibility and impact of single dose rifampicin (SDR) administered to eligible contacts of newly diagnosed leprosy cases. Household and other contacts are systematically traced, screened for signs and symptoms of leprosy and given SDR if they do not have leprosy. The impact of SDR is difficult to establish in the short term, because of the existing backlog of leprosy cases and the slow progression of the disease. Therefore, in this study we apply mathematical modeling to estimate the long-term impact of the LPEP program in India, Nepal, Tanzania and Myanmar.

Method: The individual-based model SIMCOLEP was used to estimate the future impact of LPEP in of 1) Dadra Nagar Haveli (India); 2) Jhapa, Morang, Sunsari (Nepal); 3) Kilombero, Liwale, Nanyumbu (Tanzania); and 4) Nyaung-U, Myingyan, Thayawaddy (Myanmar). The model was quantified using country and area-specific demographic data and calibrated and validated to the leprosy incidence data until 2015. Leprosy data was obtained through the LPEP program. For each area, we assessed two scenarios: A) continuation of routine program (without LPEP); B) LPEP program continued until the end of the simulation. The routine program relies only on passive case detection, except for India. The LPEP program includes provision of SDR to contacts of an index patient. On average the number of contacts per index patient was between 10 and 21 depending on the country. The effectiveness of SDR was set to 0.5 for household contacts and 0.75 for other contacts. The coverage and compliance of contacts was set to 99%. Projections were made until 2040.

Results: Our projections indicate that under the routine program incidence declines slowly over time. In all countries, the LPEP program would increase the number of cases in the first year(s) of the program, followed by a steep decline afterwards. Significant reductions due to the LPEP program compared to the routine program are only noticeable after some years. The benefit of the LPEP program increases over time. The impact of the LPEP program is evident in every country but varies by country due to differences in the number of contacts per index patient included and differences in leprosy epidemiology.

Conclusion: The LPEP program contributes significantly to the reduction of the leprosy incidence and would prevent many new cases. As the benefit increases over time, it would be advisable to make contact tracing and SDR part of the routine program.

O-143

THE EFFECT OF LEPROSY POST EXPOSURE PROPHYLAXIS IN INDIA: A COMPARISON BETWEEN TWO SETTINGS

Presenter: David J. Blok

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Objective: The Leprosy Post-Exposure Prophylaxis (LPEP) program explores the feasibility and impact of single dose rifampicin (SDR) administered to eligible contacts of newly diagnosed leprosy cases. Household and other contacts are systematically traced, screened for signs and symptoms of leprosy and given SDR if they do not have leprosy. In India, the intervention program was carried out in Dadra Nagar Haveli (DNH). The neighboring district Umbergaon was selected as a control area. In this study, we aim to compare the impact of the LPEP program in DNH on the new case detection rate (NCDR) with the routine program in Umbergaon.

Method: The individual-based model SIMCOLEP was used to estimate the future impact of LPEP and the routine program. The model was calibrated and validated to the leprosy incidence data until 2015. The NCDR in both areas was 78 per 100,000 in 2015. The LPEP program in DNH started in 2015 and consisted of active case finding and provision of SDR to on average 17 contacts per index patient. The effectiveness of SDR was set to 0.5. The coverage and compliance of contacts was set to 99%. At the same time, a door-to-door (LCDC) campaign was organized by the government. The routine program in Umbergaon consisted of passive case detection and moderate active surveillance through the LCDC campaign from 2015 onwards. For both areas, we made projections of the NCDR trend until 2040.

Results: Model predictions show that the NCDR declines from 78 per 100,000 in 2015 to 26 and 45 per 100,000 in 2040 in DNH and Umbergaon, respectively. As a result of the LPEP program more than 350 new leprosy cases could be prevented between 2015 and 2040 in DNH. The benefit of the LPEP program increases over time. When

compared to the control site Umbergaon, more than 20 new cases per 100,000 can be prevented annually in the long term.

Conclusion: Providing SDR to household and social contacts of an index case could further reduce the NCDR in DNH. More than 350 new leprosy cases could be prevented up to 2040, contributing significantly to reducing suffering of leprosy affected people and costs to treat them.

O-149

EFFECTIVENESS AND FEASIBILITY OF POST-EXPOSURE PROPHYLAXIS ON THE COMOROS AND MADAGASCAR

Presenter: Epco Hasker

Epco Hasker[1], Abdallah Baco[2], Assoumani Younoussa[2], Aboubacar Mzembaba[2], Zahara Salim[2], Mohamed Amidy[2], Saverio Grillone[2], Antoine Salim Boussouri[2], Nimer Ortuno-Gutierrez[3], Philip Suffys[4], Sofie Braet[1,6,7], Andriamira Randrianantoandro[5], Stéphanie Ramboarina[8], Bertrand Cauchoix[8], Bouke de Jong[1]

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Objective: The PEOPLE project is a community intervention trial on post-exposure prophylaxis (PEP) for leprosy on the Comoros and Madagascar. The project builds on the COMLEP trial that started in 2017 and is now in its final year. The PEOPLE trial will run for four years, the baseline surveys started in January, 2019. Main objective is to compare three different approaches of PEP administration to a non-intervention arm in which there will be annual screening only.

Method: Villages have been randomized based on reported leprosy incidence for the period 2013-2017. All villages will be screened door-to-door for four years in a row, all leprosy patients detected will be treated in accordance with WHO guidelines. In arm 1 nothing else will happen, in arm 2 household members of incident leprosy patients will receive single dose rifampicin prophylaxis (SDR), in arm 3 anyone living within a 100 meter radius of an incident leprosy patient will receive SDR, in arm 4 household members of incident leprosy patients plus anyone living within a 100 meter radius and testing positive to anti-PGL-I will receive SDR. Leprosy patients detected will also be enrolled in a substudy in which samples will be collected for detection of *M. leprae* DNA and subsequent genotyping. We will compare incidence rates of leprosy between the arm 1 and each of the three intervention arms over the study period and we will calculate detailed costs of each of the approaches compared. Genotyping and spatial data will be exploited to assess patterns of clustering of leprosy.

Results: Screening started mid-January, 2019. The baseline survey will run until December, 2019. During the first two weeks of screening 40 new leprosy patients were found on a population screened of approximately 6,000, mostly on Anjouan, Comoros. Acceptability has been excellent. Strong geographic clustering around leprosy cases of previous years was observed on the Comoros, confirming earlier findings from the COMLEP study. Patient samples tested with qPCR to date confirm excellent clinical diagnostic accuracy.

Conclusion: The PEOPLE trial started well. Results on effectiveness of SDR will only be available by the end of 2022. Overall leprosy prevalence in villages screened so far was as high as 60-70 per 10,000, mainly driven by figures from Anjouan, Comoros. By September, 2019, we expect to have prevalence data on approximately 80,000 people screened, which will allow a detailed assessment of prevalence and clustering patterns.

O-151

EVIDENCE OF THE FEASIBILITY OF POST EXPOSURE PROPHYLAXIS (PEP) FROM THE LPEP PILOTS IN NEPAL: AN INSPIRATION FOR SCALING UP

Presenter: Nand Lal Banstola

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Objective: To evaluate the feasibility of contact tracing and single dose rifampicin (SDR) as leprosy post-exposure prophylaxis (PEP) under routine leprosy control program conditions in three districts in Nepal.

Method: In 2014, The Ministry of Health formally decided to endorse the LPEP program in Nepal, coordinated by NLR. Three pilot districts, high endemic of leprosy with a new case detection rate above 20 per 100,000 populations and a child proportion above 10%, were selected. LPEP in Nepal is implemented by Ministry of Health, supported by ILEP partners and coordinated and funded by Novartis Foundation. A national LPEP implementation protocol was developed and a detailed planning of the implementation was made. The project period was 2015-2018, including leprosy patients diagnosed since 2012, and their contacts. Contacts were defined as people sharing roof and kitchen with the index patient and the closest neighbors of the index patient. Contacts were screened for signs and symptoms of leprosy and assessed for eligibility to receive SDR-PEP. A database, data collection and reporting system was established. Regular monitoring was carried out ensuring the quality of the implementation and data management. Data were analyzed regularly, findings were shared with field staff and program managers at various levels and compared to those in other countries taking part in the LPEP program.

Results: All newly diagnosed leprosy patients in the three piloting districts were covered and 852 persons diagnosed from 2012-2015 were included retrospectively. A total of 55,715 contacts of 2,439 index patients could be traced and 52,187 (94%) of this population at high risk of developing leprosy were given SDR-PEP. All targeted index patients and contacts (100%) accepted to participate in the program. The average number of contacts per index patient was 23. No serious adverse events were reported. Among the screened contacts 248 new leprosy patients and 24 new tuberculosis patients were detected. The government incorporated contact screening and SDR-PEP distribution in the national strategic document (2016), allocated resources for rifampicin supply and other logistics for the smooth integration of PEP interventions.

Conclusion: The LPEP pilot in Nepal clearly showed that contact screening and SDR-PEP distribution is a feasible strategy as part of a leprosy control program working towards stopping the existing transmission of leprosy in the communities. Policy makers, planners, and other related stakeholders were convinced by the findings, which resulted in replication of LPEP in the routine leprosy control program in several other districts of the country.

O-164

TOOLS TO SUPPORT THE INTRODUCTION AND ROUTINE IMPLEMENTATION OF CONTACT TRACING AND CHEMOPROPHYLAXIS IN LEPROSY CONTROL PROGRAMS

Presenter: Peter Steinmann

T. Barth-Jaeggi[1,2], J.H. Richardus[3], A. Cavaliero[4], P. Steinmann[1,2], LPEP Study Group

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Objective: The Leprosy Post-Exposure Prophylaxis (LPEP) program was implemented by Ministries of Health across eight countries, supported by ILEP partners, Erasmus MC, Swiss TPH and coordinated and funded by Novartis Foundation. As a three-year program, LPEP generated a wealth of experience related to the introduction,

implementation and documentation of contact tracing and chemoprophylaxis with single-dose rifampicin (SDR) under routine conditions. To facilitate introducing contact tracing and chemoprophylaxis in additional countries and organizations a standard set of forms and protocols were developed and summarized in an LPEP “toolbox”.

Method: The toolbox is based on established and validated LPEP documentation, most notably field guides and presentations used during in -country events and trainings. Following three years of implementation, all documents underwent critical review in the light of the practical experience gained. The guiding principle in the development of the toolbox components was that they should be evidence-based, concrete yet flexible to cover a range of different settings, and precise yet generic to facilitate adaptation to different needs and contexts. Therefore, different options are proposed to highlight the need for adjustment to local conditions and generic terms are used that must be regionalized to comply with local standards. The toolkit documents also feature only basic formatting and are unprotected to facilitate adaptation to national standards and integration into the corporate design of the user. Components of the toolkit can be used in their entirety, independently, or be selected as excerpts. Experts with solid experience in the implementation of the LPEP program drafted all tools. Full drafts were widely shared for input and validation. The consultation was facilitated by Novartis Foundation and the Global Partnership for Zero Leprosy. Feedback was readily integrated into the drafts before finalization of the documents.

Results: The following products have been developed: a) SDR-PEP policy/advocacy Powerpoint slide deck; b) SDR-PEP field implementation training Powerpoint slide deck; c) SDR-PEP generic field guide; d) SDR- PEP toolbox guide; and e) minimal essential data to record and report, including forms. The products are available from the authors, through websites and scientific publications. They can be modified as required as long as users correctly acknowledge the source of the documents.

Conclusion: The introduction and implementation of contact tracing and SDR -PEP into the routine of national leprosy programs will identify additional needs for tools and guidance and should be collected to form the basis for updating the toolbox components as new experiences and insights emerge. Close supervision and continuous quality control are important and their collective feedback may provide further indications as to the need for guidance revision.

O-180

TREND ANALYSIS OF LEPROSY IN MOROCCO BETWEEN 2000 AND 2017: EVIDENCE ON THE SINGLE DOSE RIFAMPICIN CHEMOPROPHYLAXIS

Presenter: Ibtissam Khoudri

I. Khoudri[1], Z. Elyoussfi[1], Y. Mourchid[1], N. Bennani Mechita[2], R.Abouqal[3], M. Youbi[1]

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Objective: Morocco has achieved the goal of leprosy elimination as a public health problem several years ago (less than 1 case/ 10 000 habitant). The aim of this study was to analyze trends of leprosy detection during the last 17 years taking into consideration the implementation of single dose rifampicin chemoprophylaxis (SDRC) in the country started in 2012.

Method: This was a time series of leprosy cases detected by the National Leprosy Control Program at national level between 2000 and 2017. For each year, the detection rate was the number of new leprosy cases registered in the country reported per 100 000 habitant. Variables collected for each year were also age category, gender, origin, regions, grade of disabilities and clinical forms. The detection time series was assessed by Joinpoint Regression Analysis. Annual percentage changes (APCs) were estimated to identify the years (joinpoint) when

significant changes occurred in the trend. We therefore examined trends in leprosy detection according to epidemiological variables.

Result: Joinpoint regression showed a reduction in the detection rate between 2000 and 2017. The APC for the period 2012-2017 (-16.83, 95% CI: -29.2 to -2.3, p <0.05) was more pronounced than that of the previous period 2000-2012 (- 4.68, 95% CI: -7.3 to -2.0, p <0.05) ; with a significant break in the same joinpoint year SDRC implementation. In stratified analysis, case detection decreased, but not significantly, after the joinpoint years in men, children, multi-bacillary cases, grade 0-1 disabilities, rural and urban cases and in ten regions of Morocco.

Conclusion: Leprosy detection was declining over years with a significant reduction by 16% per year since SDRC implementation. This fact can allow us generating a hypothesis about a possible influence of SDRC on accelerating the reduction of leprosy detection in Morocco.

O-225

ESTIMATING VACCINE EFFECTIVENESS OF BCG: MATCHED CASE - CONTROL STUDY BASED ON INTAKE SURVEY FOR MULTI-ARM LEPROSY VACCINE TRIAL, SOUTH INDIA, 1993-2003

Presenter: Manickam P

Gupte MD, Manickam P, Jayasree P, Kanagasabai K on behalf of Comparative Leprosy Vaccine Trial Team, ICMR-National Institute of Epidemiology, India

Objective: In view of the variability of estimates of effectiveness and methodological issues (inclusion of prevalent cases) from several studies, we estimated BCG's effectiveness among participants of multi-arm controlled, double-blind, randomized, prophylactic leprosy vaccine trial in a high leprosy endemic area in South India at the time of entry into the trial.

Method: The trial was designed to assess the prophylactic efficacy of then available four candidate vaccines [BCG + Killed M. leprae (KML), BCG, ICRC (a vaccine developed by Indian Cancer Research Centre), Mycobacterium. w (M.w) or placebo (normal saline)] against progressive and serious forms of leprosy. The trial area comprised of 300,000 people from 264 contiguous villages in Chingelput district, Tamil Nadu, South India. Of them, 171,400 (59%) were screened for intake during 1991-93. All the examinations were conducted by trained field investigators blinded to prior clinical or vaccination status. First resurvey was conducted during 1993-95 with the objective to remove missed prevalent cases during intake. We conducted a matched case-control study in this setting. We defined cases as those newly detected at the time of intake for the trial. We selected controls from the list of those without leprosy and matched for age (+/- 1 year of age; gender and neighbourhood). We matched one case to four controls. We defined BCG vaccination based on the presence of scar during the survey. We computed matched odds ratio (MOR) and 95% Confidence Interval (CI). We computed vaccine effectiveness (VE) as (1-MOR)% or overall and based on history of treatment and type of leprosy separately.

Results: At intake, 292,319 persons were screened and 6601 were new cases. At intake, 12.3% had BCG scar. Among the cases, 1.5% had BCG scar and under five children had the maximum (13 of 65; 20%). There was no difference by gender. We matched cases with 26,606 controls. BCG's VE was 82% (95% CI:78 to 86). VE for those with history of MDT was 81% (95% CI:75 to 86) and that of those without such history was 84% (95% CI:78 to 88). VE by specific type of leprosy was: neuritic: 82 (95%CI: 65 to 91); Tuberculoid: 82 (95% CI: 77 to 85) and lepromatous: 90 (95% CI: 73 to 96).

Conclusion: As compared to published studies, the present study of BCG's VE involving newly detected cases documented more than 80% overall protection. Lepromatous leprosy was the most prevented form of leprosy due to prior BCG vaccination.

O-227

A COMPREHENSIVE APPROACH TO INTERRUPT THE TRANSMISSION OF LEPROSY: THE PEP++ RESEARCH PROTOCOL

Presenter: Duane Charles Hinders

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Objectives: This five-year clinical trial aims to interrupt the transmission of *M. leprae* bacilli in six highly endemic communities across India, Brazil and Indonesia. The central aim of the study is to test the effectiveness of a more robust post-exposure chemoprophylaxis regimen for leprosy (PEP++) given to those at highest risk – close contacts of index patients and others living in proximity to them. This trial has the specific objectives to: a) reduce the number of new cases of leprosy in project areas by 50%; b) demonstrate the increased efficacy of the enhanced PEP++ regimen compared to single-dose rifampicin (SDR-PEP); and c) verify the benefit of using a serological screening test to determine the allocation of SDR-PEP or PEP++ according to subclinical infection.

Method: The study will use a cluster-randomised controlled trial design. The randomisation units will be sub-district geographical divisions that are specific to each context. An enhanced package of leprosy control measures, including customised community education and behaviour change initiatives, will be implemented across both intervention and control groups. In the intervention areas, close (≈20) contacts of leprosy patients that test positive on a serological screening test will receive the PEP++ regimen, while those testing negative will receive SDR-PEP. In the control areas, the same number of contacts will be tested but all will be given SDR-PEP regardless of the results. GPS mapping of all leprosy patients detected in the past five years will be used to delineate high-risk clusters. Blanket campaigns will be conducted alongside the PEP++ administration in these clusters and seek to cover another approximately 80 contacts per index patient with SDR-PEP.

Results: After a period of five years, data from the PEP++ project will be analysed to determine the efficacy of the new chemoprophylaxis regimen and the utility of serological screening of contacts of leprosy patients. The feasibility of future replication will be evaluated through acceptability and cost-effectiveness studies.

Conclusion: The combination of interventions in the PEP++ project is expected to provide proof of concept that it is possible to stop the transmission of *M. leprae*, through a dramatic reduction in new cases in highly endemic areas. The comprehensive combination of index case mapping to define high endemic leprosy clusters, blanket chemoprophylactic treatment, detection and treatment of subclinical infection among close contacts, targeted community education and a more robust regimen is expected to be a replicable package to achieve zero leprosy.

O-238

RETROSPECTIVE ACTIVE CASE FINDING COMBINED WITH CHEMOPROPHYLAXIS: AN INNOVATION FOR LEPROSY CONTROL IN LOW-ENDEMIC SETTINGS

Presenter: Peter Steinmann

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Objective: Cambodia declared leprosy elimination as a public health problem in 1998. Following the observation, one decade later, of a build-up of undiagnosed leprosy patients, the concept of retrospective active case finding (RACF) campaigns or “drives” was developed to invigorate active leprosy case finding through contact tracing. Recognizing the mutually complementing nature of routine passive case detection and RACF, and interested in exploring the potential of post-exposure prophylaxis (PEP) with single-dose rifampicin (SDR), the national program decided to pilot an enhanced RACF scheme in which SDR PEP is integrated into the drives. The Leprosy Post-Exposure Prophylaxis (LPEP) program in Cambodia explores the feasibility and impact of SDR administered to eligible contacts of formerly diagnosed leprosy patients.

Method: All leprosy patients diagnosed, since 2011, in the targeted districts are eligible for participation. Eligible contacts include their household members and the five closest neighboring households. During a pre-drive visit to the target district, national and local patient registries are reconciled for consistency and accuracy. A few days prior to the drive, the target households are informed of the drive and the exact time of the home visit to strengthen awareness and reduce absenteeism of the former leprosy patient (index case) and contacts. Upon arrival of the drive team, written informed consent to disclose the disease status to all household members and neighbors is sought from the index patient, followed by contact screening. A competent clinician embedded in the drive team can directly confirm leprosy diagnoses. Those contacts who are screened negative for leprosy are assessed for SDR eligibility, and receive SDR at the appropriate dose. An individual SDR card with the contact ID, date and rifampicin dose is handed out to each participating contact.

Result: In the frame of the first 9 drives, a total of 283 index patients were traced and 3,963 contacts could be screened. Among them, 2,938 contacts (74.1%) received SDR, and 20 individuals were diagnosed with leprosy. Absent were 1,592 contacts (28.7%).

Conclusion: Upon completion of the study in mid -2019, the feasibility of combining RACF with SDR administration will be assessed in terms of coverage, screening participation, and SDR refusal. The impact will be measured by monitoring the number and characteristics of new leprosy patients identified through contact screening, the temporal evolution of the number of new leprosy patients in the intervention areas, and the incidence of leprosy among the contacts who had received SDR.

O-251

ACTIVE SCREENING FOR LEPROSY AND POST-EXPOSURE CHEMOPROPHYLAXIS OF CLOSE CONTACTS IN SENEGAL

Presenter: Gilbert Batista

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Objective: Active contact screening of contacts is recommended by World Health Organization (WHO) in Leprosy-endemic areas. Nine former leprosy colonies were documented endemic in Senegal. The National Leprosy Elimination Programme (NLEP) implemented active screening for leprosy in these areas. In this study our objective was to assess feasibility of door-to-door screening for leprosy and provision of single dose Rifampicin as post-exposure prophylaxis (SDR-PEP) in asymptomatic contacts of leprosy patients.

Method: This a cross-sectional study including leprosy patients notified from 2008-2017, house-hold and neighbours contacts residing in a 100-meter radius in a former Leprosy-colony. We listed all leprosy patients notified from leprosy-registers. All clinical, demographic and geographical coordinates data were included in Open Data Kit (ODK) a free application in Android devices. We informed community leaders and Leprosy-associations about the objectives of the study before start. Five teams including each one a medical officer, a nurse, a social-worker and a community-volunteer visited the households of consented leprosy patients and their contacts during eight days in October 2018. Asymptomatic contacts above five years and non-presumptive Tuberculosis and non-allergic to Rifampicin and consenting received SDR-PEP at 10mg/Kg.

Result: We visited 131 Leprosy-patients and listed 1360 contacts, from which 591(43,5%) were residing at 100-meter of leprosy-patients. Total contact coverage was 1097(81%). Consented for examination: 130(99,2%) Leprosy-patients, 593/627 (94,6%) household-contacts visited and 448/470 (95,3%) contact neighbours. No Leprosy was detected among contacts. Six (0.5%) contacts were excluded for presumptive-TB. SDR-PEP uptake was 499/507 (98,4%) in household contacts, and 373/383(97,4%) contact neighbours. Two contacts had mild gastro-intestinal symptoms possibly related with SDR-PEP.

Conclusion: Implementing SDR-PEP in a former Leprosy-colony was feasible and acceptable among Leprosy-contacts, by means of activities integrating: a) Persons-affected by leprosy inclusion on the research-implementation, b) Sensitization of the population of the village and c) Systematic collection of data using new information and communication technologies.

O-281

CONTROLE DES MALADIES LIEES A L'ENVIRONNEMENT: ENQUETE QUANTITATIVE DE L'IMPACT DE L'IMPLANTATION ET L'UTILISATION DES PUITS DE FORAGE SUR L'INCIDENCE DE L'ULCERE DE BURULI

Presenter: Mahougnon Horace Degnonvi

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Objectif: L'ulcère de Buruli est la troisième maladie mycobactérienne la plus répandue au monde après la lèpre et la tuberculose. Cette maladie tropicale négligée induit un fardeau majeur pour la santé essentiellement dans les régions pauvres de l'Afrique de l'Ouest et du Centre. Le développement de stratégies préventives adaptées est

entravé par le manque de compréhension complète de l'épidémiologie et du mode exact de transmission de l'ulcère de Buruli.

L'objectif de cette étude est d'étudier l'impact de l'implantation et l'utilisation des puits de forage sur l'incidence de l'ulcère de Buruli.

Méthodes: Nous avons obtenu des données de terrain sur l'incidence de l'ulcère de Buruli des départements de l'Ouémé et du Plateau au Sud du Bénin sur une période de 10 ans auprès du Centre de Dépistage et de Traitement de la Lèpre et l'Ulcère de Buruli (CDTLUB-Pobè) ainsi que celles de l'implantation de tous les forages de puits au cours de la même période auprès du Ministère de l'énergie et de l'eau du Bénin. Toutes les coordonnées géographiques de ces forages ont été obtenues après les visites de terrain.

Une étude cas-témoins a été ensuite menée pour étudier l'effet protecteur du système de forage contre l'ulcère de Buruli.

Résultats: Une forte corrélation a été établie entre la diminution de l'incidence de l'ulcère de Buruli et le nombre de nouvelles implantations de forage.

L'étude cas-témoins (106 cas et 212 témoins) a montré qu'un contact régulier avec le forage par l'utilisation de l'eau du forage pour le lavage / la vaisselle / la boisson / la cuisson [(ORajusté)] = 0,1, 95%; (IC) = 0,04 - 0,49) a un effet protecteur contre l'ulcère de Buruli.

L'utilisation de l'eau du forage pour les activités quotidiennes est clairement identifiée comme facteur de protection et liée à la diminution de l'incidence de l'ulcère de Buruli.

Conclusion: Cette étude propose un outil unique pour le développement d'une stratégie efficace de prévention de l'ulcère de Buruli basée sur la mise en place d'un système de forage.

O-292

THE EFFICACY OF DIFFERENT CHEMOPROPHYLAXIS REGIMENS IN A HIGHLY SUSCEPTIBLE SUBCLINICAL MODEL OF LEPROSY

Presenter: Linda Adams

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Objectives: Despite successful use of MDT, leprosy incidence has remained constant at around 200,000 cases annually, indicating continuing transmission. Subclinical infections in household contacts is one potential ongoing source of transmission, and numerous post-exposure prophylaxis (PEP) regimens have been proposed to control this source. In this study, we looked at the effectiveness of different PEP protocols using low-dose infections in athymic *nu/nu* mice as a model of subclinical infection in susceptible contacts.

Methods:
Drug Study 1: Mice were inoculated in hind footpads (FP) with 6 x 10^3 *Mycobacterium leprae* and treated with vehicle, single dose rifampin (10mg/kg; SDR), single dose ROM (10mg/kg rifampin, 150mg/kg ofloxacin, 25mg/kg minocycline), or single dose PMM (10mg/kg rifapentine, 25mg/kg minocycline, 150mg/kg moxifloxacin) by gastric gavage two months post-inoculation. FPs were harvested two, four, and six months post-treatment. Following DNA/RNA extraction from FPs, bacterial enumeration and viability was determined by RLEP PCR and *esxA* gene expression respectively.

Drug Study 2: Mice were inoculated as above and treated via gastric gavage with vehicle, SDR, SD-ROM, or SD-PMM. Group I mice received their single treatment one day post-inoculation. Group II and Group III mice received their single treatment one month and two months post-infection respectively. FPs were harvested ten months post-inoculation. Bacterial enumeration was performed on extracted DNA.

Drug Study 3: Mice were inoculated as above and treated with vehicle, rifampin (10mg/kg)+moxifloxacin (150mg/kg), rifampin (10mg/kg)+clarithromycin (100mg/kg), rifapentine (10mg/kg)+moxifloxacin (150mg/kg), or rifapentine (10mg/kg)+clarithromycin (100mg/kg) by gastric gavage. Mice received three monthly doses of antibiotics. FPs were harvested at one, three, six, eight, and ten months post-inoculation. RLEP PCR was used for molecular enumeration of the bacilli on extracted DNA.

Results: The first two studies found that none of the single dose regimens were able to effectively control bacilli growth long-term. SD-PMM was the only treatment that was able to initially control growth. However, bacteria were still viable in all treatment groups. The final study showed that all four multi-dose regimens were equally effective (~10^2 bacteria compared to ~10^8 bacteria for vehicle) at controlling bacterial growth.

Conclusions: Our studies show that while SDR and other single dose PEP regimens may be effective in household contacts with decreased susceptibility, it may not be as effective in highly susceptible contacts. In contrast, all of the multi-dose combination therapies were effective. Thus, in highly susceptible individuals with subclinical disease, multiple doses of PEP are more effective at controlling multiplication and potentially decreasing transmission.

O-320

PREDICTING THE IMPACT OF HOUSEHOLD CONTACT AND MASS CHEMOPROPHYLAXIS ON NEW CASES OF LEPROSY IN SOUTH TARAWA, KIRIBATI: A MODELLING STUDY

Presenter: Patricia Priest

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Objectives: The small Pacific island nation of Kiribati had a new case detection rate of 191 per 100,000 population in 2016 and achieving the WHO leprosy elimination goal remains a formidable challenge. Studies of chemoprophylaxis of household contacts of index cases, or the whole population in a highly endemic areas have been found to be effective in reducing new case detection rates. This study investigated the potential impact of different chemoprophylaxis strategies on future cases in South Tarawa (including Betio), the main population centre of Kiribati.

Methods: The microsimulation model SIMCOLEP was calibrated to simulate the South Tarawa population and past leprosy control activities, and replicate annual new cases from 1989 to 2016. The impact of six different strategies for delivering one round of SDR chemoprophylaxis to household contacts of new cases and/or one or three rounds of SDR to the whole population was modelled from 2017-2030.

Results: Our model predicted that continuing the existing control programs of high levels of public awareness, passive case detection, and treatment with multidrug treatment would lead to a substantial reduction in cases, but this was less effective than all modelled chemoprophylaxis intervention scenarios. Mass chemoprophylaxis led to a faster initial decline in the number of new cases compared with chemoprophylaxis targeted at household contacts alone, however, the decline under the latter regimen was sustained for longer. The greatest cumulative impact was

for targeted chemoprophylaxis for household contacts together with three rounds of mass chemoprophylaxis at one-year intervals.

Conclusion: The results suggest that chemoprophylaxis is a useful tool that can be used in addition to other control measures to control leprosy. For Kiribati, the WHO elimination rate for leprosy would be achieved most rapidly with a combination of intensive population-based and household chemoprophylaxis in addition to enhanced case finding and screening household contacts. These findings may be relevant to other countries where crowding places social contacts as well as household contacts of cases at risk of developing leprosy.

O-326

ENVIRONMENTAL CONTROL OF DISEASES: QUANTITATIVE SURVEY OF THE IMPACT OF WELL-DRILLING ON BURULI ULCER

Presenter: Mahougnon Horace Degnonvi

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Objective: Buruli ulcer disease is the third most common mycobacterial disease in the world. This neglected tropical disease induced a major health burden essentially in poor areas of West and Central Africa. Development of adapted preventive strategies is hampered by the lack of complete understanding in field of epidemiology and transmission. Here we aimed to investigate the impact of well drilling implantation on Buruli ulcer incidence.

Methods: Over a period of 10 years, we obtained field data (i) from specialized center for Buruli ulcer incidence in Oueme and Plateau departments and (ii) and from Ministry of Energy for well drilling installation. Well drilling coordinates were obtained after spot visits. Then a case-control study was conducted to investigate the role of drilling system as protective factor against Buruli ulcer.

Results: A strong correlation was established between decrease of Buruli ulcer incidence and number of new drilling installation. A case control study (106 cases and 212 controls) showed that regular contact with the drilling by using the drilling water for washing/bathing/drinking/cooking [(aOR)] = 0.1, 95%; (CI) = 0.04 - 0.49) was a protective factor against Buruli ulcer. Finally, drilling water through daily activities is clearly identified as a protective factor and linked to the decrease incidence of Buruli ulcer

Conclusion: Our study propose an unique tools to develop an effective strategy to prevent Buruli ulcer base on the implementation of drilling system.

ILC-4: EPIDEMIOLOGY and CONTROL:
4.4 Transmission and Diagnostics

O-007

FINGERSTICK TEST QUANTIFYING HUMORAL AND CELLULAR BIOMARKERS INDICATIVE FOR *M. LEPRAE* INFECTION

Presenter: Annemieke Geluk

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Objective: Detection of *M. leprae* infected individuals followed by (prophylactic) treatment is vital to interrupt transmission and prevent leprosy. However, prophylactic treatment efficacy is currently only assessed by detection of new leprosy patients requiring years of follow-up.

User-friendly rapid tests for detection of infected individuals lacking clinical symptoms, can help guide therapeutic and prophylactic treatment, thus positively contributing to clinical outcome and reduction of transmission.

To facilitate point-of-care testing without the presence of phlebotomists, the use of fingerstick blood (FSB) rather than whole blood-derived serum is preferred. This study is a first proof-of-principle validating that previously described rapid serum tests detecting antibodies and cytokines can also be used with FSB.

Method: Quantitative detection of previously identified biomarker profiles for leprosy and *M. leprae* infection including e.g. anti-*M. leprae* PGL-I IgM antibodies (αPGL-I), IP-10 and CRP, was performed with lateral flow (LF) strips utilizing luminescent up-converting reporter particles (UCP) and a portable reader generating unbiased read-outs. Using UCP-LF tests it is also possible to quantify the amount of any type of biomarker present in biological samples, which will allow assessment of differences in biomarker levels in time as well as adjustable cut-off values to meet sensitivity and specificity requirements for areas with variable leprosy endemicity

Precise amounts of FSB samples were collected using disposable heparinized capillaries. Biomarker levels in paired FSB and serum samples were determined using LF test strips for leprosy patients and controls in Bangladesh, Brazil, South-Africa and the Netherlands.

Results: Correlations between serum and FSB from the same individuals for αPGL-I, CRP and IP-10 were highly significant ($p < 0.0001$) even after FSB had been frozen. The αPGL-I FSB test was able to correctly identify all multibacillary leprosy patients presenting a good quantitative correlation with the bacterial index.

Conclusion: Reader-assisted, quantitative UCP-LF tests for the detection of humoral and cellular biomarkers for *M. leprae* infection, are compatible with FSB. This allows near-patient testing for *M. leprae* infection and immunomonitoring of treatment without highly trained staff. Moreover, this makes direct assesment of the effect of prophylactic treatment on *M. leprae* infection feasible in a low complexity manner compatible with field settings: on site availability of test-result concedes immediate initiation of appropriate counselling and treatment. Alternatively, the UCP-LF format allows storage of FSB samples compatible with deferred testing in central laboratories.

O-018

CLUSTER IDENTIFICATION AND THE IMPLICATIONS FOR A BLANKET APPROACH IN CHEMOPROPHYLAXIS FOR LEPROSY IN INDIA

Presenter: Anna Theodora Taal

A.T. Taal[1,4], J.G. Barreto[2], A. Garg[3], W.H. van Brakel[1], J.H. Richardus[4]

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Objective: In leprosy, intensified and targeted interventions are needed in endemic areas to stop the transmission of *M. leprae*, the causative agent of leprosy. A potential strategy is door-to-door (or blanket) campaigns in high-transmission areas where clusters of leprosy patients occur. Thus preventive treatment can be given to the population at risk. This study aimed to identify such clusters of leprosy cases in two high-endemic districts in Uttar Pradesh State in India. We describe the specifics of the clusters and discuss the implications for a targeted blanket campaign.

Method: We included all patients registered from April 2014 to March 2018 at the Primary Health Care Centers in Fatehpur and Chandauli districts. The geo-coordinates of the patients' houses were recorded with the MapIt software and analysed in QGIS. We used Moran's I statistic to determine spatial autocorrelation and the Knox statistic for space-time clustering to identify clusters. We defined a cluster as least 2 cases living within 500 metres from each other. Based on the location of the clusters, the population data from the 2011 census, and the demographic information of the population, we identified the population to target for a blanket campaign.

Results: A total of 2440 leprosy patients registered in the two districts were mapped. Moran's I index presented positive and significant values, 0.21; $p < 0.01$ for Fatehpur and 0.28; $p < 0.01$ for Chandauli, indicating that cases are clustered. Cluster maps were developed showing 277 clusters in Fatehpur and 235 clusters in Chandauli with a total of 1586 cases in the clusters. This is 65% of all mapped cases. An estimated 160,000 people within cluster areas would be covered by the door-to-door blanket campaigns.

Conclusion: In the two districts in India, 65% of all the mapped cases are a part of a cluster, and over 150,000 people would need to be targeted for a blanket approach with chemoprophylaxis to support interruption of transmission of *M. leprae.*

O-019

UTILITY AND LIMITATIONS OF SERODIAGNOSTIC TESTS IN MONITORING THE RESPONSE TO TREATMENT OF LEPROSY PATIENTS

Presenter: Malcolm S. Duthie

Malcolm S. Duthie[1], Florenda O. Roferos[2], Junie F. Abellana[2], Tonet Taborada[2], Armi Maghanoy[2], and Marivic F. Balagon[2]

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Objective: The treatment of leprosy is long and can be complicated by reactional episodes. Although advances in leprosy surveillance have been made, simple measures that can be used to assess treatment efficacy and facilitate early recognition of treatment failure or complications are still lacking. We conducted a long term study to determine the capacities of serological diagnostic tests to inform case management during and after the MDT treatment of leprosy patients.

Method: Consenting new leprosy cases were recruited in order of attendance at the Leonard Wood Skin Clinic, Cebu, Philippines. Patients were subjected to routine leprosy diagnostic work-up such as clinical, bacteriologic and histopathologic examination. Patients were also evaluated based on diagnostic procedures detecting and quantifying serum antibodies against LID-NDO, the conjugation of antigens LID-1 and ND- PGL-I O (presented as the synthetic mimetic). Two antibody detection platforms were evaluated; a. OnSite Leprosy Ab Rapid Test (CTK Biotech, San Diego, CA, USA), a lateral flow-based rapid diagnostic test (RDT) and; b. Leprosy Detect™ fast ELISA (InBios International Ic., Seattle, WA, USA). Responses were measured at initial diagnosis, then again at regular intervals throughout and beyond the provision of standard multidrug therapy (MDT). Results were collated and analyzed by a third party with no involvement in data collection or patient evaluation.

Results: Serological evaluation in both platforms a gradual, quantifiable decline in both magnitude of response and per cent positive responders as the monitoring period progressed. A total of 58.5% (76 from 130) of the patients being monitored have presented with, or have developed, at least one reactional episode by the 36 month follow up timepoint following the initiation of MDT. Throughout the surveillance period 47 patients had type 1 reversal reactions, 28 displayed ENL, and 1 patient had both types of reaction. Patients that developed reactional episodes generally had a slightly higher antibody responses at their time of diagnosis than patients that did not develop reactions, but no clear alteration or profile of the response emerged in relation to the subsequent development of reactional episodes.

Conclusion: Our data indicate that both platforms are highly sensitive tools for the primary diagnosis of, in particular, MB leprosy. Neither platform, however, could reliably predict the emergence of reactional episodes.

O-025

DRUG RESISTANCE PATTERNS IN LEPROSY NEUROPATHY PATIENTS FROM INDIA

Presenter: Mallika Lavania

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Objective: Diagnosing pure neuritic leprosy (PNL) is an uphill task as most of these patients have nonspecific changes nerve biopsy. In such circumstances, additional molecular diagnostic tool like polymerase chain reaction (PCR) has proven to be useful in diagnosing leprosy. Polymerase chain reaction (PCR) has been used as an effective tool for determining the presence of M. leprae DNA in skin specimens of difficult-to-diagnose leprosy cases. PCR was identified to be a useful assay for the diagnosis of pure neuritic leprosy with 50%–70% sensitivity. Drug resistance to multidrug therapy (MDT) in leprosy is fast emerging. The present study was focused to evaluate the role of PCR in determining drug resistance from nerve biopsy specimens of patients with PNL.

Method: Eighty-three specimens of nerve tissue from histopathologically confirmed cases of leprosy during the duration of 2007-2018 were included in the study. DNA was extracted and PCR was performed for RLEP PCR for diagnosis. We analyzed the DNA sequences of identified regions of M. leprae folP1, rpoB and gyrA, which are responsible for resistance to dapsone, rifampicin and fluoroquinolones, respectively.

Results: Among these 83 samples, RLEP PCR was found to be positive in 77samples. The clinical diagnosis were as follows: leprous neuropathy in 70/77 (91%); mononeuritis multiplex with no specific etiology in 4 (6.3%); vasculitic neuropathy in 2 (3.2%) and distal symmetric sensory motor neuropathy in 1 (1.6%). Seventy were male and the mean age at evaluation was 38.2 ± 13.4 years (14 – 71), mean age at onset was 34.9 ± 12.6 years (10-63). Relapses were reported in 16 (21.0%) patients. Histopathologically 8 were confirmed as TT type, 50 BT, 4 BB,

8 BL, 1 indeterminate, one in reaction and rest of the samples were treated cases. Mutations were identified in 6/77 (8.0%) specimens at codon positions 436 for Rifampicin (L-Q) along with Ofloxacin (A91P) in one case, dapsone with Ofloxacin in one (P55L; A91V), only dapsone (P55S) in one, only Ofloxacin resistance in 3 cases (G89A, A91P, G89C).

Conclusion: Results from this study revealed emergence of resistance to anti-leprosy drugs in PNL cases. Presence of such resistant strains in new cases, may be indicating that resistant strains are actively circulating in India, suggesting an urgent need for establishment of a drug-resistant monitoring policy.

O-026

THE COMPARISON BETWEEN TWO ENDEMIC DISTRICTS INDIA AND INDONESIA IN THE IDENTIFICATION AND DISTRIBUTION OF CLUSTERS OF LEPROSY CASES

Presenter: Anna Theodora Taal

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Objective: Interrupting the transmission of M. leprae, the causative agent of leprosy, is challenging. In India and Indonesia, transmission still occurs as these countries continue reporting high numbers of cases annually. Geographic Information Systems (GIS) can be used to identify spatial distribution of leprosy cases in endemic areas. Identifying spatial patterns are useful for designing tailor-made and targeted interventions to stop the transmission. This study aimed to identify clusters and compare the clustering of leprosy cases in India with Indonesia.

Method: We included all leprosy patients residing in Chandauli and Fatehpur districts in India and in Pasuruan and Pamekasan districts in Indonesia and registered from 2014 to 2018 at the Primary Health Care Centres. Geo-coordinates of the patients' houses were recorded with the MapIt software and analysed in QGIS. We used Moran's I and Knox statistic for space-time to identify clusters. We used two cluster definitions to compare the clustering in India and Indonesia. We defined a cluster as 1) least 2 cases living within 500 metres from each other and 2) least 2 cases living within 300 metres from each other.

Results: A total of 2199 leprosy patients in Pasuruan and Pamekasan districts and a total of 2440 leprosy patients in Chandauli and Fatehpur districts were mapped. Positive values of Moran's I index were found in four districts, indicating the existence of clusters. In Indonesia, we identified clusters mainly in the Northern parts of the districts. In India, we identified clusters through the whole districts. Using the 500 metres cluster definition, the cluster maps show that 65% of all the mapped cases in India and 84% of all the mapped cases in Indonesia can be identified in a cluster. Using the 300 metres cluster definition, the cluster maps show that 56% of all the mapped cases in India and 70% of all the mapped cases in Indonesia can be identified in a cluster.

Conclusion: We identified a higher proportion of cases in clusters in the Indonesian districts using either the definition of 300 metres or 500 metres compared with the Indian districts. Clustering was more concentrated in Indonesian districts compared to India.

O-032

FIELD APPLICABILITY OF A RAPID DIAGNOSTIC TEST (RDT) USING FRESH CENTRIFUGED vs ARCHIVED NON-CENTRIFUGED SERUM SAMPLES OF PEOPLE AFFECTED BY LEPROSY (PALs) and ENDEMIC CONTROLS IN CEBU, PHILIPPINES

Presenter: Armi Maghanoy

A.A. Maghanoy[1], L.M.Hernandez[2], E.V. Villalon III [2] J.F. Abellana[1], F.O. Roferos[1], M.S. Duthie[3], M.F. Balagon[1]

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Objective: This study was aimed to determine field applicability of a Rapid Diagnostic Test (RDT) using fresh, centrifuged vs archived, non-centrifuged blood samples in terms of its diagnostic and treatment-response monitoring value in leprosy. (This was designed to test applicability of the tool in a field setting wherein a centrifuge unit may not be available and/or timely processing of fresh sample may not be feasible).

Method: This study was conducted in 2015 – 2016 at the Leonard Wood Memorial Center for Leprosy Research in Cebu, Philippines using RDT, a lateral flow-based immunologic test that detects the presence of antibodies against LID-PGL1, a novel conjugation of M. leprae antigens.

Patients and endemic controls were enrolled to test field applicability of RDT using both fresh, centrifuged vs non-centrifuged serum samples archived for a period of 4 weeks. In each subject, both types of blood samples were tested and compared in terms of RDT's sensitivity, specificity and treatment-response monitoring values. To avoid bias, blinding was observed between independent assessors.

Results: A total of 500 subjects were recruited - 250 were patients and 250 were endemic controls. Among patients, 90% were MBs and 10% were PBs. Average bacterial index (ABI) ranges 0-5.3+. Using both types of blood samples, these were the findings:

Sensitivity and Specificity – Among patients, overall sensitivity was 76% (80% for MB and 44% for PB). Most of the non-responders were PBs and low BI MBs. However, a significant subset of high BI (>4+) cases had a sensitivity rate of 92%. Notably, proportional correlation between sensitivity and number of lesions was also observed - the more numerous the lesions, the higher was the rate of serologic sensitivity. Among endemic controls, only 2% were seropositive.

Treatment-Response Monitoring Value – Among a subset of 100 patients, 18% attained seronegative conversion after one-year MDT.

Concordance Between Blood Sample Types - Quantitatively, results using two types of blood samples were comparable. However, qualitatively, the findings were not comparable. That is, the concordance on rate of sensitivity between sample types was 100%. However, intensity of RDT lines was observed to have diminished in non-centrifuged sera archived for a period of 4 weeks.

Conclusion: RDT is a relatively sensitive, specific and field-applicable serologic tool for leprosy. Although a centrifuged fresh blood sample maybe ideal, the use of stored non-centrifuged sample is also a good alternative in a field setting wherein a centrifuge unit may not be available and/ or processing of fresh samples may not be feasible.

O-033

BURROW COUNT WITH CAMERA TRAPPING: A SIMPLE METHOD TO ESTIMATE THE POPULATION DENSITY OF ARMADILLOS IN AMAZONIA

Presenter: Roxane Felicie Schaub

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Objective: An ongoing research project studies the eco-epidemiology of leprosy in humans, armadillos and the environment in French Guiana (FG). In North America, leprosy in nine-banded armadillos (*Dasypus novemcinctus*), a reservoir for *Mycobacterium leprae* in the Americas, is linked to armadillo density. Data on armadillo densities in South and Central America are scarce. For those cryptic and nocturnal mammals, classical methods like capture-marking recapture or linear transects that rely on direct animal count, are not easy to carry out especially in tropical rainforest and may lack of relevance. Here, we assessed the reliability of armadillo densities estimates based on burrow density counts and occupancy rate.

Method: Burrow census were done from September to December 2018 in 2 protected areas in FG: the Réserve Naturelle Régionale Trésor (RNRT) and the Bagne des Annamites (BDA). In each location, we implemented 24 regularly dispatched linear transects of 200x10 m on a 50-ha area of Amazonian highland forest. Each transect was thoroughly inspected for burrows. Each burrow was measured and evaluated on the recent character of its digging or occupancy. Recent burrows, and a random selection of older burrows, were equipped with camera traps for a minimum of 6 nights to check their occupancy.

Results: We surveyed a total of 4,8ha (24 transects) in RNRT and 3,2ha (16 transects) in BDA during 14 days. We found a total of 62 burrows (including 43.5% recent, n=27) in RNRT and 48 (including 39.6% recent, n= 19) in BDA, corresponding to a burrow density of 12,9 and 15 burrows/ha respectively. In RNRT 32 traps (on 23 recent and 9 old burrows) allowed a survey effort of 213 trap-nights. Thirteen trapped burrows (3 old and 10 recent) sheltered an armadillo (Dasypodidae) for at least one night, with a total of 18 nights recording an armadillo. The occupancy rate was 8.5% [95%CI:5.4-13.0], leading to a calculated armadillo density of 1,1 animal/ha. In BDA 11 traps (all recent burrows) produced 112 trap-nights. Seven trapped burrows sheltered an armadillo, with a total of 9 nights recording an armadillo. The occupancy rate was 8.0% [95%CI: 4.3-14.6], leading to an armadillo density of 1,2 animal/ha.

Conclusion: The burrow density found in FG is similar to the one found in central Amazon. Combining camera trapping to the relatively simple method of burrow census allows estimating Dasypodidae density. Density assessment of this zoonotic reservoir of *M. leprae* could contribute to evaluate the global leprosy risk.

O-047

DEVELOPMENT OF LEPREACT, A DEFINED SKIN TEST FOR LEPROSY/ *M. LEPRAE* INFECTION

Presenter: Malcolm S. Duthie

Malcolm S. Duthie[1,2], and Steven G. Reed[1]

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Objective: Epidemiological screening tools to enable the detection of all *M. leprae* infected individuals in endemic populations are still required. Those detecting the earliest immunological responses to *M. leprae* appear the most

amenable to sampling and mass use to facilitate targeted interventions. Such tools must be not only sensitive and specific but, to encourage inclusion within leprosy surveillance programs, they should be simple to administer, cost-effective, and easy to interpret. Paucibacillary patients typically have weak antibody responses that preclude their detection by serological methods. demonstrate a specific cell-mediated immunity against *M. leprae* that provides hope for alternate immunological diagnosis. With a goal of developing a defined and reproducible product for *in vivo* inoculation, we evaluated the delivery of either recombinant LID-1 or LEP-F1 antigen in several inert (i.e., non-immune stimulatory) formulations in preclinical models mimicking *M. leprae* exposure.

Method: Female Hartley guinea pigs were predisposed to antigen-specific DTH responses by immunization with recombinant proteins or crude *M. leprae* fractions with a Th1-inducing adjuvant. To determine specificity of testing, additional animals were immunized with antigen fractions from potentially confounding mycobacteria (e.g., *M. bovis, M. tuberculosis*). For the initial delayed type-hypersensitivity (DTH) skin tests, antigens LID-1 and LEP-F1 were injected intradermally with a standard tuberculin needle into clearly marked sections on the shaved backs at 1, 5 or 10 µg/100 µl. Animals were injected with PBS (100 µl) as a negative control and homologous antigen (10 µg/100 µl) as a positive control. DTH responses were measured at both 24 and 48 h after skin test injection by engineering grade Vernier calipers to determine the area of induration. Selected antigen doses and formulations were then evaluated in animals sensitized to crude mycobacterial fractions.

Results: Appropriate formulation of antigen permitted a reduction in the quantity required to elicit specific DTH responses. Upon skin testing of animals immunized with crude mycobacterial fractions, *M. leprae*-specific responses could be measured at sites injected with formulated LID-1. Responses were not observed in guinea pgs sensitized with *M. tuberculosis* or *M. bovis* antigens.

Conclusion: Our data provide strong proof-of-concept for an antigen-specific skin test to detect low level *M. leprae* infections. Further evaluations in controlled infectious settings appear merited.

O-048

ARTIFICAL INTELLIGENCE ENABLED DIGITAL HEALTH TOOL TO ENHANCE THE EARLY DETECTION OF LEPROSY: DEVELOPMENT OF A PROOF ON CONCEPT ALGORTHM

Presenter: Sander Timmer

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Over 200,000 people are diagnosed with Leprosy every year. Brazil, India, and Indonesia account for around 80% of new cases detected every year. When left untreated, patients are left with lifelong disabilities and are often stigmatized in their societies. Microsoft, Fiocruz and the Novartis Foundation have partnered together to develop a proof of concept Artificial Intelligence enabled Digital Health Tool with the aim of enhancing the early detection of Leprosy.

High-resolution images with associated metadata were captured under a protocol from patients with clinically confirmed diagnosis at the Souza Araújo outpatient unit, Fiocruz, Brazil. Trained dermatologist created image masks to complement the images and create a high-quality curated training data set that can be used for training deep learning models (Convolutional Neural Network (CNN)) that will be shared open-source with the larger community. We will demonstrate various training strategies, including transfer learning, and discuss a framework for measuring effectiveness of models in clinical setting. The focus of our models is to assist medical professionals in the field triage potential patients faster and gathering real world evidence (RWE) that can help shape future interventions.

Using the latest cloud, bot, and AI technology we will demonstrate how new types of digital diagnosis assistants could look like. Our commitment to make this work publicly accessible aims to empower all Leprosy researchers and accelerate research excellence in this field and better outcomes. This partnership demonstrates the societal impact of digital health tools and systems of intelligence, and the possible evolution in standard of care globally. In the case of Leprosy, it will enable the early detection of Leprosy before significant nerve damage occurs and will allow early treatment before the disease before it is further transmitted.

O-049

PRIORITIZATION OF RESEARCH REQUIRED TO REACH ZERO LEPROSY

Presenter: Fareed Mirza

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Abstract: Scientific breakthroughs are needed to provide new and innovative ways to fully interrupt transmission of *Mycobacterium leprae* the disease and reach Zero Leprosy. Closely aligned with the WHO Global Leprosy Strategy, the Leadership Team of the Global Partnership for Zero Leprosy called for a Leprosy Research Agenda Working Group to develop a coordinated research agenda to prioritize current and emerging innovations. In total, 144 international Leprosy and multi-disciplinary experts were convened, led by a working group chair, a senior advisor and a panel of sub-group facilitators working on diagnostics, vaccines, transmission interruption and post-exposure prophylaxis, operational research, epidemiologic modeling and investment case, disability, stigma and digital health. Using a mixed method approach, open consultations were held throughout 2018 with face-to-face and virtual group deliberations. Within groups, research gaps were identified based on emerging and updated evidence published in peer-reviewed publications, published reports and guidance documents. Here, we present a prioritized Leprosy research agenda to accelerate high quality research and to generate robust evidence in the areas of advancing diagnostics, investing in new therapies and interventions, including vaccines post-exposure prophylaxis. Digital innovations such as geolocation, eLearning, and diagnostic approaches are also recommended. Comprehensive research on disability, stigma and epidemiologic modeling and economic analysis is also needed. This work represents the interests and expert opinion of the Leprosy research community with the goal to align key research priorities, facilitate communication and stimulate funding for scientific research that is essential to achieving Zero Leprosy.

O-050

ULTRA-SONOGRAPHY OF NERVES AS A DIAGNOSTIC TOOL IN LEPROSY - - OBSERVATIONS AT OUR REFERRAL CENTRE

Presenter: Vivek Pai

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Objective: Though leprosy is claimed to be eliminated new cases continue to occur and the annual new case detection rate in India has remained static post elimination. Besides the cardinal features augmentary and supportive tools are necessary for diagnosis as yet there is no clear serological test supportive of diagnosis. USG

of peripheral nerves has been reported to be an encouraging non invasive investigation. We share our observations using high frequency USG of peripheral nerves in difficult to diagnose cases with no visible skin lesion, confirmed cases with suspected abscess and to measure the effect of MDT treatment on affected nerves.

Method: Patients attending the Referral Centre of Bombay Leprosy Project with necessary indications like difficult to diagnose, confirmation of clinically suspected abscess were referred for USG of peripheral trunk nerves. During the year 2018, a total of 25 such patients were referred for investigation. Out of 25 patients, 19 were males and 6 females with age group ranging from 17 to 65 years. Patients referred to our Referral centre were mostly by the practising dermatologist and teaching hospitals. 10 patients presented with neurological manifestations such as painless blisters with ulcers, while 15 had obvious signs of leprosy. All patients were investigated thoroughly including skin smear examination. Out of 25 patients, 5 were smear positive and 20 were smear negative.

Results: In 10 patients with no visible skin lesions, USG nerves showed 2 to 3 times increase in the cross sectional area and diameter of the affected nerves, nerve fascicles enlargement along with anechoic in echotexture as compared to the contralateral unaffected nerves. 5 patients with confirmed diagnosis and clinically suspected ulnar nerve abscess were confirmed to have nerve abscess with USG. In 11 patients, USG was repeated after 6 months of MDT treatment or course of steroids to measure the effect of the treatment. In all 11 patients, there was significant reduction in the diameter of the affected nerves indicating the effect of the treatment.

Conclusion: We observed from this investigation that Ultra-sonography of the peripheral trunk nerves is a very effective investigation for diagnosis and supportive in clinically strongly suspicious of leprosy. USG nerves as a tool also showed good clinical correlation thus supportive of confirmation of leprosy specially in those patients found to have clinically normal nerves.

O-085

FIRST EVIDENCE OF MYCOBACTERIUM LEPRAE INFECTION IN ARMADILLOS IN FRENCH GUIANA

Presenter: Roxane Félicie Schaub

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Objective: Armadillos are a reservoir for Mycobacterium leprae in the Americas and their contacts with humans may be important, since they are widely consumed and can endure slight habitat disturbance. Data on armadillo infection with M. leprae in South and Central America are nevertheless scarce. M. leprae DNA can be detected by PCR in lymph nodes, liver, spleen and skin of experimentally or naturally infected nine-banded armadillos (Dasypus novemcinctus). When heavily infected, phenolic glycolipid-1 (PGL-1) antibodies develop against M. Leprae PGL-1 specific antigen and can be detected in armadillo serum. Here we assess the presence of naturally acquired Mycobacterium leprae infection in 2 species of wild armadillos from the Dasypus genus in French Guiana: Dasypus Novemcinctus and Dasypus kappleri.

Method: During the filling of the Petit-Saut dam in French Guiana, from February 1994 to April 1995, scientific teams captured and translocated all wild vertebrates trapped on the 284 islands created by rising waters on the 35.000 ha surface. Blood samples were collected from all specimens of a selection of species. ELISA aimed at detecting anti-PGL-1 IgM antibodies were performed at the National Hansen's Disease Program Laboratory branch

on 120 Dasypus novemcinctus sera samples and 42 Dasypus kappleri sera samples from this collection. Meanwhile, we collect roadkill and hunted armadillo specimens on the whole territory of French Guiana since 2014 and we sample skin, lymph nodes, liver and spleen to detect the RLEP gene region of M. leprae by a Taqman qPCR assay.

Results: In the serum collection from the Petit-Saut dam, 6.7% (8/120) Dasypus novemcinctus and 0% (0/42) Dasypus kappleri were positive for anti-PGL-1 antibodies. Further armadillo tissue collection and qPCR analyses are ongoing.

Conclusion: This is the first study assessing Mycobacterium leprae infection in naturally infected wild Dasypus novemcinctus in the Guiana shield region, and – to our knowledge - the first evaluation of Mycobacterium leprae infection in naturally infected wild Dasypus kappleri, two species widely hunted in the region. Thereafter, strain typing and comparisons of Mycobacterium leprae strains found in animal, human and the environment in French Guiana will give insight into armadillo-to-human leprosy transmission.

O-086

ULTRASONOGRAPHY VERSUS CLINICAL EXAMINATION IN DETECTING LEPROSY NEUROPATHY

Presenter: Sendhil Kumaran

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Objective: To assess the role of ultrasound in identifying nerve involvement in different spectrum of leprosy.

Method: Thirty newly diagnosed, untreated cases of leprosy were recruited and classified into paucibacillary (PB) and multibacillary (MB) according to histopathology findings of skin lesion as defined by Ridley Jopling classification. USG of ulnar, median, lateral popliteal and posterior tibial nerves were done to identify the changes in different disease spectrum. The clinical examination, histopathology and ultrasonography was performed by clinicians having more than18 years of experience in management of leprosy patients.

Results: Thirty patients (16 multibacillary, MB and 14 paucibacillary, PB)with a mean age of 28.83 ± 18.57 years and a Male: Female ratio of 2:1were studied. The nerves were significantly enlarged in the MB group as compared to PB group for Ulnar Nerve, Median Nerve, Posterior Tibial Nerve and Lateral Popliteal Nerve, (p= 0.003, 0.001, 0.013 and 0.332 respectively). Forty-one nerves were found enlarged on USG (Ulnar Nerve 3, Median Nerve 22, Lateral Popliteal Nerve 5 and Posterior Tibial Nerve 11) that were not thickened on clinical examination.

Conclusion: Leprosy is a chronic infectious disease caused by *Mycobacterium Leprae* (*M. leprae*), primarily effecting nerve and skin. Ultrasonography (USG) in diagnosis of nerve involvement in leprosy is still in preliminary stages, and our results demonstrate that it can be a useful tool for identifying nerve changes earlier thus preventing misclassification of leprosy patients and appropriate MDT initiated.

O-087

RAPID AND SIMPLIFIED METHOD FOR SIMULTANEOUS DETECTION AND GENOTYPING OF M. LEPRAE STRAINS PRESENT IN INDIA

Presenter: Purna Dwivedi

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Objective: Over 126,000 new cases of leprosy are recorded in India annually. Leprosy transmission remains still incompletely understood. Molecular epidemiology for deciphering the transmission dynamics of *Mycobacterium leprae* is essentially dependent on PCR-sequencing, often unfeasible in peripheral labs. At least 16 PCR-amplifications steps are required for the Single Nucleotide Polymorphisms (SNP)-based genotyping since *M. leprae* is classified into 16 SNP-genotypes (1A to 4P). Performing so many PCRs often remains challenging. In India, SNP-type 1D is reported to be predominant (present in >75% of the cases). Detection of such unique SNPs (or their unique combinations) in 1D genotype could reveal their phylogeographic association to a defined endemic area and can provide an insight into distribution and genetic diversity of *M. leprae* strains. In the present study, SNPs unique to *M. leprae* 1D genotype were identified by genome-wide comparison and these loci were targeted by simple PCR based assays for simpler and faster detection of *M. leprae* and its genotype thus minimizing the cost and amount of DNA.

Method: A genome-wide comparison of the *M. leprae* strains revealed the presence of three SNPs specifically present in the *M. leprae* genotype 1D, following which primers specific to these SNP-loci were designed and qPCR based methods were implemented to study and compare the melt temperature of the reference strain with the sample to detect the presence of the target SNP. The amplicons were sequenced and were further investigated for the presence of restriction enzyme sites.

Results: The primers designed in this study enabled us to identify the predominant *M. leprae* genotype in India (SNP-type 1D) by using just one SNP, whereas the previous SNP-Typing scheme required the investigation of 7 SNP-loci. Additionally, we observed that the amplicon melting temperature (Tm) of the strains belonging to the 1D genotypes decreased as compared to the strains not belonging to the 1D genotype. The amplicon sequence analysis for restriction enzyme also revealed the presence of the restriction sites for several enzymes.

Conclusion: Hence, the procedure can be used as a simplified test for rapid detection and genotyping of *M. leprae*, particularly in the areas where 1D genotype is commonly found, e.g. in India and other South-Asian countries (Pakistan, Nepal etc). The amplicon sequencing results showed concordance to the qPCR test. These findings can further lead to development of a qPCR/PCR-RFLP-based field-friendly test to simultaneously detect and genotype *M. leprae* without the need of sequencing.

O-088

FUNNEL APPROACH FOR DISCOVERY OF HOST PROTEOMIC BIOMARKERS FOR LEPROSY AND *M. LEPRAE* INFECTION IN LOW COMPLEXITY ASSAYS

Presenter: Anouk van Hooij

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Objective: Transmission of *Mycobacterium leprae*, the pathogen causing leprosy, is still not under control. To reduce this transmission it is of vital importance to early diagnose and treat leprosy patients but also identify *M.*

leprae infected individuals lacking clinical symptoms. Diagnostic tests specific for *M. leprae* infection or leprosy disease would facilitate timely (prophylactic) treatment. Use of biomarker profiles can strongly enhance specificity of such tests. In this study we therefore identified various new host proteomic biomarkers and subsequently assessed their applicability in low-complexity, point-of-care (POC) tests using a funnel approach.

Method: First, levels of 60 host proteins were analyzed in supernatants of *M.leprae* stimulated whole blood by multiplex cytokine arrays in a discovery cohort of 81 leprosy patients, 54 household contacts (HC) and 51 endemic controls (EC) from Bangladesh. Next, promising biomarkers derived from the multiplex analysis and 11 additional proteins (not available in the multiplex) were assessed by ELISA in a validation cohort (55 patients, 27 EC). Subsequently, the most potential markers derived from these analyses were assessed in plasma of 36 patients and 20 EC using low-complexity lateral flow assays.

Results: Seven of the 71 proteins tested were identified in unstimulated WBA samples as biomarkers for leprosy disease. Five of these maintained their diagnostic potential in plasma, indicating applicability for a rapid POC format. Application of the 5-marker profile to the lateral flow format detected leprosy patients with a sensitivity of 97% and a specificity of 100%.

Conclusion: Extensive proteomic profiling of individuals in a leprosy endemic area in Bangladesh identified a 5-biomarker profile that sensitively detected leprosy patients irrespective of classification. The incorporation of this profile in low-complexity lateral flow assays allows identification of *M. leprae* infection or early disease which can be used in large scale contact screening field-trials to help guide (prophylactic) treatment.

O-099

MYCOBACTERIUM LEPRAE TRANSMISSION PATTERNS AND LEPROSY-SPECIFIC HOST TRANSCRIPTOMIC BIOMARKERS IN BANGLADESH

Presenter: Maria Tió-Coma

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Objectives: Despite decades of availability of adequate treatment for leprosy, *Mycobacterium leprae* transmission is unabated as shown by the stable number of new cases over the last decade. To investigate *M. leprae* transmission and determine the role of asymptomatic carriers therein, we studied the presence of *M. leprae* in leprosy patients' household contacts (HC) as well as soil samples in a leprosy endemic area in Bangladesh. Additionally, to identify host biomarkers associated with a higher risk of developing leprosy, RNA expression profiles between healthy HC and leprosy patients were compared.

Method: *M. leprae* DNA was isolated from slit skin smears (SSS) and nasal swabs (NS) of index cases and their associated HC and from soil collected in the houses of leprosy patients (n=25). Presence of *M. leprae* was determined by RLEP PCR and the genotype was determined by Sanger sequencing or whole genome sequencing (WGS).

Host RNA was obtained from whole blood and was analyzed by qPCR or RNAseq.

Results: *M. leprae* was identified in SSS and NS of healthy HC as well as leprosy patients. Results show that the presence of *M. leprae* in HC is higher in NS (ca. 29% positivity) than SSS (ca. 19% positivity) whilst in patients the

percentage of RLEP PCR positivity is higher in SSS. *M. leprae* was also present in 4 soil samples collected in the houses of leprosy patients. Using WGS a new subtype of *M. leprae* was identified in Bangladesh which is related to subtype 1A. Genotype 1D was also identified in several samples including soil.

Additionally, host RNA expression profiles associated with a higher risk of developing leprosy were characterized in whole blood

Conclusion: Our study on both pathogen and host-derived biomarkers for leprosy situated in a highly endemic region in Bangladesh show that: HC can be asymptomatic carriers of *M. leprae* and may contribute to transmission even if they never develop leprosy. Presence of *M. leprae* does not imply disease development and thus other biomarkers such as host genetic signatures are crucial to identify individuals at higher risk of developing leprosy.

O-111

HIGH RESOLUTION IMAGE AND METADATA CAPTURE PROTOCOL FOR THE DEVELOPMENT OF A LEPROSY IMAGE ATLAS

Presenter: Milton Moraes

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Abstract: Clinical identification of Leprosy lesions can be incorrectly diagnosed as other dermatological diseases, such as Pityriasis alba, Granuloma annulare and Inflammatory Sarcoidosis. Definitive diagnosis of Leprosy requires additional clinical information required based on the loss of sensation, an enlarged peripheral nerve or a histological slit-skin smear as recommended by the 2018 WHO guidelines for the diagnosis, treatment and prevention of Leprosy. There are no bacteriological, serological tests available to confirm the diagnosis of Paucibacillary Leprosy, although molecular genetic approaches and machine learning algorithms constructed and trained from high quality images taken from confirmed Leprosy lesions may help advance diagnosis in the near future. Currently, there are no publically available sources to access standardized and high-resolution images from clinically confirmed Leprosy cases with anonymized and associated metadata attachment. We present a research study protocol to capture high-resolution images in the Souza Araújo outpatient clinic, Fiocruz, RJ, Brazil under routine conditions to create an early version of an image atlas.

Approximately 1000 individual images of confirmed lesions, from R&J confirmed leprosy patients along with other dermatological diseases were captured with three focal distances per lesion (Pan, zoom, and edge) under a dermatologist supervision following a standard operating procedure. Metadata capture consisting of epidemiological and clinical data was paired with detailed dermatological characteristics (including sensitivity, location and temperature of the lesion) and subsequently associated with the patient image. An image atlas was constructed as a proof of concept that will be made as a publically available resource.

The use of an image atlas containing high-resolution Leprosy images with associated patient data will aid the development of clinical training content. Furthermore, the image atlas will also allow open access to quality image and text data to train machine-learning algorithms.

O-117

INFECTION AND TRANSMISSION POTENTIAL FOR MYCOBACTERIUM LEPRAE IN TICKS

Presenter: Kevin Macaluso

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Objectives: Zoonotic transmission of leprosy from wild armadillos has been well documented. The majority of patients presenting with zoonotic strains of *Mycobacterium leprae* note extensive outdoor activity; but only rarely report any history of direct contact with wild armadillos. Whether *M. leprae* is transmitted to new vertebrate hosts through the environment independently or with the aid of other organisms, *e.g.* arthropod vectors, is a fundamental question in leprosy transmission. The objectives of this study were to test if viable *M. leprae* can be maintained in tick-derived cells and to assess the potential for ticks to transmit *M. leprae*.

Method: Freshly isolated *M. leprae* was used to infect a tick -derived cell line and replication and bacterial viability were assessed at individual time points for up to 49 days. To evaluate transmission, nymphal *Amblyomma* species of ticks were injected with isolated *M. leprae* and infection in subsequent adult ticks was assessed by qPCR.

Results: Tick-derived cells were able to maintain viable *M. leprae* over the course of infection. Likewise, ticks infected as nymphs harbored *M. leprae* through vertical transmission events (nymph to adult and adult to progeny); and, horizontal transmission of *M. leprae* to a vertebrate host was observed. While *M. leprae* DNA was detected in multiple tick life cycle stages, the viability of *M. leprae* in the tick infection cycle, as assessed by qRT-PCR, could not be confirmed.

Conclusion: Ticks serve as biological vectors for a number of eukaryotic parasites, viruses, and bacteria. The ixodid (hard) tick life cycle involves three blood-feeding stages (larva, nymph, and adult), thus providing multiple opportunities to acquire and transmit pathogens. The results of this study suggest that tick cells can harbor viable *M. leprae* for an extended period of time and that ticks themselves might serve as a vector for the transmission of *M. leprae*.

O-145

EVALUATION OF AURAMINE O STAINING AND CONVENTIONAL PCR FOR LEPROSY DIAGNOSIS: A COMPARATIVE CROSS-SECTIONAL STUDY FROM ETHIOPIA

Presenter: Selfu Girma

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Objective: Leprosy can easily be confused with other skin pathologies indicating the need for a differential diagnosis especially by less experienced physicians. For this reason, along with clinical examination, identification of the bacteria and the histopathological classification in skin samples is necessary to confirm leprosy diagnosis. Even though ZN and FF are available at lower level health institutions of resource-limited countries, their performance in detecting M. leprae bacilli is low, particularly in PB patients. Hence, this study was designed to determine the diagnostic utility of Auramine O (AO) staining and conventional polymerase chain reaction (PCR) in routine diagnosis in comparison with the standard protocol.

Method: In this comparative study, the performance of the fluorescent AO staining and PCR was assessed with different skin samples using a combination of ZN, FF and H&E staining as the gold standard. AO, ZN, FF, H&E and PCR tests were performed on slit skin smears (SSS) and/or punch biopsies collected from 141 clinically confirmed leprosy cases and 28 non-leprosy skin samples. DNA was extracted from punch biopsies using two different methods: with or without mechanical lysis.

Results: Sensitivities were 87.6%, 59.3% and 77% for H&E, ZN and FF, respectively, whereas it reached 65.5% and 77.9% for AO in SSS and tissue sections and 91.1% for PCR in tissue samples. Moreover, samples with low bacillary index, sensitivity of AO staining (61.8%) was similar to FF (60%, $p>0.05$) and lower than PCR (86.6%, $p<0.05$). Sensitivity of PCR also increased (96.8%, $p<0.05$) when mechanical lysis was used during DNA extraction compared to enzymatic treatment alone (84.6%).

Conclusion: Our results showed that for diagnostic purposes analysis of skin section is more sensitive than SSS, especially for samples with low bacillary load. AO staining on SSS and tissue sections was not significantly better than other routine diagnostic tests but considerably more user friendly. The sensitivity of PCR was higher than current standard methods and increased when combined with more efficient DNA extraction using mechanical and chemical lysis. Therefore, we recommend AO staining for the diagnosis of leprosy in lower health facilities such as health centres and district hospitals and PCR diagnosis at referral level and research centres.

O-158

ISOLATION AND CHARACTERIZATION OF *MYCOBACTERIUM LEPROMATOSIS* AND DEVELOPMENT OF QUANTITATIVE PCR ASSAYS TO DISTINGUISH *MYCOBACTERIUM LEPRAE* AND *M. LEPROMATOSIS* IN CLINICAL SPECIMENS

Presenter: Linda Adams

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Objectives: *Mycobacterium lepromatosis* was recently identified as another causative agent of leprosy. In this study, we isolated and cultivated *M. lepromatosis* in mouse footpads (MFP). A specific quantitative PCR (qPCR) assay for detection and enumeration of *M. lepromatosis* was developed and validated and used for physiological, immunological, and epidemiological comparisons with *M. leprae*.

Method: *M. lepromatosis*, isolated from a DLL patient, was inoculated and maintained by continuous passage in athymic nude MFP. Genomic analysis identified a unique repetitive element on which a specific qPCR assay was developed and validated. The limit of detection was 3.0 bacilli ($Ct \leq 34.55 \pm 0.57$; 98% CI). For growth kinetics, BALB/c MFP were inoculated with 10^2, 10^3, or 10^4 bacilli and harvested every 2 months up to 6 months post - infection. For cross protection studies, BALB/c MFP were challenged with 6×10^3 *M. leprae* or *M. lepromatosis* one month after intradermal vaccination with heat-killed *M. lepromatosis* or *M. leprae*. MFP were harvested 6 months after challenge. For drug susceptibility studies, *M. lepromatosis* was incubated in vitro with anti-leprosy drugs for 7 or 14 days. For diagnostic and epidemiological studies, DNA was extracted from 15 archived histological sections (LL, DLL or Lucio's patients), human specimens from the United States (n=206), the Philippines (n=180), and Mexico (n=47), and 98 wild armadillos.

Results: *M. lepromatosis* and *M. leprae* demonstrated similar growth rates in MFP and both induced cross-protection. Both species exhibited similar palmitic acid and glucose oxidation rates in axenic media. *M. lepromatosis* had enhanced susceptibility to ofloxacin and decreased susceptibility to minocycline. Among the archived histological specimens, only 10 showed detectable DNA perhaps due to limited material/long storage. *M. lepromatosis* in 1 LL, 1 DLL, and 3 Lucio's. *M. leprae* in 2 LL and 2 Lucio's. Only 1.46% of United States patients and none from the Philippines were *M. lepromatosis* positive. In contrast, 32% of Mexican patients were positive for *M. lepromatosis,* 40% were positive for *M. leprae,* and 4.25% contained both organisms. All armadillos, a known zoonosis for leprosy, were *M. lepromatosis* negative.

Conclusion: This is the first report on the cultivation of *M. lepromatosis* in athymic nude MFP. We developed and validated a qPCR assay to identify and enumerate *M. lepromatosis* for clinical and research studies. We found no major differences between *M. lepromatosis* and *M. leprae* in terms of growth kinetics or drug susceptibility. Both species were found in LL and Lucio's patients.

O-161

BACILLOSCOPY TESTING FOR LEPROSY IN THE REGION OF THE AMERICAS

Presenter: Isabelle Roger

Patricia Sammarco Rosa [(1)], Suzana Madeira Diório [(1)], Nestor Vera Nieto [(2)], Isabel-le Roger [(3)]
Instituto Lauro de Souza Lima [(1)], Consultant for PAHO regional Leprosy program [(2)], PAHO regional leprosy program [(3)]

Objectives: The diagnosis of leprosy is essentially clinical with skin slit smear used as a complementary test. However, in the region of the Americas bacilloscopy has remained an important component of leprosy control. The result and interpretation of a skin smear examination is required by most national leprosy programs, for confirmation of diagnosis and decision to end treatment. In this abstract we describe the laboratory network and technical and organizational challenges for quality bacilloscopy for the region of the Americas.

Methods: In autumn 2018 a questionnaire was sent to all Latin America and Caribbean countries and territories that reported leprosy cases between 2012-2017. The national leprosy program was requested to describe the laboratory network, use of bacilloscopy, alternative laboratory exams and quality management system.

Results: We received answers from 23 of the 24 countries to which the survey was sent (96%). The results of the analysis for Brazil are presented separately. 20 countries reported a total of 2388 laboratories with capacity to perform bacilloscopy for leprosy: 18 national, 145 regional, 2225 local. Colombia (79%), El Salvador (8%) and Cuba (5%) accounted for 92% of the total number of laboratories whereas Cost Rica, Guyana, Honduras, Nicaragua, Trinidad and Tobago, and Uruguay each had one laboratory. The estimated number of samples processed yearly at national laboratory level varied greatly (maximum 2000; minimum 15). One country reported results on smear positivity, six countries on bacillary index and thirteen on bacillary and morphological indices. Only nine (45%) countries performed internal quality control through Ziehl-Neelsen stain check and four (20%) countries established an external system based on re-examination of slides sampled from routine services for quality of smearing and staining and inter-observer comparison of quantitative results. Brazil reported 6 national, 27 regional and over 3000 local laboratories with capacity to perform bacilloscopy for leprosy. Both bacillary and morphological indexes are calculated and internal and external quality control performed.

Conclusion: This is the first survey conducted to assess the leprosy laboratory network in the region in which there is a relatively wide use of laboratory testing to support diagnosis and to monitor treatment. The survey revealed the absence of a routine quality control system in the majority of the countries of the region. In line with good laboratory practices, countries are called to implement measures to verify that laboratories are proficient in their testing processes and can obtain accurate results.

O-173

INTENSIFIED EXTENDED CONTACT SURVEY (IECS) OF BACILLARY INDEX (BI) POSITIVE LEPROSY PATIENTS AN EXPERIENCE FROM DAMIEN FOUNDATION BANGLADESH

Presenter: Md. Zobair Hossain

M. Z. Hossain[1] K. W. Sumon[2] M. A. Ali[3] S. G. Ahmed[4]
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Objective: To assess the effectiveness between Intensified Extended Contact Survey (IECS) and Extended Contact Survey (ECS) in terms of diagnosing Leprosy cases.

Methods:

1. Extended Contact Survey (ECS)/ Routine:

   Routine contact-survey consists of inviting index contacts once a year to visit the health facility. This is done for **one, two and seven** years of PB, MB with Bacillary Index (BI) negative and MB with BI positive cases respectively. It depends on voluntary seeking care, identification and referral system and passive contact checking through inviting them to the health centers or active contact checking.

2. Intensified Extended Contact Survey (IECS):

   IECS group of patients are those index cases that were diagnosed more than 7 years before and BI positive. Leprosy related health education (HE) is given with flipchart in index case and then 20 neighbor houses. Then check all the people who are present at that time.

3. Work plan and grouping:

   We select 2 sub-districts and calculate all the BI positive patients. From 1996 to 2016 we find 245 patient and plan to do IECS of 135 cases whose BI result are more than 3+. Then we create seven groups. Each group consist one TB and Leprosy Control Officer (TLCO) and one TB and Leprosy Control Assistant (TLCA) with 1:1 male female ratio. Then index cases are equally distributed. MO will check and confirm all the cases. After confirmation, we will register all the cases and treat the OBS (put on observation) and follow up them. The MO, Monitoring and Evaluation Officer (M&EO) along with Project Director (PD) will supervise and monitor the IECS.

4. Data analysis through Excel sheet was done.

Result: We did 91% IECS according to our plan where 25 were routine ECS and 98 were IECS. Total household were 12212 and we checked 93% of attended contact which was 60% of the total household. Our checked 93% household contacts were 21% and 79% from ECS and IECS group and we found 52 cases, 0.85% and 0.63% respectively. MB 0.13% and 0.07% was higher in IECS group. Half of all detected cases were from neighbor of IECS group those indexes were diagnosed from 1996 to 2009.

Conclusion: This study shows that IECS is effective than ECS. We find inspiration and will plan do a research of comparative interventional cohort study of IECS.

O-209

DEVELOPMENT AND EVALUATION OF A DROPLET DIGITAL PCR ASSAY FOR THE DIAGNOSIS OF PAUCIBACILLARY LEPROSY IN SKIN BIOPSY SPECIMENS

Presenter: Hong Liu

Hong Liu[1], Lele Sun[1], Zihao Mi[1], Gongqi Yu[1], Zhenzhen Wang[1], Yonghu Sun[1], Chuan Wang[1], Furen Zhang[1]

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Objectives: The reduced amounts of Mycobacterium leprae (M. leprae) among paucibacillary (PB) patients reflect the need to further optimize methods for leprosy diagnosis. An increasing number of reports have shown that droplet digital polymerase chain reaction (ddPCR) is a promising tool for diagnosis of infectious disease among samples with low copy number. To date, no publications have investigated the utility of ddPCR in the detection of M. leprae. The aim of this study was to develop and evaluate a ddPCR assay for the diagnosis of PB leprosy.

Method: The two most sensitive DNA targets for detection of M. leprae were selected from electronic databases for assessment of sensitivity and specificity by quantitative polymerase chain reaction (qPCR) and ddPCR. Control patients (n=59) suffering from other dermatological diseases were used to define the cut-off of the duplex ddPCR assay. For comparative evaluation, qPCR and ddPCR assays were performed in 44 PB patients and 68 multibacillary (MB) patients.

Result: M. leprae-specific repetitive element (RLEP) and groEL (encoding the 65 kDa molecular chaperone GroEL) were used to develop the ddPCR assay by systematically analyzing specificity and sensitivity. Based on the defined cut-off value, the ddPCR assay showed greater sensitivity in detecting M. leprae DNA in PB patients compared with qPCR (79.5% vs 36.4%), while both assays have a 100% sensitivity in MB patients.

Conclusion: We developed and evaluated a duplex ddPCR assay for leprosy diagnosis in skin biopsy samples from leprosy patients. While still costly, ddPCR might be a promising diagnostic tool for detection of PB leprosy.

O-240

COMMUNITY-DRIVEN DATA SCIENCE OF LEPROSY

Presenter: Marcin J. Skwark

Marcin J. Skwark[1]

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Introduction and Objective: Data-driven health and personalized medicine become a mainstay of modern healthcare. Woefully, it is only the first world countries and affluent citizens who reap its benefits. I suggest, that with a concerted effort from the Community at large, this situation may change. Through modern data science and leveraging of already collected data, it should be possible to substantially improve both the field resource allocation and early stage diagnostics in leprosy.

Method: Leprosy is expressly a disease of underprivileged and as such commands little to no attention from the big players in the healthcare field. Most of the afflicted have insufficient access to care and get treatment only if symptomatic. This comes through no ill will of the providers but is a direct effect of insufficiencies in terms of staff and supplies' availability. Therefore, one needs to prioritize the resource allocation, both in macro-scale (which part of the world/country/region should one focus on) and micro-scale (which of the patients should be allocated the

course of antibiotics). This is currently done largely in an uninformed, discretionary way and could be greatly helped by predictive methods to model epidemiology and progression of disease.

These approaches have been tried time and time again, without ever attaining sufficient traction and generalization capacity. These tasks are expressly easy, given enough data and a proper statistical model to capture the phenomena. The latter problem has been solved to near satisfaction by the machine learning and statistical modelling communities. Models one could use are getting better by an hour. Data remains an obstacle.

Result: The lack of sufficient data does not stem from lack of data as a whole, but rather from lack of data dissemination. Even anonymized data, if provided at scale, would yield inexpressible benefits to the leprosy community, enabling e.g. detection of latent and early stage leprosy centers. In so doing, it could prove key to the eradication of the disease as a whole.

Conclusion and Recommendation: Therefore, we would like to propose an open, secure platform for leprosy researchers to deposit curated, anonymized clinical data. The same platform will be used by statisticians and computer scientists, who will deposit publicly available predictive models using these data. This will – most importantly – lead to both intra- and inter-community dialogue, which leprosy research so desperately needs now.

O-277

SCHISTOSOMIASIS AND VITAMIN D DEFICIENCY ARE ASSOCIATED WITH CASES OF LEPROSY WHEN COMPARED TO HOUSEHOLD CONTACTS AND NON-CONTACT CONTROLS IN AN ENDEMIC AREA OF MINAS GERAIS, BRAZIL

Presenter: Jessica Fairley

Cori L. Dennison[1], Lorena B. de Oliveira[2], Jose A. Ferreira[3], Erica B. Magueta[2], Rosemary S. e Lima[4], Bailey Conner[1], Julie Clennon[1], Alexandre Castelo Branco[5], Michelle Carvalho de Rezende[6], Deborah A. Negrao Correa[6], Maria Aparecida de F. Grossi[7], Lucia A. de O. Fraga[2], Jessica K. Fairley[8]

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Objectives: Studies have shown that leprosy, as well as helminth infections, are associated with poverty. Furthermore, there is evidence that helminth co-infections and undernutrition are associated with leprosy, and more importantly, multibacillary disease, and therefore could affect transmission. Our aim was to investigate the association of schistosomiasis and select micronutrient deficiencies with leprosy in a hyperendemic area of Minas Gerais, Brazil, through a case-control study design.

Methods: From 2016-2018, individuals ages 3 years and older were recruited for a case-control study at community clinics in and around Governador Valadares, MG. Newly diagnosed cases of leprosy were enrolled along with household contacts and age / sex/ community matched controls. Participants were given a demographic and nutritional questionnaire and blood and stool samples were taken for helminth and micronutrient deficiency analysis. Helminths were diagnosed through stool kato katz and serum reactivity to anti-SWAP IgG4. Ferritin, 25-OH vitamin D, and retinol were measured. Descriptive, univariate and multivariate analyses were undertaken to investigate potential risk factors for leprosy.

Results: There were 70 case, 70 contacts and 70 controls enrolled in the study; 51.2% male with a median age of 41.5 years old (range 5 - 83) and 42 (70%) cases were multibacillary. Fifteen (8.3%) were positive for *S. mansoni* on stool exam and 67 (34.9%) were positive by serology. In multivariate analysis, cases were more likely be infected with *S. mansoni* (diagnosed by stool) compared to contacts and controls (aOR: 4.46, 95% CI 1.34,14.83). Serologic positivity for SWAP was not associated with cases. In a highly endemic area for HD

(41 cases and 82 contacts / controls), the association was even stronger with aOR = 6.94, 95% CI 1.77 27.15). Vitamin D was associated with leprosy when compared to controls on univariate analyses (OR = 4.0, 95% CI 1.3, 14.7). Iron deficiency was not associated with leprosy and we did not detect vitamin A deficiency in the study.

Conclusion: The assocations between schistosomiasis and leprosy cases supports the findings of prior studies on helminth co-infections and suggests that the immune consequences of scjhistosomiasis may affect the presentation of leprosy. Vitamin D deficiency was also associated with cases, although unclear if this could be a result of M. leprae infection or a risk factor. Both of these findings deserce further study as addressing co-infections and nutritional deficiencies could be incorporated into programs to improve leprosy control in endemic commnunities.

O-284

LES METHODES DIAGNOSTIQUES DE LA LÈPRE AU CDTLUB DE POBE AU BENIN

Presenter: Nina Sigg

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Introduction: Les dernières recommandations de l'OMS sur la lèpre (sept 2018) stipulent que le diagnostic de la lèpre repose sur la présence d'au moins un des trois signes (hypoesthésie sur tache/ Epaississement d'un nerf périphérique / présence de BAAR). Néanmoins, il s'est avéré que certaines formes atypiques font l'objet de doutes diagnostiques.

Depuis 2017, le CDTLUB de Pobé bénéficie d'un laboratoire d'analyses moléculaires permettant la détection de l'ADN du bacille de Hansen. Cette méthode de détection semble la plus sensible et la plus spécifique comme le suggèrent plusieurs études. Cependant, la plupart de ces travaux étaient réalisés sur un unique prélèvement, le plus souvent une biopsie cutanée en périphérie d'une tâche. Dans ce contexte, nous réalisons au CDTLUB de Pobé une étude qui a pour objectif de determiner l'efficacité de la PCR selon le nombre et le type de sites prélevés uniquement sur frottis cutané (peu invasif et adapté aux campagnes de dépistage actif).

Matériels et méthodes: Chaque patient cliniquement suspecté de lèpre sont inclus dans notre étude. Des frottis sont réalisés en bordure d'une tâche et sur le lobe des oreilles sur lesquels sont réalisés une bacilloscopie et une PCR quantitative. À ce jour, 8 patients ont été recruté. Nous avons également réalisé ces analyses uniquement sur le frottis cutané du lobe de l'oreille de 19 patients.

Résultats : Pour 2 patients, toutes les analyses sont négatives et pour 3, sont positives. Pour 1 patient, seules les prélèvements du lobe de l'oreille étaient positifs (bacilloscopie et PCR). Pour 1 patient, seule la PCR à partir du frottis de la tâche était positive. Pour 1, patient toutes les analyses étaient positives sauf la bacilloscopie de la tâche.

Parallèlement, les analyses réalisées sur des frottis provenant du lobe de l'oreille incluant 19 patients étaient négatives (PCR et bacilloscopie) pour 6 patients. Seule la PCR s'est révélée positive pour 8 patients. Et enfin, la bacilloscopie et la PCR étaient positives chez 5 patients.

Discussion: La sensibilité de notre PCR (tout sites confondus) est de 75% dans les formes MB. Ce résultat est comparable à la revue de la littérature. Malgré un effectif faible, nos résultats montrent que la recherche du bacille à partir de frottis cutané semble une méthode de prélèvement adéquate. Notre étude préliminaire montre que la réalisation d'un prélèvement sur plusieurs sites augmente la probabilité d'obtenir un résultat positif.

O-331

MOLECULAR EPIDEMIOLOGY AND TRANSMISSION DYNAMICS OF LEPROSY AMONG CASE- CONTACT PAIRS

Presenter: Madhusmita Das

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Objectives: *Mycobacterium leprae* causes leprosy in approximately 200,000 people each year, around the world and primarily in the endemic tropical countries. In the absence of an effective early diagnostic tool, transmission dynamics play a vital role in ascertaining individuals at risk of contracting leprosy. Human to human transmission among household contacts of active leprosy cases is prominent and surveillance of household contacts is vital to interrupting transmission chain in leprosy. The objective of this study is to ascertain the risk factors among index leprosy cases to transmit the disease to their household contacts.

Methods: A total of 61 index leprosy case-household contacts pairs (122 individuals) were enrolled in the study at Schieffelin Institute of Health-Research and Leprosy Center (SIH-R&LC)at Vellore in India. Slit skin scrapings were collected from all the subjects and PCR for detection of *M. leprae* DNA (by the amplification of *rlep* gene) and SNP-subtyping of *M. leprae* strains were performed. Clinical, epidemiological and demographic characteristics were analyzed for index cases in relation to positivity for *M. leprae* DNA and similar strain types in contacts. Additionally, six multicase families (n = 16) were recruited each comprising of an index case, a contact who developed leprosy (CDL) and a contact who has not developed leprosy (CNDLs). PCRs were performed, and strain types were compared.

Results: It was noted that index cases with lepromatous and borderline lepromatous leprosy (RJ Classification), and positive bacteriological index (BI) have higher percentage of their contacts subclinically infected with *M. leprae* (Odds Ratio (OR) 5.79 and 2.84 for LL and BL respectively). Most of these pairs are infected with subtype 1D. Further analysis was performed to relate clinical characteristics of the index case with PCR positivity and strain variations among the genetic and non-genetic pairs.

Conclusion: Molecular strain typing and determination of *M. leprae* DNA in the peripheral skin tissues of the index leprosy case-household contact pairs can aid in understanding transmission pattern and ascertain risk factors for progressing to overt disease in susceptible individuals.

O-333

DETECTING SEROLOGICAL AND MOLECULAR BIOMARKERS OF *MYCOBACTERIUM LEPRAE* INFECTION.

Presenter: Moises Silva

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Objective: To examine two biomarkers of *M. leprae* infection, the presence of *M. leprae* DNA by PCR from earlobe slit skin smears (SSS) and serum anti-PGL-I antibody titer in newly diagnosed and post-treated leprosy patients and household contacts.

Methods: Newly diagnosed leprosy patients (n = 87), post-treated patients (n = 52, averaging 4 years after completing MDT), and healthy household contacts (HHC, n = 296, without clinical symptoms) were enrolled from seven different cities from the northern Brazilian state of Pará. An ELISA was used to measure the antibody titer to the *M. leprae*-specific antigen PGL-I, while earlobe SSS was obtained to detect the presence of *M. leprae* DNA by PCR. These two biomarkers of infection were sorted to detect double positive (PGL-I+/RLEP+), single positive (PGL-I+/RLEP- and PGL-I-/RLEP+) and double negative (PGL-I-/RLEP-) for each group.

Results: Measuring the anti-PGL-I titers, the rate of positivity was 55.3% (44/87) for new cases, 50% (26/52) in post-treated individuals and 51.7% (153/296) in HHC (no statistical difference between any of these groups). RLEP amplification show positivity in 83.9% (73/87) in new cases, 44.2% (23/52) in the post-treated group, while only 27.4% (81/296) among HHC. RLEP detection was 87.3% (61/71) in MB cases and 68.8% (11/16) in PB cases overall. When the two biomarkers were sorted within each of the three groups, the highest frequency of double positives was found in the new case group (46%, 40/87), with lower numbers for post-treated (23.1%, 12/52) and HHC (15.5%, 46/296). The frequency of double negatives was reversed, with the highest numbers in HHC (36.5% 108/296) with lower numbers in post-treated cases (28.8%, 15/52) and the fewest in new cases (6.9% 6/87).

Conclusions: Having a positive anti-PGL-I titer and a positive PCR result for *M. leprae* DNA in earlobe SSS are known biomarkers of infection for *M. leprae* and have been shown to be independent risk factors for succumbing to leprosy. Examination of these two biomarkers revealed that there were statistically significant differences in the distribution of double positives which were found in the highest numbers in the new case group, while double negatives were highest in the HHC group. This suggests that HHC who are found to be double positive likely have the highest risk for progressing to disease, should be more closely monitored in regular follow-up for clinical disease and may be a group that could be targeted for drug prophylaxis treatment. Financial support: Brazil Ministry of Health, CNPQ, CAPES, UFPA, SESPA, The Heiser Fund of the New York Community Trust.

ILC-4: EPIDEMIOLOGY and CONTROL:

4.5 Leprosy and Other Skin NTDs / Neglected Tropical Diseases

O-096

INTEGRATED MAPPING AND STRATEGY DEVELOPMENT FOR LEPROSY AND OTHER SKIN NTDs IN NIGERIA

Presenter: Adebayo Peters

Tiawanlyn Akpan, Adebayo Peters, Anna Wickenden, Moses Onoh, Oluwole Gabriel Afolayan,
AIM Initiative, Ghana, Federal Ministry of Health, KNVC Tuberculosis foundation, Nigeria,

Objective: Nigeria is the most populous country in Africa with an estimated population of 190 million. The administrative structure of the country includes six geopolitical regions, 36 states and 774 local government areas. Nigeria is endemic for over seven skin NTDs including: Buruli ulcer, leprosy, lymphatic filariasis, human African trypanosomiasis and yaws.

The skin NTDs are managed by the National TB, leprosy and Buruli Ulcer control (NTBLCP) and the National NTDs programs with limited support to the latter which has led to poor data management and response to NTDs. In 2016, the NTBLCP program initiated the integrated mapping project in collaboration with the NTDs program to map cases reported for four of the major skin NTDs to understand the geographic distribution of the diseases and develop a national plan for the elimination and control of these diseases.

Methods: The mapping protocol was jointly developed by the two programs with support from partners; London School of Hygiene and Tropical Medicine, through the AIM Initiative. The protocol was approved by a national ethics committee and later guided the implementation of development of data collection tools and training materials. The training materials and data collection tools were integrated with information for all four skin NTDs targeted by the project. The disaggregated data from health facilities in all local government areas were entered into a database and later georeferenced by using software such as google maps on smartphones to collect the longitude and latitude of health facilities were cases were diagnosed and villages of patients' residence.

A five days meeting was held with stakeholders from all levels of the health system and partners to develop a strategy for integrated case management of NTDs in Nigeria.

Results: An integrated database now exists for NTDs. Digital maps were produced to show the geographic distribution of cases from the state level to the village level. The integrated maps also show co-morbidities and possible areas for intervention. Strengthened capacity of the national programs to develop and update maps with new data. A case management subcommittee is now part of the National NTDs Steering Committee.

Conclusion: The two programs managing skin NTDs in Nigeria have been able to work together successfully to utilize their integrated plan for resource mobilization. Funding received will be used to pilot the integrated case management of NTDs in selected states.

O-132

THE NTD MORBIDITY AND DISABILITY TOOLKIT – ITS RELEVANCE FOR USE IN LEPROSY AND OTHER NTDS

Presenter: Wim H. van Brakel

W.H. van Brakel[1], K.P. Puchner[2], A.T. van 't Noordende[1]
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Objectives: Many millions of people live with the disabling consequences of neglected tropical diseases (NTDs). Well-known examples include leprosy, lymphatic filariasis, trachoma, onchocerciasis, schistosomiasis and Buruli ulcer. There is an urgent need of more data on disease complications, disability, stigma and mental wellbeing among persons affected by these diseases. These data are needed for political advocacy, fundraising, needs assessments, intervention planning, programme management, and monitoring and evaluation of programmes and interventions. However, there is a lack of agreed instruments to assess these NTD consequences. The Disease Management, Disability and Inclusion (DMDI) Working Group of the NTD NGDO Network (NNN) commissioned a project to compile a toolkit of instruments to assess NTD consequences. This project was led by NLR. The objective of this presentation is 1) to describe the development of the NTD Morbidity & Disability (NMD) Toolkit and present the results of the field validation studies to date, and, 2) to explain the role of the instruments in NTD programming.

Method: The principle of the selection of instruments for the toolkit was that they should be existing generic instruments, or instruments with potential for generic use that measured aspects of DMDI: disease management (impairments, complications or mental health), disabilities (activities and participation) or inclusion (stigma and mental wellbeing). The initial selection was based on a literature review and a Delphi study with NTD-experts in 2015. Once the prototype toolkit had been compiled, an initial cultural validation study was done in Ceará State, Brazil. Subsequently, other suitable instruments were added, and additional mixed-methods studies were carried out to culturally validate the instruments in multiple countries and across multiple NTDs. The Herdman/Stevelink framework was used for all of these validation studies.

Results: A total of 21 cultural validation studies were carried out in 6 countries between 2015 and 2018. These examined the validity of one or more of a total of 21 instruments, involving people affected by one of more of 7 different NTDs. Five instruments were not found suitable in their present format in one or more of populations in which they were tested. The remaining 16 have been included in the NMD Toolkit.

Conclusion: A cross-NTD toolkit was developed with measuring aspects of disease management, disability and inclusion of persons affected by NTDs. The evidence base for the NMD Toolkit is a work in progress, but the available tools and the supporting evidence are freely available on www.InfoNTD.org/toolkit.

O-162

INTEGRATED CASE MANAGEMENT OF NTDs, INCLUDING LEPROSY, IN LIBERIA

Presenter: Emerson Rogers

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Objectives: Liberia is a country in West Africa, with estimated population of 4.1m. It is divided into 15 administrative counties and a total of 92 health districts.

Initially leprosy control was part of a Leprosy/TB Control Program, while other NTDs were in a separate program. There was no linkage or data sharing between these programs. In 2016, an integrated plan was developed, in which the leprosy program joined the NTD program, in order to increase early case detection and improve access to services of relevance to many NTDs, including morbidity management and prevention of disability.

Method: Tools for training of health staff and community health workers were developed for the integrated program, which included Buruli ulcer, leprosy and lymphatic filariasis. IEC materials were developed for community sensitization. The program started in 5 counties which were already treating a number of leprosy cases and were known to be endemic for other NTDs, although precise data were not available.

Recording and reporting tools were developed to collect data from the communities, health facilities and counties. Based on the data collected during the first year, the NTD program advocated for the inclusion of specific indicators into the DHIS2 system.

Results: A large increase (more than double) in the number of cases of all three diseases were reported. Most have received treatment although since 2018, there has been a shortage of drugs for Buruli ulcer. All health facilities in these five counties have received training in morbidity management for each of the diseases, and supplies of dressing materials have been made available in adequate amounts. Lymphoedema patients received self-care kits.

Detailed data for 2017 and 2018 will be presented.

Conclusion: The close collaboration between the NTD Department and AIM has provided a stable platform for this initiative. Other partners, including other government departments, GLRA and COR-NTD, have provided helpful support. The capacity to manage disabling NTDs in the target counties of Liberia has been greatly increased.

O-163

TREATMENT OF JORGE LOBO'S DISEASE WITH MULTIDRUG THERAPY FOR LEPROSY (MDT/MB/WHO) AND ITRACONAZOLE: A VIABLE OPTION

Presenter: Patricia S. Rosa

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Objective: Similar to leprosy, Jorge Lobo`s disease (JLD) is a neglected tropical disease endemic in North of Brazil. Potentially underdiagnosed, is not a notifiable disease, therefore, it is difficult to be characterized as a public health problem (Brito, Quaresma, 2007; Woods et al., 2010; Brito, 2012). During the past 24 years in the Dermatology Clinic in Acre state, we observed that 30 (6.5%) of 460 JLD patients with who had co-infection with leprosy markedly improved the JLD lesions after multidrug therapy for multibacillary (MDT/MB) leprosy. Thus, in the present work we show results of the off-label MDT/MB/WHO treatment in 80 JLD patients for four years, and two years of follow-up.

M**ethod:** Therapeutic regimens were given to 80 JLD patients divided into two groups: MDT/MB associated with surgery; MDT/MB associated with 200mg itraconazole and surgery. Patients received drugs daily for four years and were evaluated every six months for clinical and histopathological evaluation of lesions and fungal cells viability determination using a fluorescent dye.

Result: Independent on treatment, most patients experienced rapid decrease in pruritus, and regression and softening of the lesions. Histopathological evaluation showed presence of epithelioid macrophages and giant cells filled with fungal cells with morphological aspect of non-viable cells. Viability indices decreased wit evolution of treatment in most patients. The greatest improvements (37.5% cured and 52.5% improved) were observed in the group of subjects who received the triple regimen (MDT, itraconazole and surgery). In the group that received MDT with surgery 20% were cured, and most of them improved (77.5%). A few patients deteriorated despite the clinical form of the disease. Generally, patients taking MDT and itraconazole did not relapse during the follow-up after the total or partial removal of the lesions. Cure was observed in 19 patients with lesions located in the auricular pavilion or on the extremities.

Conclusion: The largest number of patients who improved were from MDT/surgery associated with itraconazole group. With the evident improvement of some patients, other individuals with more recent infections looked for treatment at the Dermatology Service increasing their chances of cure. The present results show for the first time a chance of cure for JLD patients, especially those with initial extensive lesion.

O-215

SINGLE LESION LEPROMATOUS LEPROSY IN A TEENAGER: AN UNEXPECTED SCENARIO

Presenter: Carmella Jane Luis

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Objectives: Hansen's disease (HD) is a chronic granulomatous disease principally affecting the skin and peripheral nervous system caused by Mycobacterium leprae. The incubation period varies from months to more than 30 years. The tuberculoid form of HD usually presents with a single hypoesthetic patch and skin biopsy shows epithelioid granulomas with absence of bacilli on Fite-Faraco stain. In contradistinction, lepromatous leprosy usually presents with numerous papules, plaques and nodules with induration of the ears and nose. Biopsy shows foamy granulomas with presence of acid-fast bacilli on Fite-Faraco stain.

Methods and Results: We present a case of a 13-year old female who presented with a 3-year history of a single hypoesthetic patch on the left knee. The initial clinical diagnosis was tuberculoid leprosy. However, histopathology revealed a Grenz zone, and a nodular granulomatous infiltrate consisting of epitheloid and foamy histiocytes with scattered lymphocytes. Fite-Faraco stain showed a bacillary index (BI) of 3+. Slit-skin smear revealed a BI of 4+. She was then started on multidrug therapy.

Conclusion: This case highlights the importance of slit-skin smear and biopsy as routine procedures in all new cases of suspected HD. These procedures will help differentiate multibacillary from paucibacillary forms of the disease which will influence decisions for treatment and prognostication. This case emphasizes that lepromatous leprosy may present with single lesions and may be misdiagnosed as paucibacillary leprosy if skin-slit smear and biopsy have not been done. This case further suggests that there are factors yet undetermined which play significant roles in determining the host response to M. leprae which are believed to influence morphology, configuration, number and distribution of skin lesions.

O-223

VALIDATING ROUTINE CASE DATA ON LEPROSY, BURULI ULCER, LYMPHATIC FILARIASIS AND YAWS THROUGH A POPULATION-BASED CLUSTER-RANDOMISED PREVALENCE SURVEY IN MARYLAND COUNTY, LIBERIA

Presenter: Joseph Timothy

Joseph Timothy[1], Zeela Zaizay[2] , Emerson Rogers[2], Katherine Halliday[1], Tarnue Mulbah[2], Michael Marks[1], Anna Wickenden[3], Steve Walker[1], Paul Saunderson[3], Rachel Pullan[1], Karsor Kollie[2]

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Objectives: The ability of leprosy and NTD programmes to efficiently allocate resources can be significantly strengthened by the availability of reliable data on disease distribution and co-endemicity. Population-based prevalence surveys represent a gold standard to generate accurate prevalence and distribution data, yet these activities can be expensive and burdensome upon health systems to implement on a regular basis.

Reliable routine case data, collected at primary healthcare level, could instead be used to identify areas of high disease burden or ongoing transmission and thus function as a practical tool to improve resource allocation. Despite this potential, the validity of routine data has not been rigorously assessed. To assess the potential of routine case reports in a rigorous fashion, we undertook a comprehensive population-level prevalence survey for leprosy, buruli ulcer, lymphatic filariasis and yaws in Maryland County, Liberia and compared aggregated findings to routine case reports collected over the previous 18 months.

Methods: Survey activities were completed following 18-month implementation of an improved case finding and data reporting package by the Ministry of Health case management NTD programme. Routine case data was collected from county-level health records aggregated within the programme. To estimate population-level disease burden for each disease, we developed a novel two-stage cluster-randomised survey design using community health workers to enumerate and screen entire communities using disease photographs. Suspected cases were referred onwards for second-stage mobile case verification by mid-level health workers trained in the diagnosis of leprosy and other skin-presenting NTDs.

Results: We will present final design adjusted prevalence estimates and compare these findings with case detection rates collected through the routine health system aggregated at health facility, district and county level. We also present indicators of patients' interactions with health systems and care seeking behaviours across all new and previously known cases identified during survey activities.

Conclusion: These data provide will robust evidence on the potential use of routine case reporting as an affordable proxy for disease distribution to inform programmatic activities.

O-226

COMBINED DISABILITY MANAGEMENT UNDER NTD UMBRELLA: LESSON LEARNT FROM BANGLADESH

Presenter: David Pahan

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Objective: Despite the achievement of elimination goal early in 1998, the NLP still identifying significant number of disability cases. Gradually decreased fund flow prompted to try alternate strategies like combined management of Leprosy & Lymphatic Filariasis (LF) under NTD umbrella. So the objective of this study is "To assess the

effectiveness of combined disability prevention and economic improvement strategy in case of Leprosy and LF in selected areas of Bangladesh".

Method: Combined management of disability included Intervention packages consisted of selection and training of Community Champions/Volunteers, the formation of the self-care practice group, train person affected by Leprosy and LF of disability management/self-care, health education during the home visit and encouraged for self-care practice by Community Champions and supply Kit Box and footwear. We interviewed 1988 (45% Leprosy, and 54% LF) consecutively all newly diagnosed cases between July 2016 and March 2017 at baseline and 1178 patients (33% leprosy, 67% LF) between September and November 2018 as end line survey. The surveys were conducted by trained staffs and data was collected using Kobo software with mobile phones.

Results: The number of ulcers dropped by three times at end-line, 92% reported practicing self-care daily compared to 57% at baseline in-person affected by leprosy. Participants reported partial or severe limitations at work changed 85% at baseline to 39% at end-line. The number of acute attacks decreased by 65% in LF. Average day lost due to leprosy is 1.2 days at the end-line, compared to 7.8 days at baseline and in LF 1.5 days at end line compare to 5.5 days at baseline. The proportion of health expenditure dropped by 4 times due to disease. Family income increased by 75% at end-line for leprosy and 31% in LF. As a result, the poverty line (<£2/day) dropped by 8 times (70% to 8.2%).

Conclusion: It has been observed that disability has multiple effects, physical limitation, increases health expenditure cost, decreases monthly income, the working day lost and create other social impacts (discrimination/prejudice). We were able to demonstrate improved quality of life by implementing a special combined intervention package among person affected by Leprosy & LF for a certain period. Lessons learned can be applied in any other disability- related conditions in the community and in other settings.

O-257

SKINAPP, ENABLE HEALTH WORKERS TO DIAGNOSE AND TREAT SKIN DISEASES INCLUDING SKIN-RELATED NTDs SUCH AS LEPROSY

Presenter: Benita Johanna Jansen

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Objective: NLR has developed the SkinApp, a mobile phone application that aims to support peripheral health workers (PHWs) to recognize signs and symptoms of skin diseases, so that treatment can start immediately, or referral for more advanced diagnostic testing or disease management can be advised when needed. The SkinApp uses an algorithm to guide the process of diagnosis of 29 skin diseases, of which the signs and symptoms are described and shown in photos. A management or referral advice is given for each of the skin diseases, as well as additional general advices for management of skin conditions.

After initial pilots in Nigeria and Mozambique a third version of the SkinApp was developed, and is validated as part of the current study. The objective is to evaluate the diagnostic accuracy and reproducibility of the NLR SkinApp for skin diseases when used by PHWs attending to persons with skin diseases, and to determine the value of the SkinApp in clinical decision making.

Method: A cross-sectional study among consenting patients (≥18 years) presenting with skin diseases at outpatient dermatology clinics in Tanzania, Mozambique and Ethiopia is being conducted. Diagnostic accuracy is

measured as the sensitivity and specificity of diagnosis made by two PHWs trained in using the SkinApp compared to the (consensus) diagnosis made by two experienced dermatologists. Reproducibility is measured as the agreement in diagnosis between the two PHWs. The value in clinical decision making is assessed as the proportion of correct treatment and/or referrals. The aim is to enrol at least 27 patients per disease listed in the SkinApp per country, taking into account the desired sensitivity, precision and confidence levels.

Result: To date, preliminary results are available from Mwanza, Tanzania. PHWs considered the SkinApp an easy-to use, supporting tool during consultation. Overall, PHWs made correct diagnosis in 78% of patients presenting with a skin disease included in the SkinApp with a positive agreement rate of 72%.

Conclusion: The preliminary findings from Mwanza, Tanzania indicate that PHWs using the SkinApp can correctly diagnose 4 out of 5 patients that present with one of the skin diseases listed in the SkinApp. Further analysis of the Mwanza data and validation in Ethiopia and Mozambique are currently ongoing and results will be presented. Interest has also been shown for country-specific versions for India, Brazil and Indonesia, the countries where leprosy is most prevalent.

O-285

EVOLUTION DE LA SITUATION EPIDEMIOLOGIQUE DE L'ULCERE DE BURULI AU BENIN DE 2008 A 2018

Presenter: Anita Wadagni

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Objectif: Décrire l'évolution épidémiologique de l'ulcère de Buruli de 2008 à 2018 au Bénin

Méthode: Etude rétrospective, descriptive réalisée sur la période de 2008 à 2018. La base de données du Programme National de Lutte contre la Lèpre et l'Ulcère de Buruli PNLLUB a été exploitée. Les logiciels ARVIEW3.4 et Stata version 14 ont respectivement été utilisés pour illustrer les données géographiques et pour analyser les données démographiques et cliniques ainsi que les principaux indicateurs de contrôle de la maladie.

Résultats: Les foyers d'endémie de l'UB s'organisent principalement autour de la vallée des fleuves Ouémé et Couffo. Les communes de Dangbo, Adjohoun et Bonou demeurent les plus endémiques en 2018. Le nombre de cas a diminué passant de 897 cas en 2008 à 219 cas en 2018. Les formes graves de la maladie (catégorie III) représentent 42,14% en 2008 pour 58,41% en 2018. La distribution de l'UB au sein des enfants est superposable à celle des adultes et la maladie touche autant de femme que d'homme. On note une persistance des lésions ulcérées qui sont passées de 52,51% en 2008 à 47,95% en 2018. Le taux de confirmation biologique a connu une importante augmentation, passant de 46.04% en 2008 à 67.58% en 2018.

Conclusion : Le nombre de cas d'UB au Bénin a considérablement diminué ces dernières années avec de grands progrès réalisés pour la confirmation des cas ; cependant, des efforts restent à faire pour améliorer la précocité du diagnostic.

O-286

APPROCHE INTEGREE DE LA LUTTE CONTRE LES MALADIES TROPICALES NEGLIGEES A MANIFESTATIONS CUTANEES AU BENIN

Presenter: Jean Gabin Houézo

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Objectifs: Décrire l'expérience de la lutte intégrée contre les Maladies Tropicales Négligées (MTN) à manifestations cutanées au Bénin.

Méthodes: D'Octobre 2017 à Décembre 2018, nous avons organisé :

- la formation intégrée des agents de santé, des relais communautaires, des enseignants et anciens patients d'UB sur les signes de reconnaissance de la lèpre, de l'UB et du pian ;
- des séances des sensibilisations et de dépistages intégrés sur ces trois dans les villages par des équipes médicales composées d'infirmiers, de médecins et de dermatologues.

Les cas suspects d'UB ont été confirmés par la PCR.
Les cas de lèpre ont été cliniquement confirmés par un personnel expérimenté ;
Le test rapide du Pian a été fait de façon systématique chez tous les enfants ayant une lésion cutanée et chez tous les adultes porteur d'une lésion cutanée suspecte de pian.
Les données sociodémographiques et cliniques des cas ont été collectées à l'aide de fiches de collectes de données intégrées élaborées à cet effet. L'analyse des données a été faite avec le logiciel IBM SPSS Version 20.

Résultats: Au total, 7262 personnes ayant une lésion cutanée dont 53% de femmes ont été examinées dans plus de 300 villages dans les zones endémiques de l'UB et de la Lèpre. L'âge médian (IIQ) des personnes examinées est de 16 ans (7;35). Les principales affections dépistées se présentent comme suit :

- 144 (2,0%) cas suspects d'ulcère de Buruli dont 108 confirmés ;
- 118 (1,6%) cas de suspects de lèpre dont 77 confirmés ;
- 3848 (53,0%) cas ont été systématiquement testés au test rapide de pian dont 4 confirmés par DPP ;
- 218 (3,0%) cas de scabiose ;
- 12 (0,2%) cas de filariose lymphatique ;
- 6843 (94,3%) cas d'autres affections cutanées dont notamment les infections fongiques, les eczémas, les cellulites, et les autres ulcères chroniques.

Conclusion: Le dépistage intégré des MTN permet un dépistage et une prise en charge optimales des MTN à manifestations cutanées. Mais la pérennisation de cette approche passera par la formation des agents de santé périphériques seulement sur les MTN à manifestations cutanées mais aussi sur la dermatologie élémentaire.

O-297

ANALYSIS OF LEPROSY AND OTHER SKIN NTDS IN JAPAN

Presenter: Mariko Mikami

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Objectives: To analyze cases of leprosy and other skin neglected tropical diseases (NTDs) in Japan.

Methods: We analyzed cases of leprosy and other skin NTDs that were reported in Japan from 2000 to 2018. In particular, we focused on patients with leprosy, Buruli ulcer and cutaneous/mucocutaneous leishmaniasis. We performed sub-analysis on sex, age, type of lesions, diagnostic methods, and treatments. The search was performed using the Japan Medical Abstracts Society. Database at the Leprosy Research Center, National Institute of Infectious Diseases (NIID), Japan was also used for this analysis.

Results: All cases of leishmaniasis reported in Japan during the given period were imported cases. Decline in the number of new cases of leprosy has been observed with less than 10 cases per year during the past decade. However, although the numbers were very limited, there still were cases of leprosy domestically acquired. These cases were in aged individuals mostly from Okinawa, the most southern islands of Japan, which was the last endemic site. Conversely, all patients with Buruli ulcer were in Japanese individuals with no travel history overseas, and the causative bacteria was isolated to be *Mycobacterium ulcerans* subsp. *shinshuense*, a characteristic strain domestic to Japan.

Conclusion: A majority of cases of leprosy and other skin NTDs in Japan was foreign-born. Almost all cases were diagnosed by dermatologists. Nonetheless, we face difficulties in diagnosing these skin NTDs cases as the number of dermatologists who can diagnose these diseases are very few. Our mission as a low endemic country is to establish a training system targeting dermatologists on skin NTDs for a sustainable disease control on these globally targeted diseases.

O-310

PILOTING THE USE OF DHIS2 TO COLLECT, ANALYZE AND VISUALIZE LEPROSY DATA IN MOZAMIBQUE

Presenter: Melissa Edmiston

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Mozambique Ministry of Health Department of Other Communicable Diseases[1], The Leprosy Mission Mozamibque[2,] AIM Initiative [3]

Objectives: The Ministry of Health Department of Other Communicable Diseases in partnership with the Leprosy Mission Mozambique and the AIM Initiative established a project to evaluate how the use of DHIS2 could improve collection, analysis and utilization of leprosy data to support strategic planning and resource distribution. While Mozambique declared elimination in 2008, a lack of resources and reliable data resulted in the inability to fulfill post-elimination monitoring activities. The primary objective of the project was to input and map all cases of leprosy and complications from LF into the DHIS2 system to establish a comprehensive online database. Additional objectives included strengthening data quality and use of information, access to real-time reports at various administrative levels, and to verify data reports.

Methods: In 2017 the team began a DHIS2 data collection pilot using smartphones and tablets in 2 provinces, Gaza and Cabo Delgado, consisting of 31 districts and 33 trained users. Leprosy cases (and a number of other indicators) recorded through the routine paper-based data were entered into the DHIS2 platform for the past 5 years. Gaza, considered to be one of the lowest incidence provinces reported 21 cases during the 5-year period and Cabo Delgado, one of the highest, reported 1400. In 2018, the team expanded to the remaining provinces for a total of 161 districts across 11 provinces. A total of 172 users were trained.

Results: A total of 7459 leprosy cases were reported in the country's 161 districts from 2013 through the first 9 months of 2018. The province of Nampula reported the most cases, with an estimated prevalence of 3.1 per 10,000 inhabitants. In December 2018, the team worked with partners to map the cases using DHIS2's GIS features to see the distribution of cases. The team is currently working on comparing the results in DHIS2 to those numbers generated through the paper-based routine system to identify and address discrepancies and system issues. Result of the comparison, as well as lessons learned will be available upon completion.

Conclusion: While many countries may use DHIS2 for other disease programs, it is not always used for leprosy or other NTDs. Utilizing this tool at strategic points within the flow of data in the health system can add significant benefit when implemented to the quality and accessibility of program data. Lessons learned from this project can inform others seeking to adopt DHIS2.

ILC-4: EPIDEMIOLOGY and CONTROL:

4.6 Cross-Cutting Issues: Wound Care, WASH and Integration

O-009

APPLICATION OF AUTOLOGOUS LEUKOCYTE AND PLATELET RICH FIBRIN (L-PRF) IN TROPHIC LEPROSY ULCERS: A CLINICAL STUDY AT ANANDABAN HOSPITAL IN NEPAL

Presenter: Indra Bahadur Napit

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Objective: Routine leprosy ulcer care can be insufficient to address large or deep trophic ulcers – which can require long hospitalisation(s) and can significantly affect patient's income, employment, household and quality of life. Autologous leukocyte-platelet rich fibrin (L-PRF) containing growth factors has been demonstrated in clinical studies across dental, diabetic, leprosy and venous ulcer care to regenerate tissue and reduce overall healing time. Our study aimed to evaluate efficacy of L-PRF therapy in trophic leprosy ulcers.

Method: Patients (n=30) having ulcers ≥2-18 cm^2 were enrolled for weekly L-PRF therapy to treat trophic foot ulcers. Venous blood was collected, centrifuged, the middle portion fibrin clot taken out and compressed to form the L-PRF matrix. This was then applied on ulcer-bed with sterile Vaseline gauze dressing. This procedure was repeated weekly until healing was complete. The clock-method was used for ulcer measurement and high-quality photographs were recorded in each L-PRF treatment.

Results: The male: female ratio of enrolled patients (n=30) was 7:3. The mean and median ages of patients were 60±1 and 63 (R=35-81) years respectively. The majority of ulcer locations were on the right foot (60%), midfoot (47%). Ulcer sizes were classified into groups: ≤ 3 cm^2 (5 ulcers), 3-6 cm^2 (10 ulcers), 6-9 cm^2 (7 ulcers) and >9 cm^2 (8 ulcers, range 2-18 cm^2). Compared within groups, average complete healing durations were 3.4, 6.4, 8.4 and 10 weeks respectively and demonstrated significant differences ($p<0.005$) within the groups except for the last pair. On average, L-PRF treatment resulted in tissue regeneration and wound closure at the mean rate of 0.95±0.3 cm^2/week with little to no scar tissue development, enabling complete healing of all ulcers within 3 to 13 weeks depending on initial size. Age was not associated with the rate of healing ($p>0.05$). Self-care management after L-PRF ulcer healing remained essential for maintenance.

Conclusion: L-PRF therapy is safe, effective and simple to perform in hospital or outpatient settings by nursing or paramedic staff. This study has revealed that the efficacy of L-PRF therapy is significantly effective towards ulcer healing. On average, L-PRF treatment resulted in tissue regeneration and wound closure of around 1 cm^2/week. These study findings are crucial to improving leprosy wound care management. Further analyses are ongoing.

O-030

A RANDOMIZED CONTROLLED TRIAL OF TOPICAL HUMAN AMNIOTIC MEMBRANE-MESENCHYMAL STEM CELL-CONDITIONED MEDIUM (HAMMSC-CM) AND A MIXTURE OF TOPICAL HAMMSC-CM + VITAMIN C AND HAMMSC-CM + VITAMIN E ON LEPROSY CHRONIC PLANTAR ULCERS

Presenter: Cita Rosita Sigit Prakoeswa

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Objective: To evaluate the effect of topical hAMMSC-CM and a mixture of topical hAMMSC-CM + vitamin C and hAMMSC-CM + vitamin E on leprosy chronic plantar ulcers.

Method: A randomized controlled trial with 22 subjects for each of the treatment groups. Topical hAMMSC-CM (group 1), a mixture hAMMSC-CM + vitamin C (group 2), and hAMMSC-CM + vitamin E (group 3) were applied every 3 days for up to 8 weeks. Monitoring for ulcer size and depth, side-effects, and possible complications were performed weekly.

Results: Improvement of healing percentage showed in all groups each week. Ulcer size and depth were decreasing in group 2 and 3 every week. There was a significant decrease in the ulcer size and depth 1.70±1.05cm^2(p=.000) in group1, 2.01±1.19cm^2 (p=.000) in group 2, 2.84±1.67cm^2 (p=.000) in group 3. Mean difference in ulcer size was highest in the hAMMSC-CM + vitamin E group, indicating better progress of wound healing. There were no side-effects or complications during the trial.

Conclusion: Leprosy chronic plantar ulcers showed high levels of reactive oxygen species, which could delay wound healing process by inhibiting granulation and epithelialization. Vitamin E (α-tocopherol) is widely used in skin lesions, owing to its antioxidant and anti-inflammatory properties. Vitamin C also has antioxidant, anti-inflammatory, antibacterial, and collagen synthesis properties which are useful in wound healing. Topical hAMMSC-CM contains many cytokines and growth factors which may be effective in the inflammatory and the proliferation phase of the wound healing. Topical hAMMSC-CM has shown improvement of healing in leprosy chronic plantar ulcers of which the mixture of topical hAMMSC-CM + vitamin E showed superior results than mixture of topical hAMMSC-CM + vitamin C.

O-152

ROLE OF PLATELETS RICH PLASMA IN HEALING DIABETIC AND LEPROSY FOOT ULCERS IN RESOURCE POOR SETTING

Presenter: Mandeep Joshi

M.Joshi[1]

[1]Far Western Community Hospital, Kaillai, Nepal.

Objective: To determine whether sterile autologous PRP promotes the healing of chronic wounds as compare with conventional wound-therapy

Method: Participants were divided in to two groups having chronic wound. A study group in which PRP was used and a control group receiving standard therapy among 32 participants. After wound bed preparation, activates sterile PRP was sprayed over the ulcer and occlusive dressings were applied. Same procedure was repeated every

week until complete re-epithelisation or up to six sittings whichever occurred earlier. Wound assessment was carried out according to the Bates-Jensen Wound Assessment Tool at weekly for 4 times.

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Results: After application of PRP, there was significant improvement in mean wound score and significant percent improvement in wound score in the study group ($p < 0.0001$). Complete healing occurred in all patients in the study group in (mean score and standard deviation) 36.7±3 days compared with 60.6±3.7 days in the control group ($p < 0.0001$) and no unwanted side effects in patients using the PRP

Conclusion: Both DM and leprosy wound healing time is shorten as compared with conventional therapy. Neuropathic ulcers in leprosy represent a therapeutic challenge for clinicians. Chronic ulcers affect patient health, emotional state and quality of life, causing considerable morbidity and mortality in addition to contributing to significant health care costs. PRP therapy leads to faster rate of induction of granulation tissue with rapid healing. Healing had no direct statistical correlation with the size, site and duration of ulcer, the leprosy spectrum and associated motor deformities. It is a simple, safe and cost effective in-office procedure, albeit requiring an optimal set-up and expertise. Foot ulcers are a major complication of diabetes mellitus and leprosy, often leading to amputation. Trophic ulcers secondary to leprosy pose a great stigma to the patients and remain a challenge to the treating dermatologists. The discovery of Platelet Rich Plasma (PRP) with its favourable role in wound healing is a boon for the patients. PRP introduces the growth factors directly into the wound and aids in rapid healing.

PRP therapy has been growing as a viable treatment alternative for chronic ulcers in resource poor setting. However, stronger scientific evidence is required to support its potential benefit for use in chronic wounds.

O-268

INTEGRATION OF LEPROSY CONTROL AND LEPROSY CHEMOPROPHYLAXIS IN AN INCLUSIVE DEVELOPMENT PROGRAMME WITH DISABILITY PREVENTION, DISABILITY MANAGEMENT AND COMPREHENSIVE WASH – A PRELIMINARY EXPERIENCE FROM NEPAL

Presenter: Himalaya Dev Sigdel

H.D. Sigdel[1], N. Banstola[1],

[1] NLR Nepal, Country Office, Kathmandu, Nepal

Objective: Nepal is one of the leprosy-endemic countries in the world. With the effort of Government of Nepal along with supporting partners, the target of leprosy elimination was achieved in 2010. The leprosy post-exposure chemoprophylaxis concept has been introduced in Nepal in mid-2015 and implemented initially in three districts as a pilot project. It became a National Strategy in 2018 and was expanded to eight districts.

Despite of various strategies, policies and programme implementation, the annual case detection has not been reduced from 3,000 from last 8 years. In the changed Government structure of Nepal with more authority to local rural/urban municipalities, leprosy is better understood as part of mainstream development rather than vertical program. This suggests that an additional leprosy control strategy is necessary with relevant integration and maximum community participation. Therefore an integrated programme has been designed and is being implemented in ten municipalities of two provinces of Nepal.

Method: Through piloting several innovations in the past, NLR Nepal introduced the concept of “Our Village Model Village” in some of the villages. With the implementation of this project modality, NLR Nepal, together with Local Government, has designed a package programme under the heading of “Inclusive Development”, including seven project components. These components are:

i) Disability prevention
ii) Disability Management
iii) Disability Inclusive Development (DID)
iv) **Leprosy Prevention (PEP**)
v) **Leprosy Control**
vi) Comprehensive WASH
vii) Organizational Strengthening

The integrated package programme is being implemented in ten municipalities of Province no 1 and 7 under a Memorandum of Understanding between the local Government and NLR Nepal.

Results: The first year result is very encouraging since the leprosy control and prevention activities has been fully owned by the local Government and Communities within the package program of Inclusive Development. Municipalities have done the census survey (80%), profiles are developed (70%), execution plan are in place (100%), individual profiles of persons with disabilities are prepared (60%) and the leprosy PEP interventions is done (100%) for all the notified cases. We have the impression that the new integrated programme has led to increased case detection. This is still being verified at the time of writing.

Conclusion: The preliminary experience of the integration of leprosy control and prevention program into an inclusive development programme including disability and WASH is that this is well appreciated, fully adopted and owned by the local Government and communities. This has encouraged replication in other municipalities of Nepal.

O-322

MAINSTREAMING AND ADVOCACY: A PATHWAY FOR REACHING THE MISSING MILLIONS

Presenter: Masuma Parvin

Jiptha Boiragee[1], Masuma Parvin[1], Noyel Tappa[1], Md. Khalequzzaman[1],

[1]The Leprosy Mission Bangladesh

Objectives: To assess an approach to engaging and activating Government departments in partnership with; NGOs, media, researchers and communities for defeating leprosy and transforming lives

Methods: Piloting novel method of encouraging active involvement in the field of leprosy by a wider range of players in 11 poorly-served districts of Bangladesh, using following techniques;

- Partnerships with local NGOs for bottom-up advocacy
- Initiate leprosy award for journalists and medias
- Engage & work with central and local health department
- Offering small grants for subsidizing leprosy research for academic groups
- Arranging scientific conference for disseminating research finding
- Formed national level organization of people with leprosy and disability

Results:
This Project has brought significant change in the lives of people affected by leprosy and leprosy program in Bangladesh which are as follows;

- Built partnership with 5 NGOs, serving 18.75 million people. Over 1500 new leprosy cases detected and brought under treatment through GoB health system
- PNGOs dedicated leprosy staff built strong linkages with health sector to support awareness, new case finding, referral system, follow-up and entitlements
- 200 journalists engaged, 120 reports published in print media & 21 in TV, 5 TV talk show with policy makers

• GoB has increased budget for National Leprosy Program
• GoB recruited 206 newly and dedicated staff for leprosy and TB
• MDT supply and registration in new 4 districts & 8 sub-districts GoB health points
• Leprosy included as an agenda of GoB health staff meetings.
• Medical Colleges, University and other institutions carried out leprosy research for first time. Research findings published in 4 international journals.
• First ever NTD Research conference in collaboration with WHO, GoB Health and International Researchers.
• An engaged legitimate Apex body of 1500 SHGs, advocacy to claim services, entitlements and represent in GoB led committee

Conclusion: The Advocacy for Empowerment Project being implemented by TLMIB is about how to engage Government departments in a partnership for mainstreaming leprosy in the general health provisions in order to reach the missing million. This is a bottom-up advocacy approach & lessons learned regarding advocacy towards leprosy mainstreaming could be replicate for other programs. Govt. Health departments and NGOs are key stakeholders able to bring sustainable change in life of people affected by leprosy. Evidence shows that Advocacy is one of the means to engage and activate GoB and NGOs to introduce and/or improve leprosy services is creating a huge impact for the whole country program and life of people with leprosy.

O-325

INTEGRATING WATER SANITATION AND HYGIENE (WASH) INTO LEPROSY FOR PRACTICING SELF CARE

Presenter: Radhika Mamidi

Radhika Mamidi

LEPRA Society, Andhra Pradesh

Objectives:
- To demonstrate the need of WASH for morbidity management and disability prevention (MMDP) in self-care.
- Develop strategies for better access of WASH services among the disabled persons.

Methods: The persons affected with leprosy and their family members are oriented and educated for promotion of self-care practices. Lack of adequate water, no customized toilets, improper drainage facilities are the issues identified among the persons of leprosy affected families. These are hampering them for practicing of self care at regular intervals. Advocacy efforts were taken with the support of leprosy Forums at State and District level for WASH needs of this population and adequately represented. In addition, the family members are engaged for promotion of self care practices among the leprosy affected persons. The peer educators are formed and trained for taking up health education and counseling sessions. The Disability prevention and medical rehabilitation (DPMR) camps are conducted in coordination with the District Health Department, Panchayats for providing comprehensive services like Health Education, Physio care, ulcer Care and referral to the secondary care hospitals. Community engagement is ensured by conducting camps in the Panchayat premises.

The Project has given representation to the State/District Health Society collecting information from colonies of 13 districts in the state of Andhra Pradesh. Circulars were passed to the concerned Collectors and authorities for taking up necessary action. The Inter sectoral convergence happened at district level

Results:
- Issues of 48 colonies from 13 Districts of Andhra Pradesh represented
- Among 18 Leprosy Colonies there is improved WASH facilities with the advocacy efforts
- 62 Peer Educators are providing Health Education sessions for the persons affected with leprosy

- 869 Persons affected with leprosy are trained on Self Care Practices. Out of which, 72% (625) of them are practicing self care and efforts are being taken for reaching more populations to practice and adhere to the self care
- 8 Panchayats came forward and provided their premises for conducting DMPR Camps

Conclusion: The WASH needs of persons affected with leprosy have to be addressed as a priority. Educating and engaging the family members for support is crucial. Community partnership will increase the support towards leprosy affected families thus reducing stigma and discrimination towards the diseased persons.

ILC-5: DISABILITY and IMPAIRMENT:

5.1 Nerve Function and Impairments

O-008

UNMET CARE NEEDS OF LEPROSY PATIENTS WITH DISABILITIES- FINDINGS IN A KOLI COMMUNITY DOMINATED AREA IN MAHARASHTRA, INDIA.

Presenter: Vanaja Shetty

V P Shetty[1], NF Mistry [1], S S Pandya [1] and K Shah [1]

[1]The Foundation for Medical Research, Senior Mentor, Director, Medical Officer and Research Associate

Objective: To assess the disability status and utility of Deformity Prevention and Medical Rehabilitation (DMPR) services by leprosy patients released from treatment at the public health facility

Study design & methods: Cross- sectional descriptive study. Purposive and convenient sampling method.

Study sight: Two Koli dominated villages in Panvel block of Maharashtra, India, with a population of ~5000.

Study subjects: People who have registered for treatment and have been released from treatment at the Primary Health Centre (PHC) and are willing to participate. Data was collected through direct interview using a pre-set interview schedule; clinical examination, nerve function impairment testing, Slit skin smear if found necessary and history of any other major illness. Epidemiological retrospective data pertaining to number of patients living with deformity, numbers with old and new deformities i.e. numbers developing NFI during and after the release from treatment, knowledge and utility of DMPR services, corrective surgeries are gathered. At the point of interview Blood Pressure and blood sugar levels were recorded in age group of 30 and above.

Findings: Of the 76 RFT patients included 39 were males and 37 females with age ranging between 21-65 years. On examination 29 patients (38%) were seen with grade 1 and/or grade 2 deformity. Majority had (79%) had multiple grade 2 deformities with involvement of multiple nerves. While 20 patients presented with deformity at registration nine developed it during or after the completion of treatment and went unnoticed. At the point of examination the Foot ulcers were the most common (12 cases), followed by claw hand deformity (ulnar claw 8 cases, median claw (5 cases) foot drop (4 cases). Good proportion of patients were also seen with other co-morbidities such as hypertension, diabetics and lymphatic filarisis and were leading a very poor quality life. While all the patients interviewed admitted, were aware of the availability of DPMR service and were given instructions regarding self care, none were keen on availing the services or were following the guidelines. Reasons included; lack of faith, poor service, poor transport and too far, not free and fragmented service.

Conclusion: While the magnitude of disability related problem/s does not come as a shocker, the extent of neglect resulting in poor quality life is unacceptably high. A comprehensive patient friendly approach is the need of the day for care of patients after the MDT cure.

O-034

WHAT IS THE LEVEL OF USAGE OF TOOLS TO DETECT NERVE FUNCTION IMPAIRMENT AND BARRIERS IN ITS USE IN CURRENT NATIONAL LEPROSY ERADICATION PROGRAM (NLEP), INDIA?

Presenter: Sarwat Husain Naqvi

Sarwat Husain Naqvi[1], Dr. M.R. Deshpande[2], Karthikeyan G [3] Dr. Ashish Sinha[4]

[1]NLEP Consultant The Leprosy Mission Trust India ,[2] State Leprosy Officer Chhattisgarh, [3] Research Coordinator TLMTI INDIA [4]Assistant Professor Pt. JL Medical college Raipur

Objective: Prevention of disability is the key component of any leprosy program. Identification and management of early nerve function impairment (NFI) is the key strategy to prevent permanent disabilities due to leprosy. The tests such as Monofilament test (MFT) and voluntary muscle tests (VMT) are common tools used to detect early NFI of sensation and motor functions, respectively. In a large program like NLEP, the implementation of these tools is a huge challenge. The objective of this study is to understand the level of usage and barriers of tools to detect nerve function impairment in current national leprosy eradication program (NLEP), India

Method: The Leprosy Mission Trust India, provides technical support to NLEP in two states, Maharashtra and Chhattisgarh. This includes capacity building, implementation planning, monitoring and evaluation. We did desk review to know the strategies used in NLEP to perform the disabilities assessment and its frequency. Interviews were done with key informants to understand the barriers in implementation of MFT and VMT in the NLEP at the lowest level of treatment

Results: In the program, sensory functions were assessed using ballpoint pen technique. The VMT is performed by physiotherapy technicians at block level using simple muscle grades, as strong (S), weak (W) and paralysis (P). The assessment of Nerve Impairment disability is graded and recorded at the time of diagnosis and not periodically at subsequent visits. The non-availability of monofilament is the top barrier to its use, followed by the capacity of health workers to use it. The disability assessments were mostly done by physiotherapy technicians at block level, who are very few in number to match the number of patients. The detailed analysis will be presented in the conference.

Conclusion: Timely and proper use of tools to detect early nerve function impairment such as MFT and VMT by NLEP functionary may prevent disability in leprosy effected person or may prevent the worsening in a person who has already developed disability.

O-037

ENDOSCOPIC ULNAR NERVE DECOMPRESSION IN LEPROSY

Presenter: Premal Das

Premal Das[1], Karthikeyan G[2]

[1]Surgeon; The Leprosy Mission Hospital Naini, Allahabad, India.
[2]Research Coordinator; The Leprosy Mission Trust India, New Delhi, India.

Objective: There have been discussions of the sonographic evaluation of the Ulnar Nerve thickening in leprosy and subsequent endoscopic nerve decompression. The open Ulnar nerve decompression is a large 15-25 cm incision with open exposure of the nerve. This leaves a large scar and frequently the nerve necrosis festers through this long wound. The patient takes long to recover from this large open surgery. The endoscopic procedure is suitable for nerve thickening associated with pain and diminished function; done through a 1-2cm incision with

quicker recovery. In this case series we will demonstrate the effectiveness of endoscopic ulnar nerve decompression in relief of nerve pain with minimal scarring.

Method: At The Leprosy Mission Trust India's Hospital in Naini, North India, we have recently commenced endoscopic ulnar nerve decompression. This is currently being done for pain relief and after sonographic assistance is available, will be extended for early deficit as an adjunct to steroids. The nerve pain was graded and scored as explained by Pearson; 'Absent', 'Mild', 'Moderate' and 'Severe' were scored as 3,2,1 and 0, respectively. The impact on pain relief, rapid recovery and absent local infection will be compared with other patients who had an open nerve decompression prior to the availability of this facility.

Results: A case series of 12 endoscopic nerve decompressions have shown that the patient is relieved of pain and can go home immediately. The findings from final analysis will be presented in the conference.

Conclusion: Endoscopic Nerve decompression is a good alternative to the open nerve decompression when there is no nerve abscess, necrotic collection. Recovery is rapid, patient satisfaction is good.

O-051

MENTAL WELLBEING OF PERSONS AFFECTED BY LEPROSY – A FORGOTTEN ASPECT OF LEPROSY SERVICES

Presenter: Wim H. van Brakel

W.H. van Brakel[1], M. van Dorst[1,4], W.J. van Netten[1,4], J.I.R. Dijkstra[1,5], A. van der Linden[1,5], B. Widjanarko[2], P. Ginandjar[2], D. Aley[3], Y. Rai[3], P.M.W. Somar[1,4], M.M. Waltz[4], M. van Elteren[5], B.D. Pandey[6], H.M. Denny[2]

[1] NLR, Amsterdam, Netherlands, [2] Universitas Diponegoro, Semarang, Indonesia, [3] Lalgadh Leprosy Hospital and Services Centre (LLHSC), Dhanusha, Nepal, [4] VU University Amsterdam, Netherlands, [5] VUmc School of Medical Sciences, Amsterdam, Netherlands, [6] Ministry of Health and Population, Government of Nepal, Kathmandu, Nepal

Objectives: Leprosy and its consequences, particularly stigma, physical complications and disabilities, affect the mental wellbeing of (former) patients. However, very few leprosy programmes have any kind of mental health services available. A recent systematic review found 67 studies reporting poor mental health, including depression, anxiety disorders, and suicide (attempts) among persons affected. Much less known is that the mental wellbeing of their families is also affected, although data on this are still sparse. Hardly any population-based studies exist and very few mental health instruments have been validated for this target group. There is an urgent need of more data on the mental wellbeing of persons affected and their family members for advocacy, fundraising, needs assessment, intervention planning, development of interventions and monitoring of programmes and services. The objectives of this presentation are to present recent results of instrument validation and assessment of mental wellbeing and depression among persons affected by leprosy and highlight the need to implement appropriate interventions to address this area of need.

Methods: Mixed-methods studies using the Herdman/Stevelink framework were done in Central Java, Indonesia, and in the catchment area of LLHSC, Dhanusha District, Province 2, Nepal, to validate the PHQ-9 and WEMWBS (Nepal only) and collecting data on depression and mental wellbeing among persons affected by leprosy. The study in Indonesia used a convenience sampling, while the study in Nepal used random sampling of members of self-help groups. Community controls were also included.

Results: With some minor modifications, both scales were found culturally suitable and easy and quick to use. Despite being members of a self-help group, 38% of respondents in south-east Nepal had poor mental wellbeing (n=142) and 25% a level of depression that would warrant intervention. These frequencies were 0% and 9.3%, respectively, among 54 community controls. Fifty percent had recent thoughts of self-harm or suicide. The prevalence of depression was 22% among 114 persons affected in Central Java, Indonesia.

Conclusion: Two mental health instruments were culturally validated in Nepal and one in Indonesia for use among persons affected by leprosy. Subsequent prevalence studies revealed poor mental wellbeing and a high prevalence of depression. We hope that these studies contribute to raising awareness of the mental health needs of persons affected. Interventions to mitigate the negative impact of leprosy on mental wellbeing should be implemented. Further population studies of mental wellbeing are needed, also including family members of persons affected.

O-061

ULNAR NERVE DECOMPRESSION SURGERY FOR PAIN RELIEF AND NERVE FUNCTION IMPAIRMENTS (NFI) RECOVERY: A RETROSPECTIVE CLINICAL STUDY ATANANDABAN HOSPITAL IN NEPAL

Presenter: Pradip Sapkota

P. Sapkota[1*], I. B. Napit[1], J. R. Sharma[1], D. RSJB. Rana[2], R. B. Bista[1], J. Maharjan[1], S. Dulal[2], M. Shah[1], D. A. Hagge[2]

[1]Anandaban Hospital, The Leprosy Mission Nepal, Lalitpur, Nepal; [2]Mycobacterial Research Laboratory, The Leprosy Mission Nepal, Tikabhairav, Lalitpur, Nepal

Objective: Leprosy is a chronic granulomatous disease affecting peripheral nerves and skin. Manifestations of neuropathy include nerve function impairment (NFI), swelling and pain. As a current practice, the management of nerve pain is carried out by medication or surgery. We aimed a retrospective medical chart review to evaluate the efficacy of ulnar nerve decompression surgery to relieve pain and recover nerve function impairments.

Method: Medical records of patients (n=30), who had undergone ulnar nerve decompression surgeries along with steroid therapy from January 2014 - October 2018 were reviewed and further analyzed for retrospective study. The routine Monofilament Test (MFT, 2 gram monofilament standard) was used to determine sensory NFI of the ulnar nerve while Voluntary Muscle Testing (VMT) was utilized for Motor NFI determination of strength of *abductor digiti minimi* and third and fourth intrinsic muscles. Follow-up results were investigated approximately one year or nearest to one year (6 months to 18 months) after the surgery. Nerve pain was determined by medical physicians based on medical evaluation and history. In few cases (n=6), no existence of nerve pain was assumed when there was no follow up at one year or after. For nerve pain recovery, data analysis was conducted at one year or nearest to one year after surgery; while for an exceptional few cases (n=6) the longest period of duration (2-5 months) after surgery was utilized.

Results: Patient charts of ulnar nerve decompression surgeries (n=30, median pain duration=6 months, Range=1-36 months) were analyzed. Patients average follow-up duration was 12±9 months however, the average for NFI analysis (n=23) was 14±9 months. Cases were classified as: BT=13, 43%; BL/LL=2/12, 47%; and PN=3, 10%. At follow-up, 83% (n=24/29) patients had shown decrease in their ulnar nerve pain. However, regarding NFI at 1 year, only 35% (n=7/20) of those patients demonstrated significant NFI recovery; while, 50% (n=10/20) revealed no change in their NFI. NFI recovery was better in BT (63%, n=5/8) cases as compared to none in PN and BL/LL (20%, n=2/10) cases. Duration of nerve pain (less or more than 1 year) was not associated with pain relief (p=0.46) or NFI recovery (p=0.36).

Conclusion: Nerve decompression surgery may be an empirical therapeutic approach for nerve pain management; nonetheless, it did not demonstrate significant NFI recovery within this limited patient cohort. To better understand the efficacy of this surgery, further analysis will be performed with more cases and evaluating longer time duration.

O-062

THE RELATIONSHIP BETWEEN LIGHT TOUCH-DEEP PRESSURE SENSATION AND COLD and WARM DETECTION

Presenter: John Figarola

J.H. Figarola[1], E. Tomancik-Voelker[2], A.S. Hoard[4], D.E. Hupp[3] and R. Lahiri[1]

[1]National Hansen's Disease Programs, [2]Anders Group, [3]D Hupp Physical Therapy, [4]National Hansen's Disease Programs (retired)

Objective: The National Hansen's Disease Programs (NHDP) uses the Semmes Weinstein monofilaments to monitor sensory changes in patients with Hansen's disease. Warm Detection and Cold Detection thresholds were measured using the Medoc Q-Sense. This study examines the relationship between each monofilament in the mini-kit and the warm and cold detection test. The overall objective was to determine if the monofilaments correlate with loss of protective warm and cold sensation.

Method: A cross sectional study was performed on 83 patients tested from January 2013 – December 2016. All patients seen for routine Hand and Foot screens underwent testing for cold and warm detection. Sites on the distal index and ring fingers and great toes were tested. The monofilaments with index numbers 2.83, 3.61, 4.31, 4.56 and 6.65 monofilaments were used on the hand and 4.17, 5.10 and 6.10 were used on the foot. The limits protocol was utilized for the warm and cold detection tests. Temperatures ranged from 20-50°C.

Results: Our results indicate that loss of protective warm and cold sensation generally follows monofilament scores. All patients feeling the 4.56 monofilament or below had loss of protective temperature sensation in their hands. An interesting observation was that in some patients with normal monofilament scores (2.83 in the hand/4.17 in the foot) there was some loss of warm and/or cold sensation in hands and feet.

Conclusion: Hand and foot screening using monofilaments is an economical and field friendly test that requires minimal training and set-up to conduct. This study shows that monofilament scores correlate well with loss of protective warm and cold sensation in patients. Therefore, hand and foot screens using appropriate monofilaments should be routinely conducted on patients. However, some patients can have abnormal temperature detection even with normal monofilament scores. Using warm and cold detection tests adds value in these cases to detect subclinical sensory loss.

O-063

EVALUATION THE TEMPERATURE OF THE HANDS IN LEPROSY PATIENTS AND SEROPOSITIVE CONTACTS BY THERMOGRAPHY

Presenter: Diogo Fernades dos Santos

E.F.P. Sabino[1], A.C.R Cunha[2], D.F. Santos[2], D.E. Antunes[2], Isabela Maria Bernardes Goulart[1,2]

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[2] National Reference Center for Sanitary Dermatology and Leprosy, Clinic's Hospital, Federal University of Uberlandia (UFU), Minas Gerais, Brazil.

Objective: To evaluate the temperature of the hands by thermographic examination of ELISA anti-PGL-I seropositive contacts and compare with leprosy patients and healthy individuals aiming to detect early peripheral autonomic neuropathy.

Method: Infrared images (camera Flir Tools t420) were obtained of dorsal and palmar regions of the hands on the following groups: leprosy patients (n = 60) subdivided into 10 patients for each clinical form; ELISA anti-PGL-I seropositive contacts (n = 11) and control (healthy subjects) (n = 20). All subjects had ages between 18 and 70

years, of both genders. After obtaining images, the analyzes were performed in software, which provided the mean temperature of palmar region of the 1st to 5th fingers, the central palm region and the two regions of the dorsum of the hands. In the statistical analysis, the student T test was used to compare the means between groups ($p < 0.05$).

Results: The group of leprosy patients presented a significant decrease in temperature in all regions of the hands when compared to the control group ($p < 0.05$). The seropositive leprosy contacts demonstrated a significant temperature decrease at 1°, 2°, 4° and 5° fingers, with values 33.5°C, 33.7°C, 33.4°C and 33.2°C, compared with the control that presented 34.5°C, 34.5°C, 34.4°C and 34.5°C, respectively ($p < 0.05$). The temperature in the back of the hands (patients: 32.8°C and 32.7°C / contacts: 34.3°C and 34.3°C) and in the palm region (patients: 33.2 °C / contacts: 34.2 °C) was lower ($p < 0.05$) when it was compared leprosy patients with seropositive contacts.

Conclusion: Thermography can demonstrated an autonomic neuropathy of peripheral microcirculation in the hands of patients with leprosy, as well as peripheral dysautonomia in the hands of seropositive leprosy contacts, identifying the presumed patients in this group who are at higher risk of becoming ill.

O-102

PREVALENCE OF DEPRESSION AMONG PATIENTS ATTENDING OUTPATIENT DEPARTMENT OF TERTIARY CARE LEPROSY HOSPITAL IN THE CITY OF KOLKATA, WESTBENGAL, INDIA.

Presenter: Helen Gnanasiro Roberts

Helen Gnanasiro Roberts[1], Joel Mahato[2]

[1]The Leprosy Mission, Premananda Memorial Leprosy Hospital, 259 A, Acharya Prafulla Chandra Road, Kolkata 700 006, West Bengal, India.

Objective: The objective of this study is to assess the Prevalence of Depression among the patients suffering from consequences of Leprosy (Disability) and its relationship with demographic and clinical factors.

Method: Patients attending Premananda memorial Leprosy Hospital were assessed for Depression using Patient Health questionnaire-9 (PHQ-9) in language of the patient either Bengali or Hindi. PHQ9 is a validated screening tool for depression, which is available in different languages. It consists of nine questions about how the patient has felt in the preceding two weeks, each of which get a score out of three. The maximum score is 27. A score of 0-4 indicates no depression, 5-9 indicates minimal problems, 10-14 indicates mild depression, 15-19 moderate depression and 20-27 indicates severe depression. The questionnaire was administered either by clinician asking the questions, or by filling in the form themselves. Men and women above the age of 20 years attending outpatient department were recruited for the study. Descriptive statistics was used to report the findings and Chi-square tests were used to study the association between depression and other factors.

Results: A total of 200 patients attending the out-patient department were included in the study. The data is being collected and the findings will be presented in the conference. Based on the score obtained patients were given counselling for their symptoms.

Conclusion: Expected Outcomes; Prevalence of Depression among the Leprosy patients attending Tertiary care Hospital and its association with other clinical and demographic factors. The necessity of counselling services will be determined based on the outcome of the study.

O-103

PATHOGENESIS AND TREATMENT OF LEPROSY NEUROPATHIES WITH REACTIVE STATES AND RELAPSES

Presenter: Vladimir Belopasov

Belopasov V.V., Grigorieva Yu.G., Duiko V.V., Shats E.I.
Leprosy Research Institute

Objective: Despite the elimination of leprosy in Russia, patients on etiotropic therapy periodically experience reactive states accompanied by the development of mono- or polyneuropathy.

Method: 146 patients were examined: with the paucibacillary form of leprosy - 48 (32.8%), with the multi-bacillary form - 98 (67.2%). The level and extent of damage of the neuromuscular apparatus was assessed on the basis of electromyography (EMG) data, and enzyme immunoassay was used to determine the serum antibodies to the neuromarkers Ab-PNS, Ab-Cer, Ab-MBP and Ab-S100.

Results: The development of Erythema Nodosum Leprous (ENL) was observed in 57 patients (82.6%), borderline or tuberculoid-type reversion to lepromatous - in 12 (17.4%). Local exacerbations in the form of pronounced pain syndrome, thickening of the nerve trunks, the development of new or progression of existing neuropathies, occurred regardless of the severity of skin manifestations, were accompanied by functional or persistent changes in EMG indices, indicating damage of the muscles, axons, myelin sheaths of the sensory and motor nerves, involvement of the segmental apparatus of the spinal cord in the pathological process. Along with inflammatory infiltration, regional edema, ischemia, compression of nerve trunks in anatomical tunnels, autoimmune mechanisms are important in the genesis of sensory and motor disorders. An increase in the levels of antibodies to Ab-PNS, Ab-Cer and Ab-S100 is detected in the serum of 89.5-77.2% of patients even before the diagnosed exacerbation, persists in the coming months. Synthesis of antibodies to myelin basic protein (Ab-MBP) remains constantly high, determined not only by the phase of the course, but also by the degree of the peripheral nerves damage. Prescription of prednisolone 30-60 mg / day, ketoprofen 16 mg / day per os or 200 mg / day intramuscularly and intravenously, thioctacid 600 mg / day intravenous, in combination with local application of anesthetics, perineural and endoneural administration of hydrocortisone, neurosurgical nerve decompression will allow to obtain a positive clinical effect in the form of relieving pain syndrome, preventing the development of amyotrophy, contractures, reducing the severity of denervation changes, the content of antibodies to neuromarkers Ab-PNS, Ab-Cer and Ab-S100 in all the sick.

Conclusion: The timely administration of complex anti-inflammatory, immunosuppressive, anti-edema, antioxidant therapy favours to the regression of neurological complications and preservation of the function of peripheral nerve trunks.

O-155

EVALUATION OF PERIPHERAL NERVE INJURY DUE TO LEPROSY IN ARMADILLOS

Presenter: Linda Adams

M. T. Pena[1], R. Lahiri[1], G. J. Ebenezer[2], L.B. Adams[1],

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Objective: The nine-banded armadillo (*Dasypus novemcinctus*) is a natural host for *Mycobacterium leprae* and more importantly it shows extensive nerve involvement similar to humans. The objective of this research is to further

advance the armadillo as a model for human leprosy, particularly for leprosy neuropathy, using motor and sensory tests that allow early detection of nerve function impairment.

Method: A total of 12 armadillos were experimentally inoculated with a dose of 10^9 viable *M. leprae* intravenously and were monitored for disease progression until dissemination at 18-24 months post-inoculation. Motor nerve involvement was monitored using the Motor Nerve Conduction Test (MNCT) performed at the post-tibial nerve of both hind legs with a Cadwell Sierra Summit machine. Extent of sensory nerve involvement was determined using the Epidermal Nerve Fiber Density (ENFD) test. For this test a 3mm skin biopsy was obtained from the hind leg and immunostained with anti-PGP9.5 and anti-p75 as markers for axons and Schwann cells, respectively. We also evaluated the integrity of the neuromuscular junctions (NMJ) in footpad muscles at sacrifice by staining with FITC-bungarotoxin and PE-anti-myosin, respectively.

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Results: Nerve injury due to leprosy was detected as early as 4 months post-inoculation using the MNCT and was manifested by abnormal compound muscle action potential (cMAP) of <0.9 mV. Armadillos progressing to late stage leprosy showed significant slowing of conduction velocity (<50m/sec) and a total conduction block indicative of demyelination. *M. leprae*-infected armadillos tended to show lower ENFD (22.5 ENFD/mm) compared to naïve non-infected animals (24.8 ENFD/mm), signifying small fiber degeneration. Remak Schwann cells of the dermal cutaneous nerves showed significant increase in density (5224 cells/mm^3) in *M .leprae* infected armadillos compared to naïve armadillos (4184 cells/mm^3) indicating that during early infection Schwann cells undergo proliferation while harboring *M. leprae*. Lastly, in *M. leprae*-infected armadillos the integrity of the neuromuscular junctions was altered and the number of NMJ was reduced compared to naïve non-infected armadillos.

Conclusion: The armadillo model for leprosy enables early detection of nerve injury because of the defined course of infection. Another advantage of using armadillos for leprosy research is that large quantities of leprotic nerve tissues that cannot be obtained from human subjects are available. The armadillo model could markedly benefit the understanding of the mechanisms of nerve injury in leprosy and might provide useful tools for early diagnosis and evaluation of new therapies.

O-234

COMPARISON OF TWO METHODS OF POSTERIOR TIBIALIS TRANSFER- STUDY AT A RURAL HOSPITAL OF WEST BENGAL, INDIA

Presenter: Baniprasad Chattopadhyay

Dr Bani Prasad Chattopadhyay [1] Rani Chatterjee[2]

[1]B.S. Medical College, Bankura,WB,India,[2] NRS Medical College, Kolkata, West Bengal, India

Objective: Transfer of posterior tibialis tendon for correction of foot drop is common and long standing practice procedure. Leprosy patients presenting with foot drop has many associated comorbidities. Though it is widely practiced mainly two methods are followed that is interosseous technique and circumtibial technique. Our study is aimed to compare these two methods.

Method: 40 patients operated between 2008 to 2012 for posterior tibialis transfer was followed up. 20 was of interosseous technique and 20 was of circumtibial technique, irrespective of tendon fixed with bone or another tendon. Patients with comorbidities like large ulcer or neurological problem where excluded .Active dorsiflexion, walking gait, plantar flexion of the ankle joint, ulceration and overall satisfaction was recorded for two different group.

Result: Our observation is Interosseous technique has relatively better outcome then circumferential techniques Details will be presented

Conclusion: Selection of method should be done according to the cases, osteoporosis, toe drop, interosseous space size for better result restoration of ankle function.

O-280

ENHANCED SCHWANN CELL AND AXONAL REGENERATION DURING *M. LEPRAE* INFECTION FOLLOWING INTRACUTANEOUS AXOTOMY IN ARMADILLOS

Presenter: Gigi J Ebenezer

Gigi J Ebenezer[1], Maria T Pena[2], Richard W Truman[3], Linda B Adams[2], Kelly Wagner[1], Michael Polydefkis[1]

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Objective: Nine–banded armadillos develop peripheral neuropathy after experimental *M. leprae* infection that closely recapitulates human lepromatous leprosy neuritis. We used the armadillo model to determine whether *M. leprae* infection alters cutaneous nerve regeneration following intracutaneous axotomy to further understand the pathogenesis of *M. leprae* associated peripheral neuropathy.

Method: 15 naïve and 18 M. leprae -infected armadillos underwent 3mm excisional skin punches in abdominal skin at 12, 13 and 14 months post-M. leprae inoculation. 4mm concentric punches, overlapping the previous 3mm excision punch sites yielded samples that were 30, 60 and 90 days post-axotomy. 3mm skin punches were obtained at the distal leg at 16 months. 50µm sections were immunostained with the panaxonal marker PGP9.5, and anti-p75, the Remak Schwann cell marker. Axonal and Schwann cell growth rates were assessed by measuring changes in innervation over time, using a design -based unbiased stereology methodology. Epidermal nerve fiber density at the distal leg was determined using established counting rules. All data are expressed as the mean ± standard error.

Results: Both collateral sprouting and vertical regenerative axon regrowth from the deeper dermis led to complete reinnervation of the epidermis at the axotomy site by 60 days post axotomy. The axonal growth rate was significantly (p =0.01) higher in infected animals (naïve:21.9±2.5, *M. leprae*: 30.6±2.8 mm/day) at the early 30 day post axotomy time point. Later time points had similar growth rates. There was a similar trend towards increased Schwann cell nuclear proliferation (cells/day, naïve: 118±14, *M. leprae*: 137±13) at 30 days. At the distal leg, epidermal nerve fiber density was reduced in infected animals compared to controls (naïve:14.3±2.8 , *M. leprae*: 9.5±1.2 fibers/mm, p=0.04) while Schwann cell number remained significantly elevated in infected animals (naïve: 6684±535, *M. leprae*:10282±792 cells/mm^3, p<0.001).

Conclusion: These results suggest that *M. leprae* infection leads to increased and persistent Schwann cell proliferation in response to injury. This is initially associated with enhanced axonal regeneration that slows over time and is ultimately associated with distal axon loss.

O-294

SILENT NEUROPATHY IN LEPROSY - AN IGNORED EVENT.

Presenter: Joydeepa Darlong

Joydeepa Darlong[1], G Karthikeyan[2]

[1]Head KMD , TLMTI ; [2]Research coordinator TLMTI

Objectives: Silent neuropathy is a much ignored and neglected event in leprosy. Because the patient experiences no nerve pain, tingling, burning and symptoms of early nerve damage, this goes unreported many times. In the

present health system, nerve function assessment is done at the time of diagnosis and completion of treatment and occasionally when patients report with reactions. Several studies have reported a high percentage of 'silent neuropathy' that undoubtedly results in impairment in many patients. Following the declaration of leprosy elimination nerve function assessments are done infrequently. Under the Global Leprosy Strategy 2016-2020, the proportion of patients with G2D at the time of diagnosis and at the end of treatment is monitored. Thus silent neuropathy remains undetected leading to impairments despite MDT intake.

In this study we aim to estimate the incidence of silent neuritis and document patient experiences in detecting them.

Methods: The current study is a retrospective cohort study of all leprosy patients registering at The Leprosy Mission Hospitals and government health facility between January 2018 and December 2018. All patients on treatment were included and nerve function assessment was tabulated at registration and at RFT. A questionnaire will be administered to record events of reaction, symptoms of nerve pain and steroid intake. It will also tabulate information on the patients experiences at the onset of the event, and the need of IEC activities for better awareness.

These will be then analysed separately to estimate the number the impairments that were undiagnosed and untreated.

Results: 2234 newly diagnosed with leprosy were registered in 2017 in 3 TLM hospitals from 3 states of India. About 471 presented with nerve imapairment less than 6 months and were started on steroids. Presence of silent neuropathy and its correlated are being documented and will be presented in the final paper.

Conclusion: Silent neuropathy must be looked for rigorously through quick nerve assessments each time the patient visits the health facility. Patients also must be taught the subtle symptoms of motor and sensory damage

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O-319

ETIOPATHOGENESIS OF ULCER-MUTILATED NEUROPATHIES IN LEPROSY

Presenter: Vladimir Belopasov

V.V. Belopasov, V.V. Duiko
Leprosy Research Institute, Russia

Objectives: To determine the role of deafferentation and vascular changes in the pathogenesis of local trophic disorders.

Methods: A survey of 24 leprosy patients, 25 with type 2 diabetes mellitus, 3 with sensor-vegetative neuropathy type I (sporadic cases) with trophic ulcers of the feet was carried out. In addition to the clinical evaluation, paraclinical methods were used: cutaneous and promoting electromyography, direct and volume sphygmography (OSFG), skin electrothermometry.

Results: According all patients with ulcers and the presence of a destructive process in the focal osteomyelitis, an increase in the blood content of the limb in the lower leg and foot on the ipsilateral side was observed. The amplitude of the anacrotic lift increases by 2 times, compared with the “intact” limb ($p < 0.01$). With an increase in the size of the ulcer, the phenomenon of “luxury perfusion” develops, in the absence of clinical markers of inflammation the skin temperature rises, the amplitude and time of the anacrotic rise increases, on the length of the main wave multiple “collateral” waves of ripple are recorded. With positive results of treatment, there is a tendency to normalization of hemodynamic parameters, however, the inclusion of compensatory mechanisms in the form of increased tissue vascularization did not always lead to a positive result.

In EMG studies indicate the presence of marked signs of axon and myelinopathy in patients. In addition to damage to the peripheral nerves, changes characteristic of the lesion of the spinal cord segmental apparatus are identified. In connection with the release of the dystrophic process beyond the affected nerves, motor neurons generate pulses of the type of fasciculations. During the dynamic observation of patients it was established that the progression of clinical manifestations is associated with the stages of development of the pathological process. We have identified the following phases of the nervous system damage: 1) neuritic; 2) involvement in the pathological process of the segmental apparatus of the spinal cord; 3) complete death of sensory and motor neurons. The defeat of the neuromuscular apparatus is ahead of the timing and extent of violations of the peripheral circulation.

Conclusion: Loss or change of controlling influences from the nervous system is the determining factor in the development of neuropathies. Along with the defeat of the sensory component, sympathetic denervation, retrograde dystrophic changes in the segmental apparatus of the spinal cord, which occur under the influence of prolonged afferent impulses, are important in the trophic disorders.

ILC-5: DISABILITY and IMPAIRMENT:

5.2 Prevention of Disability

O-017

ENHANCING ACCESS TO DISABILITY PREVENTION AND MEDICAL REHABILITATION (DPMR) SERVICES IN TRIBAL LOCATIONS, IMPROVED DIAGNOSIS AND LINKAGE WITH TREATMENT AND CARE CASCADE

Presenter: Naveen Kumar Satle

Naveen Satle, Satish Chaudhary
LEPRA Society, Madhya Pradesh. India

Objective: Establish DPMR facility for persons affected with leprosy in high endemic block Sendhwa of District Barwani to provide adequate diagnosis, treatment and prevention of disability services to make an impact.

Method: Before reaching on the decision of finalisation of location for Referral Center LEPRA has done data analysis of State NLEP reports of last five years to analyse the situation and then it was decided that Block Sendhwa is appropriate for establishing Referral Centre within Govt. Civil Hospital Sendhwa a tribal block to provide services for difficult to diagnosed cases and prevention of disability. In this Referral Center One trained and experienced Physio- Technician and one Shoe technician were positioned from April 2016 till date to provide the services for people affected by leprosy daily in OPD.

Result: We have analysed the monthly progress report data of Block Sendhwa of 2016-17 with 2017-18 to validate the changes pre- and post-Referral Centre scenario.

Result :

S.No	Indicator	2016-17	2017-18
1	New leprosy case detection	192	452
2	Female cases diagnosed	60	209
3	Grade 2 Disability	13	18
4	Child cases of leprosy	11	40
5	Re-constructive surgery done	0	8

Conclusion: There is a strong need to have quality diagnosis and prevention of disability services (DPMR) in endemic locations of high endemic district to provide easy access for correct and timely diagnosis and prevention of deformity and disability which brings about a positive change in the lives of persons affected with leprosy.

O-027

FACTORS INFLUENCING SELF-CARE PRACTICE AMONG PERSONS AFFECTED BY LEPROSY: AN INTEGRATIVE LITERATURE REVIEW

Presenter: Sunday Udo

S.O. Udo[1], P.O. Sunday[2], P.I. Adebayo[3]

[1] The Leprosy Mission-Nigeria, Abuja, Nigeria and Lancaster University, Lancaster, UK, [2] The Leprosy Mission-Nigeria, Abuja, Nigeria [3]National Tuberculosis and Leprosy Control Programme, Abuja, Nigeria.

Objective: To identify the facilitators and barriers to self-care practice among people affected by leprosy

Method: For this integrative literature review, qualitative, quantitative and mixed-methods studies of self-care practices among persons affected by leprosy who carried out self-care either at home or in self-care groups were combined. Five electronic databases (EMBASE, Medline, Web of Science, CINAHL, SCOPUS,) were searched. The search strategy applied the terms 'Leprosy', 'Hansen's Disease', linked to 'self-care', self-management, 'self-care group', to identify the relevant articles on the experience and factors that influence self-care practices of people affected by leprosy. Thematic analysis was used to identify the prominent themes from the data.

Results: The search of the databases yielded 495 articles relevant to the research, and 27 papers were included. Five major themes were identified. The first theme centered on self-efficacy and perceived importance of self-care. High self-efficacy was identified as a positive factor in initiating and sustaining leprosy self-care practice. Although none of the papers directly assessed the factors that facilitated or inhibited the development of self-efficacy in the lives of people affected by leprosy. The second theme focused on the availability of self-care materials. Adequate, appropriate and uninterrupted supply of basic self-care materials, like water, soap, and protective footwear were found as a positive factor for promoting compliance with self-care practice. The third theme identified inadequate knowledge and skills about self-care as a barrier to carry out leprosy self-care. An understanding of basic self-care techniques (soaking, oiling, scrapping, etc) facilitates participation in self-care. The fourth theme identified social support, particularly family and peer support, through membership of self-care groups, as instrumental in encouraging people affected by leprosy to sustain self-care activities. The fifth theme focuses on the role of health care providers. Although self-care groups are intrinsically designed to be self-organised by people affected by leprosy, supportive supervision from health workers helped to optimise their knowledge of self-care, solve problems and facilitated referrals when necessary.

Conclusion: Evidence from this integrative review show that patients' engagement with self-care is largely influenced by a high level of self-efficacy and perceived importance of self-care; their level of understanding and knowledge of self-care and skills of self-care; availability of self-care materials; family support and membership of a self-care group; and supportive supervision from health care providers. Detailed understanding of these factors will contribute in deepening knowledge on how leprosy self-care can be improved, scaled up and sustained.

O-035

COMPARISON OF OUTCOMES USING EIP Vs RING F FDS FOR THUMB OPPOSITION REPLACEMENT IN MEDIAN PARALYSIS DUE TO LEPROSY

Presenter: Premal Das

Premal Das[1], Karthikeyan G[2] & G Manivannan[3]

[1]Surgeon; The Leprosy Mission Hospital Naini, Allahabad, India; [2]Research Coordinator; The Leprosy Mission Trust India, New Delhi, India; [3]Occupational Therapist; The Leprosy Mission Trust India, PARTI project, India.

Objective: To demonstrate the effectiveness of using Extensor Indicis Proprius as an alternate motor tendon in selected cases, to correct Opposition of thumb and prevent swan neck deformity.

Method: The study was conducted at a tertiary referral Leprosy hospital in North India. All patients who were operated from 2008 to 2017, to correct 'Thumb Claw' due to Leprosy were included in the study. There were about 500 corrective surgeries for Thumb during this period, 200 using EIP and 300 using FDS. There was a pre-selection for the type of surgery, based on clinical and occupational findings.The primary outcome is the quality of thumb opposition which was graded as described by Sundararaj GD et al (JHS, 1984). The secondary outcome of Improvement in Pinch power, and Pulp to Pulp contact were analyzed and compared for both the groups. The z-test was used to compare the quality of thumb opposition between the groups. The paired sample t-test and independent-t test was used to compare the pinch power before and after surgery and between the groups, respectively.

Results: The thumb function of the two groups was compared in terms of quality of thumb opposition, pinch power, pulp contact and opposition strength before surgery, post-op and at final follow-up. The incidence of swan neck deformity was also assessed. The detailed analysis is in progress.

Conclusion: The Extensor Indicis Proprius is a useful motor tendon for correction of Thumb Opposition and gives comparable results to the FDS, in mobile hands. It also prevents the deformity of swan neck in the donor finger.

O-036

HALF FLEXOR DIGITORUM SUPERFICIALIS (FDS) Vs WHOLE FDS FOR LASSO PROCEDURE TO CORRECT CLAW HAND IN LEPROSY

Presenter: Premal Das

Premal Das[1], Karthikeyan G[2], Babu G[3], Joy Esther Thapa[4].

[1]Surgeon; The Leprosy Mission Hospital Naini, Allahabad, India; [2]Research Coordinator; The Leprosy Mission Trust India, New Delhi, India; [3]Training Coordinator; The Leprosy Mission Trust India, New Delhi; [4]Occupational Therapist; The Leprosy Mission Hospital Naini, Allahabad, India

Objective: Lasso surgery has become a common procedure to correct claw finger deformities in leprosy. For several years, the full 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 sublimus minus deformity and reduces the overall grip strength after surgery. Therefore, 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.

Method: There were 900 half FDS procedures done during the period 2009 to 2018 at The Leprosy Mission Hospital Naini, Allahabad. The results of these were compared with full FDS lasso procedures done during the same time frame for relevant parameters. There was a pre-selection of patients for the type of hand surgery based on the standard criteria used in this hospital.. The decrease in the unassisted angle (UA) of Proximal Interphalangeal joints of the fingers were used to determine the improvement in the clawed finger. The change in grip strength was taken as improvement in hand function. For continuous variables, paired-sample t-test will be used to determine the difference between before and after surgery and the independent t-test will be used to compare between groups.

Results: The mean unassisted angle and grip strength, before surgery and post-op at final follow-up and between half FDS and full FDS lasso procedure 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.

Conclusion: The half FDS gives comparable results in terms of function and appearance with minimal incidence of sublimus minus deformity.

O-040

THE USE OF VAN BRAKEL SCALE TO ASSESS SKIN LESION AND NERVE FUNCTION: A THERAPEUTIC GUIDELINE IN REVERSAL REACTIONS

Presenter: Astri Adelia

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Departement of Dermatology and Venereology Faculty of Medicine Universitas Indonesia, Dr. Cipto Mangunkusumo Hospital, Jakarta, Indonesia

Objective: Reversal reactions (RR) plays a substantial role in the leprosy morbidity, however various results with existing therapies as well as inavailabilty of criteria regarding drug dosage adjustment warrants an objective guideline. Van Brakel scale (VBS) is a method to assess the severity of RR and also can be used to evaluate the results and determine the subsequent drug dose during the treatment period. The scale assessment is based on the skin lesion (A score) as well as sensory (B score) and motoric (C score) nerve functions.

Method: This single-blind randomized controlled trial was conducted at the Dermatovenereology Clinic, Dr. Cipto Mangunkusumo Hospital since December 2017 until June 2018. Twenty-two subjects with severe RR were consecutively selected, all of whom had never received treatment. The first group which assessment based on clinical manifestations and nerve function, received adjusted methylprednisolone dose based on changes in total score of VBS which is sum of A, B, and C score. Meanwhile, the second group which assessment only based on clinical manifestations, received adjusted dose based on changes in A score of SVB. The treatment procedure follows the WHO guidelines on corticosteroid treatment for RR with an initial dose of methylprednisolone is 32 mg with changes in dosage depending on the results of the assessment score at the time of evaluation. Evaluation was performed every two weeks for three months. Study outcomes were analysed using non-parametric tests and results were considered significant if p-values were $\leq$0,05.

Results: Changes in methylprednisolone dose as well as SVB score at the beginning and end of observation were significantly different. However, they were not significantly different between the two groups. In this research, detected 7 patients with decreased motor nerve function and 4 patients with decreased sensory nerve function during the treatment evaluation period, that was not realized previously by the patients.

Conclusion: Adjusting methylprednisolone dose in severe RR based on assessment of changes in skin lesion and nerve function was not proven to be superior to assessment solely based on changes in skin lesion. The use of SVB may allow for earlier detection of nerve function abnormalities, especially a sensory nerve function disorder that is the most rarely concern or complained by the patients. Thus, further therapy regimen may be adjusted immediately. It is expected to prevent a new of further disability and decrease the quality of life of patients.

O-064

COMPARISON OF NEUROLOGICAL AND BIO-MECHANICAL FACTORS IN PATIENTS WITH AND WITHOUT PLANTAR ULCER IN LEPROSY

Presenter: Babu Govindan

Babu G[1] Karthikeyan G[2] Premal Das[3] Ruby Marshala[4] Vibha Mani[5]

[1]Training Coordinator, The Leprosy Mission Trust India, New Delhi, India; [2] Research Coordinator, The Leprosy Mission Trust India, New Delhi, India; [3]Surgeon, The Leprosy Mission Hospital Naini, Uttar Pradesh India; [4]Superintendent, The Leprosy Mission Hospital Naini, Uttar Pradesh India; [5]Physiotherapist, The Leprosy Mission Hospital Naini, Uttar Pradesh, India

Objective: Plantar ulcer is the single most common cause of morbidity and dehabilitation of leprosy affected person. Anesthetic foot is the single important cause of ulcers, however not all anesthetic feet progress to ulceration. Therefore, the objective of this study is to analyse the neurological and biomechanical parameters in anaesthetic feet for the occurrence of ulcers.

Method: In this pilot study, a total of 14 patients (6 with ulcers and 8 without ulcer) with insensitive feet due to leprosy who were treated at The Leprosy Mission Hospital Naini were included. All the patients were investigated for demographic, socio-economic details, voluntary muscle testing, range of motion, proprioception, vibration, navicular drop and gait parameters. The Gait ScanTM a state-of-the-art diagnostic tool was used to evaluate the bio-mechanical factors of the gait parameters; stance phase duration, proportion of time spent in different phases of gait and at different part of the foot. The unit of analysis was foot. Descriptive statistics were used to describe the study findings. Non-parametric tests were used to study the difference between the foot with and without ulcer.

Results: The findings of the preliminary analysis is presented here. Among the demographic variables, the education level and socio-economic status was lower among those with ulcer as compared to those without the ulcer. Among the clinical variables the loss of vibration sensation (128 Hz) at 5th Metatarsal head (p=<0.05), higher EHF score (6.8 Vs 3.5, p=<0.05), the longer duration of impairment (60 months Vs 28 months, p=<0.05) were associated with the presence of ulcer. Among life style related variables, those with ulcer had a history of longer duration of standing and walking per day as compared to those without ulcer, however not statistically significant. Among the bio-mechanical parameters, the proportion of time spent in midstance phase (p=<0.05) was longer among those with ulcer than those without it.

Conclusion: There is a definite abnormality in the gait pattern among those with ulcers which can be corrected. The disability level incapacitates a person to practice self-care. Further studies are needed to determine the risk factors for ulcers and its prevention.

O-128

FACTORS ASSOCIATED WITH DEVELOPING DISABILITIES AMONG LEPROSY PATIENTS IN ENDEMIC POCKETS OF BANGLADESH: UNMATCHED CASE-CONTROL STUDY

Presenter: Fatema Akter Bonny

F.A.Bonny[1], E.D. Anggara[1], M. Htet[1], A.K. Thu[1], A. Priyadarshani[1], P.Gayen[2], A. Das[1], R. Azmi[1], F. Islam[3], M.Z. Islam[3], S.A.S. Hossain[1,3]

[1] BRAC James P Grants School of Public Health, BRAC University, [2]Save the Children, [3]International Centre for Diarrhoeal Disease Research, Bangladesh

Objectives: Bangladesh continued to be one of the high leprosy burden countries in the world with 7.2% disability among new cases. Most of these cases are reported from few endemic areas. To meet global leprosy strategy 2016-2020 one of the indicators is to reduce leprosy related disability rate to <1 per million population but in

Bangladesh, the disability rate remains ≥1 in some endemic pockets. To understand the stagnancy of the disability rate the study aimed to investigate the factors associated with developing disabilities among person affected with leprosy in the endemic pockets of Bangladesh.

Method: An unmatched case control study was conducted among leprosy patients who were registered at National Leprosy Eradication Programme (NLEP) between July 2016 and July 2017 in Bogra district, an endemic pocket for leprosy. All available patients over the age of 15 years with leprosy related disability were enrolled as cases but patients with leprosy reaction had been excluded. Patient with leprosy but free from any disability were randomly selected as controls from the sampling frame. Structured pre-tested questionnaire had been used to collect data. To capture clinical manifestation patients' reports had been accessed. Data were analyzed by descriptive and inferential statistics techniques using SPSS version 20.

Results: Data was recorded from 69 participants among them 24 were cases and 45 were controls. The likelihood of getting leprosy related disability were more among multibacillary classification (OR 14·00, 95% CI 3·60-54·51, P = 0·00), illiteracy (OR 7·33, 95% CI 1·63-33·09, P = 0·01), patients care seeking delay >18 months (OR 5·20, 95% CI 1·65-16·41, P = 0·01) and travel time >30 minutes to nearby MDT facility (OR 4.00, 95% CI 1·33-11·44, P = 0·04).

Conclusion: Multibacillary classification and multiple social factors still continues to contribute in developing disabilities. This indicates that the delay in detection of leprosy and discrimination against persons affected by the disease still persist that eventually results in disability among patients. To combat the situation National Leprosy Eradication Programme (NLEP) needs to accelerate their activity of early detection, strengthen patient and community awareness, improve prevention and management of disability.

O-129

OUTCOME STUDY OF PODIATRIC APPLIANCES TO HEAL PLANTER ULCER AND TO PREVENT RECURRENCE

Presenter: Santosh Kumar Singh

Santosh kumar Singh[1], Rajni Kant singh[2], Lal Babu Singh[2], Fulchand Mahto[2]

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Objective: To improve the functional ability by providing podiatric appliances with MCR footwear in order to improve the quality of life

Method: 200 patients with planter ulcer due to leprosy from year 2016 (Jan.) to 2018 (Dec.) has been brought under this study, who has attended the clininc. The total no. was 100 with Male -50, Female – 50. All cases are RFT. Two groups (controlled & Non-Controlled) have formed with 100 cases. Sparsh Centre has provided protective footwear and podiatry appliances, teach Self-care practices &techniques, ulcer dressing, follow up etc. to 100 cases under control group and also has provided has provided protective footwear to uncontrolled group for 100 cases.

- Taken foot measurement
- Individual interviewers
- Ulcer assessment
- Biomechanical assessment of foot
- Follow up every 3 & 6 months
- Promote self-care practices
- Wear suitable footwear
- Find out cause of wound and plan avoidance in future

Results: The data was analyzed, and result was very encouraging. The result shows under controlled group was very good. Ulcer was healed in 97 cases (97%) and only 03 cases has got recurrence ulcer, which is 3%. The result with non-control group was not encouraging. Ulcer was healed only (50.49 %) and recurrence rate was (30.69%) high. The result shows protective footwear with podiatry appliances was very effective and outcome was good.

The control group study showed good result with podiatry appliances. Only 3%of the patients have developed the recurrent ulcer, and 97% ulcer healed. So proper self care and regular use MCR footwear with podiatry appliances to help wound healing is achieved to prevent recurrence of the ulceration after. The non-control group (Without podiatry appliances) 30 % of recurrence of ulcer and healing was only 50%.

Conclusion: Proper footwear with podiatry appliances is very important for Leprosy patients of aesthetic foot. It helps redistribute the pressure and reduce the chance of ulcer development. Patients prescribed shoes (custom designed) are the most appropriate one and were shown to reduce pressure. Shoes should be prescribed with addition of insoles for pressure distributed to achieve a plantar pressure reduction. To help the ulcer healed and preventing recurrence ulcer. It's also helps in correction of foot abnormalities.

O-156

EARLY DETECTION OF NERVE INVOLVEMENT: ROLE OF TESTING EXTENSOR HALLUSIS LONGUS IN THE FOOT & 1ST DORSAL INTEROSSEOUS IN THE HAND

Presenter: Ananth Reddy

Dr.S.Ananth Reddy, Mr.P.Purushotham Rao, Mr.K.Ganapathy, Ms.R.Vimala Kumari
SIVANANDA REHABILITATION HOME, Hyderabad, India

Objective: Leprosy is the most frequent treatable neuromuscular disease. Yet, every year, thousands of patients develop permanent peripheral nerve damage as a result of leprosy. Since early detection and treatment of neuropathy in leprosy has strong preventive potential.

Nerve function impairment (NFI) is a common occurrence in leprosy patients. It may occur prior to diagnosis and treatment. NFI may also occur after diagnosis and after cessation of the prescribed course of medication.
It is known that in most cases early detection of impaired nerve function and adequate interventions may preserve and restore nerve. Hence, the importance of regular nerve function assessment.
Manual Voluntary Muscle strength Testing (VMT) and sensory testing (ST) are the common clinical tools to assess, evaluate and monitor the status of nerve function.

The Voluntary Muscle Test (VMT) is a rapid, reliable and reproducible assessment of the extent of nerve damage in leprosy, and requires no equipment and definite muscle weaknesses, revealed in hands and feet that appear normal to a casual observer.

For field testing in leprosy, the accepted practice to detect early nerve damage is to carry out Voluntary Muscle Testing (VMT) of Tibialis Anterior(TA) in the foot and Abductor Digiti Minimi (ADM) in the hand. The objective of our study was to assess the value of additional test of Extensor Halucis Longus (EHL) in the foot and 1st Dorsal Interosseous (1st DI) in the hand to detect early nerve damage.

Method: During the period January 2014 to December 2018 (5 years) all leprosy patients presenting to the Sivananda Rehabilitation Home (SRH) were assessed by VMT of the following muscles –Tibialis Anterior and EHL for lateral popliteal nerve, ADM & 1st DI for Ulnar nerve and Abductor Policis Brevis (APB) for Median nerve. MRC grading was used for VMT testing.

Results: A total of 2017 leprosy patients were assessed (male : Female). Among these patients 144 patients (2%) showed evidence of early nerve involvement with VMT's. In 119 patients there was weakness of EHL in the presence of a normal VMT of Tibialis Anterior. Similarly there was early muscle weakness of the 1st DI in 25 patients in the presence of normal VMT in ADM.

Conclusion: Inclusion of routine VMT testing of EHL and 1st DI in all leprosy patients will help us to detect early nerve damage in the hands & feet in leprosy.

O-192

PULLEY ADVANCEMENT SURGERY TO CORRECT MILD CLAW HAND AND RESTORE GRIP STRENGTH

Presenter: Premal Das

Premal Das[1], Karthikeyan G[2], Babu G[3] , Joy Esther Thapa[4].

[1]Surgeon; The Leprosy Mission Hospital Naini, Allahabad, India. [2]Research Coordinator; The Leprosy Mission Trust India, New Delhi, India [3]Training Coordinator; The Leprosy Mission Trust India, New Delhi [4]Occupational Therapist; The Leprosy Mission Hospital Naini, Allahabad, India

Objective: Pulley Advancement is an effective procedure when used judiciously. The paper aims to demonstrate that selected ulnar claw hand deformities, with smaller unassisted angles but symptoms of weakness in grip strength would benefit from a simpler procedure with faster recovery and a far shorter morbidity period.

Method: The study was conducted at the Naini Hospital of The Leprosy Mission Trust India, a Tertiary Care Leprosy Referral centre in North India. An analysis of the 16 Pulley Advancement Procedures performed during the 5 years from 2013 to 2017 was done to compare grip strength improvement, functional assessment and correction of the pre-existing assisted angles. The Wilcoxon Signed-Rank test was used to study the statistical significance of change in the unassisted angle and grip strength after surgery.

Result: The mean unassisted angle and grip strength, before surgery and post-op at final follow-up was compared. The results was also compared with available literature and lasso procedure done at the same hospital. The detailed analysis is in progress.

Conclusion: The deformity is corrected, grip strength restored in the cases selected for this procedure. Mobilization is immediately after surgery, thus reducing period of inability to use the hand or hospitalization.

O-193

INDIRECT LASSO PROCEDURE USING PALMARIS LONGUS TENDON TO CORRECT HYPERMOBILE ULNAR CLAW HAND DEFORMITY OF LEPROSY

Presenter: Premal Das

Premal Das[1], Karthikeyan G[2], Babu G[3] , Joy Esther Thapa[4].

[1]Surgeon; The Leprosy Mission Hospital Naini, Allahabad, India. [2]Research Coordinator; The Leprosy Mission Trust India, New Delhi, India [3]Training Coordinator; The Leprosy Mission Trust India, New Delhi [4]Occupational Therapist; The Leprosy Mission Hospital Naini, Allahabad, India

Objective: Lasso surgery procedure using the Flexor Digitorum Superficialis (FDS) is now a commonly used procedure in Leprosy Re-constructive Surgery. However, it is not uncommon to have hypermobile Inter-Phalangeal joints in the Asian population, which are at increased risk to develop the Swan Neck/ Sublimus Minus deformity.

The aim of this paper is to demonstrate that the Indirect Lasso using the Palmaris Longus or the Extensor Carpi Radialis Longus as the motor tendon, with Fascia Lata graft, gives excellent correction of the deformity and useful function, when selected judiciously.

Method: The analysis of the 80 Palmaris Lasso surgeries performed at The Leprosy Mission Trust India's hospital of Naini, in North India during a 5 year period from 2013 to 2017 was done with respect to restoration of assisted angles, grip strength and function. This was compared with the other results from a Literature Review as well as the routine FDS lasso done at the same hospital. The descriptive statistics was used to describe the results. The correction of claw finger deformity was determined by reduction in the unassisted angle after surgery, and it's statistical significance was tested using Paired sample t-test.

Result: The post op hand after completion of Physiotherapy in terms of appearance, function and grip strength was analyzed by measurement of assisted angles, functional test parameters and hand Dynamometry. This analysis is in progress. Results were compared with available literature.

Conclusion: Palmaris longus Lasso gives excellent results when patients are selected according to the mobility of joints, occupation and ability to care for themselves. Hence the procedure is recommended for students or skilled office workers with hypermobility of the IP joints.

O-194

HALF OF FLEXOR POLLICIS LONGUS TRANSFERRED TO CORRECT Z THUMB DEFORMITY IN LEPROSY

Presenter: Premal Das

Premal Das[1], Karthikeyan G[2], Manivannan G[3]

[1]Surgeon; The Leprosy Mission Hospital Naini, Allahabad, India. [2]Research Coordinator; The Leprosy Mission Trust India, New Delhi, India
[3]Occupational therapist, PARTI Project, The Leprosy Mission Trust India, Tamil Nadu.

Objective: In Leprosy with an ulnar claw, the Z Thumb deformity is a significant functional restriction to patients even after correcting the 4-finger claw deformity. The inability to get pulp to pulp pinch makes many routine functional activities cumbersome. When splints fail to effect a permanent solution, surgical correction by transferring part of the flexor tendon to support IP extension and the remnant to do MCP flexion allows the patient a good pinch function and normal appearance.

Method: A analytical demonstration of this infrequently performed procedure was done at The Leprosy Mission Trust India's Hospital in Naini. The importance of the pulp to pinch and restoration of this ability is done by the half FPL transfer and an improvement of functional activity assessed. The pinch power and appearance was analyzed from the available records. The descriptive statistics was used to report the results.

Results: The analysis of the data for the 10 patients who underwent the procedure shows improvement in function and appearance.

Conclusion: A relatively simple tendon transfer procedure to increase functional thumb length and oppose the pulp to that of other fingers to enable finer activities and prevent further damage to the flexed thump IP joint.

O-204

USEFULNESS OF NERVE FUNCITON ASSESSMENT IN CHILDREN EVEN AFTER REFERRAL TO PRIMARY HEALTH CENTRE

Presenter: Rashmi Nayak

Rashmi Nayak[1], Senthilkumar Ramasamy[1], Archana Kumar[2]

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Objectives: According to World Health Organization, the global target is to achieve zero disability among children by 2020, yet still today children's are continued to get visible disabilities. This study has been conducted to assess the disability status of children at diagnosis and to estimate the number of children getting impairment after starting anti-leprosy treatment till the completion.

Method: A longitudinal study was conducted among newly diagnosed children for leprosy at The Leprosy Mission Hospital, Champa, India who have been referred to nearby public health centre for MDT from January 2015 to December 2016. Nerve function assessment was insisted through self-reporting, while continuing treatment elsewhere. The standard nerve function assessment was done at diagnosis and at regular intervals using voluntary muscle testing and sensory testing by monofilament.

Result: A total of 64 children's have been diagnosed as a new case of leprosy during the period of 2015 to 2016, among these 51 children's have been referred to nearby health centers for MDT. Among these 23 (45%) were Multibacillary. The mean (SD) age in years was 10. Among the study participants 22 (41%) were female. At diagnosis 3 (6%) had grade 2 disability and the remaining 48 (94%) had no disability, respectively. Of 24 (47%) children's who completed treatment on time, 5 had Type 1 reaction and/or neuritis and one of them developed impairment due to delay in coming to hospital for assessment and treatment. Their disability status post treatment were 1 (4.2%) and 2 (8.3%) had grade 2 and grade 1 disability, respectively. The follow-up is in progress and detailed findings will be presented in the conference.

Conclusion: The considerable numbers of children develop impairment during anti-leprosy treatment and regular follow-up and nerve function assessment is crucial to achieve the zero disability among children with disability.

O-205

LATE REPORTING OF LEPROSY PATIENTS WITH GRADE-II DISABILITY FOR TREATMENT AND RECONSTRUCTIVE SURGERY – AN ASSESSMENT OF THE RESPONSIBLE FACTORS

Presenter: Ananth Reddy

S. Ananth Reddy[1], P. Purusthotham Rao1, K Ganapathy1, R. Vimala Kumari[1], Vivek Lal[2]

[1]Sivananda Rehabilitation Home, Hyderabad, India ; [2]German Leprosy and TB Relief Association India

Objective: Prevention of deformities and disabilities in the Leprosy Eradication Programme is important because of its potential to cause permanent and progressive physical deformities, with social and economic impact. In India Grade-II disability among new cases is around 3-4%. Effort should be made to minimize delay between appearance of the first symptom of Leprosy and the start of treatment and recognition of early nerve damage. Grade II disabilities and varying grades of motor function impairment are still being encountered in the post elimination phase of leprosy in India. This present study is to identify the factors which influence the persons affected by Leprosy (adults & children) with Grade II disabilities reported late for corrective therapy and surgeries i.e. various reasons, medical, social, economic and psychological issues.

Method: The study is a retrospective analysis, conducted among 357 persons affected by leprosy with irreversible palsy who underwent reconstructive surgery between 2011 to 2018 at Sivananda Rehabilitation Home (SRH), Hyderabad, Telangana, India. The data were collected from 61.7% male & 38.3% female respondents and analyzed for reasons for late reporting for reconstructive surgery.

Result: The study revealed that 71% of them were productive age group between 18 – 55 years. 56.6% of respondents developed deformities during MDT treatment and 27.1% developed after treatment while only 16.3% had disabilities prior to treatment. 46% never heard about corrective surgeries with highest score for reasons for delay to report for surgeries followed by stigma 15.7%, false believe 10.1% belief in indigenous medicine 8.3%, fear of losing job 6% and the rest of the reasons contributed 13.9%.

Conclusion: The findings emphasize the importance of routine examination for Nerve Function Assessment of all new leprosy cases at beginning of treatment, during treatment, and after treatment to search for disability. To reduce grade-2 disability, early diagnosis and searching for grade-I disability should be routine procedure in the health system/National program, for which thorough neurological examination along with appropriate preventive measures is the need of the hour beside sensitization of health staff to promote timely referral for re-constructive surgeries.

O-228

EVALUATION OF THE CUTANEOUS SENSATION OF THE FACE IN PATIENTS WITH DIFFERENT CLINICAL FORMS OF LEPROSY

Presenter: Diogo Fernandes dos Santos

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Objective: Leprosy represents a public health problem and can be considered the most common peripheral neuropathy of infectious etiology. The standard routine examination to assess the sensory impairment in leprosy neuropathy basically evaluates hands, feet and eyes. However, the evaluation of cutaneous facial sensation is not routinely performed. The aim of this study was to evaluate the cutaneous facial sensation in patients with different clinical forms of leprosy and compare it with healthy individuals.

Method: 19 healthy controls and 71 leprosy patients treated in a National Reference Center for Leprosy in Brazil, underwent a facial sensation assessment using the Semmes -Weinstein's monofilament. The face was subdivided into seven regions, according to the anatomical distribution of the trigeminal nerve branches: supraorbital, nasal, infraorbital, zygomatic, auriculotemporal, buccal and mental. The test was applied over the face areas corresponding to the different distal branches of the trigeminal nerve. The sensitivity level of each nerve was evaluated using the six Semmes- Weinstein filaments, which exert forces of 0,05 g, 0,2 g, 2g, 4g, 10g and 300 g on the skin. The perception of 0.05g was normal for the face and, above that, the facial sensitivity was considered altered.

Results: The predominant clinical form in terms of changes in the facial cutaneous sensation was lepromatous leprosy (LL), followed by the borderline-borderline (BB), and borderline-lepromatous (BL) when compared to healthy individuals. The most affected distal branches were: zygomatic (28.2%; 20/71), buccal (23.9%; 17/71) and nasal (22.5%; 16/71). 31.2% (10/32) presented a unilateral face involvement and 68.8% (22/32) presented bilateral

impairment. However, among the patients with bilateral impairment, 45.5% (10/22) presented different degrees of impairment in the sensory evaluation. Therefore, there was an asymmetric sensory impairment of the face in 62.5% (20/32) of cases.

Conclusion: The face is as impaired in leprosy as the feet, hands and eyes, but this condition is underdiagnosed. The evaluation of the different sensory branches and the evidence of an asymmetric impairment in the face reinforce the classically described pattern in leprosy neuropathy - an asymmetric and predominantly sensory peripheral neuropathy.

O-246

THE ASSOCIATION OF FUNCTIONAL ACTIVITY LIMITATION AND QUALITY OF LIFE OF LEPROSY CASES IN THE SOUTHERN PHILIPPINES MEDICAL CENTER: A CROSS SECTIONAL STUDY

Presenter: Margaret Stephanie Jimenez

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Objective: There have only been a few studies done on the association of functional activity limitations (FALs) and quality of life (QoL) among those with leprosy. This is the first study in the Philippines that aims to determine the association between functional activity limitations and quality of life of leprosy cases.

Method: This is a cross-sectional study of leprosy cases in the Department of Dermatology in the Southern Philippines Medical Center. It was done between January and August 2018. The Screening of Activity Limitation and Safety Awareness (SALSA) scale was used to measure FALs with scores ranging from 10 to 80. The higher scores represent more severe functional activity limitations. The World Health Organization QOL-BREF (WHOQOL-BREF) questionnaire was used to measure QoL. It is divided into physical, psychological, environmental and social domains with each item rated from 0 to 5. Higher scores denote better QoL.

Results: A total of 70 leprosy cases were included in the study. The SALSA scores showed more than half of the population had no significant FALs which was similar to reports done in other countries. This may also reflect the effectiveness of implementation of health services following the National Leprosy Control program in lowering the burden of the disease. The QoL scores were lower for the physical and environmental domains, with scores of 64.3 (50-75) and 70.3 (59.38-78.13), respectively. The QoL results from this study differ from other reports due to different socio-cultural, epidemiological and economic contexts. Low scores in the physical domain may reflect their dissatisfaction to dependence on medicine and their capacity to work as well as their daily discomfort and pain due to leprosy. Low scores in the environmental domain reveal a low amount of access to financial resources, information, leisure activities, transportation and health services. Furthermore, there was a statistically significant association between increasing SALSA scores and lower QoL most notably in the physical domain.

Conclusion: The presence of functional activity limitations is associated with lower QoL in leprosy. These factors denote areas to address as they contribute to the deterioration of QoL among those with leprosy leading to delayed diagnosis, highly infectious multibacillary forms, reactions, disabilities, deformities and stigma. This study also underlines the need for regular assessment using QoL and FAL measures in order to fully assess the health and well-being of those with leprosy in order to provide more specific strategies and interventions.

O-248

ASSESSMENT AND IMPACT OF DISABILITY CARE SERVICES - OBSERVATIONS FROM REFERRAL CENTER

Presenter: Vivek Pai

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Objective: Prevention of disability and care of persons affected with leprosy related disability is one of the major quality components of Referral centre. BLP has documented utility of simple field based techniques for door step and community based services both in urban and rural areas. We now share our experience on assessment and impact of prevention of disability care services (POD) in leprosy patients practised at our Referral centre.

Method: Patients either newly diagnosed with G2D or those who developed disabilities during treatment or follow up during the period from March 2014 to Dec 2018 were considered for this evaluation. During this period, 179 patients registered with grade 2 disabilities comprising of 86 (48%) with mobile claw hand, 10 (5.5%) with fixed claw hand, 23 (13%) with abduction deformity, 17 (9%) with foot drop, 30 (17%) with chronic non healing foot ulcers and 13 (8.2%) with lagophthalmos.

Following baseline assessment depending on type of disability patients were provided various disability aids like splints, hand exerciser, ulcer kit, foot drop splint, MCR footwear, POP cast etc. In addition patients with reactions and neuritis and early onset of disability were administered steroid course as per protocol coupled with physiotherapy measures like muscle stimulation, wax bath to improve upon nerve muscle function. Clinical impact of services was assessed using simplified proforma.

Results: On assessment of 179 patients, we found 30 (34.8%) patients with mobile claw improved well, 53(61.6%) remained static and 3 (3.4%) worsened. Amongst fixed claw hand 3 (30%) improved and 7(70%) remained static. Of 23 patients with abduction deformity,12(52%) improved, 10(43.4) remained static, while one (4.3%) worsened. In patients with foot drop, 8 (47%) improved, 8(47%) remained static and one (5.8%) worsened. Amongst 30 patients with foot ulcers, 11(36.6%) healed, 14(46%) remained static and 5 (16.6%) worsened. Amongst 30 patients with chronic foot ulcers, 9 were given mini POP cast of which 44 showed complete healing after 3 weeks and 2 remained static and 3 worsened and cast had to be removed. Of 13 patients with lagophthalmos, 9 (69%) improved and 4(31%) remained static.

Conclusion: The need for applying various modalities and interventions mainly medical rehabilitation coupled with physical rehabilitation measures to correct and reverse the nerve damage and prevent disability cannot be over emphasized. It is also essential to identify G2D early enough or referred in time to ensure initiate early medical management with physiotherapy measures not only to correct disabilities but also to prevent worsening of nerve damage.

O-254

FUNCTIONAL ADAPTABILITY OF PATIENTS WITH ULNAR/ MEDIAN PARALYSIS IN CARRYING OUT ACTIVITIES OF DAILY LIVING (ADL) AND BASIC HAND FUNCTIONS

Presenter: Sathish Kumar Paul

Sathish Kumar Paul[1], Raghu[1], Priyanka[1], Jerry Joshua[1]

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Objective: Effective communication, motivation, and self-care have many a times failed to motivate the leprosy affected patient to seek the correction and management of impairments. The non-adherence of the patient in the

treatment and correction of impairments have led to further deterioration and worsening of impairments. The objective of the study was to identify the ADL functions adopted by leprosy affected patients with long standing ulnar, median paralysis through their self-adaptations. Ascertain the relationship between residual prehensile functions and the altered functionality in leprosy affected patients with ulnar, median paralysis. Evaluate the patient's perspective of carrying out their key ADL functions through the Karigiri Activities of Daily Living Rating Scale (KADLRS) and Screening of Activity Limitation and Safety Awareness (SALSA) scores.

Method: A cross sectional study was conducted to identify the adaptations developed by the patients with ulnar and median paralysis and who have refused corrective surgery. Random sampling was done to recruit leprosy affected patients those coming to institute and refuse surgery. The data on the functional abilities and their prehensile functions were collected using various scales.

Result: The preliminary analysis shows that the altered functions help patients adapt with ulnar/ median paralysis in carrying out their key ADL functions. The prehensile functions haven't been significantly established in carrying out the functional activities in these patients with long duration ulnar and median paralysis. The process and the techniques adapted by these patients over the years (average <3 years) has no significance in their SALSA and ADL scores.

Conclusion: The study results suggest that early interventions and motivation of the patients for surgery are very essential. The patients with long standing impairments adapt to their impairments and are worried about losing the gained functions with corrective surgeries.

O-262

SELF-CARE AND MORBIDITY MANAGEMENT IN NTDS: A PILOT PROJECT IN ANAMBRA STATE, NIGERIA BY GERMAN LEPROSY AND TUBERCULOSIS RELIEF ASSOCIATION (GLRA)/AMERICAN LEPROSY MISSION (ALM)

Presenter: Alphonsus Chukwuka

Chinwe Eze[1], Ngozi Ekeke[1], Alphonsus Chukwuka[1], Linda Lehman[2], Joseph Chukwu[1], Charles Nwafor[1], Eileen Stillwaggon[3], Anthony Meka[1], Larry Sawers[4], Joy Ikebudu[1], Moses Anyim[1], Kingsley Ukwaja[5]

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Objectives: To assess the effectiveness of self-care practices on cost of care, disability status and health-related quality of life of patients affected by neglected tropical diseases (NTD) like leprosy, lymphatic filariasis (LF) and Buruli ulcer (BU) in two communities in Ogbaru local government area, Anambra State.

Methods: Quasi-experimental design was utilised for the six months (December 2017-May 2018) pilot study. The interventions involved training of community health-care workers (HCWs) in four health facilities to identify and care for common impairments (wounds, oedema, limitations of movement and scars). The HCWs in turn taught people affected by NTDs self-care skills to care for their impairments at home. Each individual's impairments were assessed and they were interviewed on their monthly cost for care. Disability status and quality of life (QoL) were also assessed using WHODAS and WHOQOL-BREF respectively. Monthly monitoring visits to the health facilities were done. Focus group discussions (FGD) were held with the people affected and HCWs at the end of the project.

Results: Of the 48 people recruited, 30 (62.5%) sustained the self-care intervention till the end of the project. Of this 30, 25 (83%) demonstrated improvement in their baseline impairment status. Overall, the mean household costs of care per patient decreased by 66% following the intervention ($157.5 at baseline to $53.24 at the end, $p = 0.004$). Similarly, the mean disability score decreased from 22.3 to 12.5 ($p < 0.001$). At baseline, 26 (86.7%) patients had severe WHODAS disability score (score of 10 – 46). This dropped to 18 (60%) patients at the end of the project. The mean QoL score significantly improved from 45.7 to 57.5 ($p = 0.004$). The change was more marked in the

physical and psychological QoL domain scores. The physical domain improved from 40.0 to 58.5 (p = 0.001) and the psychological domain score improved from 46.3 to 60.5 at the end (p = 0.008).

Benefit of self-care was one of the emergent themes from the FGD. HCWs and patients expressed satisfaction with the project and desired continuity.

Conclusion: Integrated morbidity management through self-care for people affected by NTDs was effective, acceptable and affordable. A larger scale study over a longer period is recommended to further demonstrate the impact of self-care.

O-278

DESIGN CUSTOMIZED OFFLOADING DEVICES TO PROMOTE HEALING OF PLANTAR ULCER

Presenter: David Prakash Kumar

David Prakash Kumar.M., Dr. Sathish Kumar Paul., Dr.Jerry Joshua
Schieffelin Institute of Health Research & Leprosy Centre, India

Objectives: To custom design light weight and aesthetic devices to offload plantar ulcers, using Computer Aided 3 dimensional modeling
To test the efficacy of developed design in offloading the anaesthetic foot through computer simulated studies

Methods: Offloading modalities like below knee Total Contact Cast (TCC), Molded double rocker shoes (MDRS) for protecting the ulcers has been a vital component of leprosy control programs. The disadvantage is that they are heavy and cumbersome to wear, preventing individuals from performing their daily activities. In the present study, the authors have designed customized offloading devices using computer based designing software like ANSYS, Solidworks and AutoCAD.

Results: The 2 dimensional drawings of the offloading devices were designed and were tested using 3 dimensional modeling. The 3 dimensional models were simulated to test the functionality and its efficacy in offloading the patient's feet. The designs were developed to make the offloading devices aesthetically appealing and lighter. The innovativeness (uniqueness) and the offloading principles were considered while developing the device through the computerized simulating studies.

Conclusion: Customized offloading devices will help in healing of ulcers while improving acceptability, reducing stigma and helping individuals suffering from ulcers to continue performing their daily activities. The functionality and the materials used would improve the devices' effectiveness in offloading plantar ulcers. The preliminary results of the simulation studies would further be used to remodify the designs and develop an appropriate offloading device for the patients.

O-295

MOBILE TECHNOLOGY (M-HEALTH) – A NOVEL APPROACH TO FACILITATE AND MOTIVATE SELF-CARE AMONG THE LEPROSY AFFECTED

Presenter: Sathish Kumar Paul

Sathish Kumar Paul[1], David Prakash Kumar[1], Richard Joseph[1], Jerry Joshua[1]
[1]Schieffelin Institute of Health Research & Leprosy Centre, India

Objectives: The objectives of the project were to provide professional tailor made plan and advice for leprosy affected patients in identifying and preventing early impairments and stigma maintaining confidentiality. To analyse

and document the reasons those are hindrances for patients to adhere to the prevention and early reporting of impairments at their homes. In designing and developing appropriate self-care tools and strategies to be implemented through mobile (devices) technology

Methods: Leprosy affected patients were recruited for the study through unmatched case control method. Unequal allocations of the subjects were done for both the cases and the controls. Individual mobile phones (non-android) were provided to leprosy affected patients coming to the institute and those who fulfilled the inclusion criteria. The patients through their individual mobile phones were able to provide detailed and regular information on his/ her condition to the health worker through a 12 hour toll-free number. Data on the frequency of the use of toll free number by patients and the details required by patients from the health professionals were recorded and analyzed. Duration and the time of call by the patients through the toll free number were recorded. The analysed data were categorized based on specific areas of self-care, awareness and complication management.

Results: The preliminary results show that of the 98 subjects recruited for the study n=75 (76.5%) were multibacillary (MB) and n=23 (23.46%) were paucibacillary (PB) type of patients. N=91 (92%) were using the toll free number to talk to the health workers in the hospital. Of the n=351 call received from the patients, there were n=271 (77.23%) enquires were made by females and n=80 (22.32%) by males. To the n=882 phone calls made by the health workers to the individual mobile hand sets of patients, the patients responded positively at 631 (71.54%) instances. The patients responses were grouped and analysed.

Conclusion: The results would help utilize telecommunication devices to impart self-care and improve treatment adherence among the leprosy affected. Information, education and communication (IEC) strategies specific for mobile users could be developed. Problem specific m-health applications could be designed for leprosy affected patients

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O-298

LAGOPHTHALMOS CORRECTION BY TEMPORALIS MYOFASCIAL SLING IN LEPROSY

Presenter: Naveen Kothari

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Objectives:

1. Correction of lagophthalmos to prevent corneal ulcer and dry eye.
2. Cosmetic improvement in lagophthalmos.
3. Evaluation of easy and feasible technique for high risk patients

Lagophthalmos is a well known complication in Hensen's disease. It occurs due to facial nerve involvement Temporalis muscle sling transfer for correction of lagophthalmos as compare to fascia lata transfer, tarsorraphy, weight implantation is very easy technique with better cosmetic result and better patient's satisfaction

Method: All the RFT(received full treatment) patients of Hensen's disease coming to the referral unit with no Lepra reaction and no history of steroid treatment in last 3 weeks having lagophthalmos (>3mm) were selected for temporalis muscle transfer. All the cases were done under local anaesthesia. Our setup is technically supported by Lepra India and Fontalis .They help in prolonged followup of these patients.

Result: From January 2008 to December 2018 total 62 cases(48 males and 24 females) age ranging from 18 to 68 years of lagophthalmos were operated by this technique .3 patients were having bilateral presentation .Average

time taken for surgery was 45 minutes and hospital stay was 3 days. Full approximation of eyelids was achieved in 88.7%. No dry eye and corneal ulceration was seen in any patient after 5 years follow up.

Conclusion: Temporalis muscle and fascia transfer is a easy, economic, feasible and easily reproducible technique for correction of lagophthalmos with a better patient compliance.

O-299

NEW DEVICE FOR INCREASING TISSUE GROWTH OF THUMB WEB ANGLE IN PERSONS WITH MEDIAN NERVE PALSY.

Presenter: Pankaj Gupta

Pankaj Gupta[1]

[1.]Physiotherapist, The Leprosy Mission Community Hospital, Nandnagri Delhi-93

Objectives: To determine the efficacy of a new innovative device to increase the thumb web space after the median nerve palsy.

Methods: A patient reported to physiotherapy OPD with diagnosed median nerve palsy and ape thumb deformity, due to Hansen's disease. His thumb web angle was measured with the help of goniometer and it was 40 degrees. The surgeon's opinion was that it was inappropriate to do tendon transfer for correction of ape thumb deformity. Hence the patient was asked to undergo therapeutic exercises for remodelling and tissue growth of the thumb web. In the therapeutic plan patient was allowed to do exercise with the help of new designed device apart from doing routine passive thumb web exercises. The newly achieved increased range was maintained with the help of night time use of thumb spica splint.

Results: There was considerable improvement in the thumb web angle when patient used the innovative device. There was tissue remodelling and tissue growth in the thumb web and thumb web angle increased from 40 degree to 55 degrees in two weeks period.

Further, the motivation level of the patient was high while doing the exercises with the new device as he could easily appreciate the tissue remodelling and growth in his thumb web.

Conclusion: Thumb web angle increased more rapidly by using the new innovative device. This device will add to the existing means of improving the thumb web space.

O-314

EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME IN IMPROVING THE KNOWLEDGE, ATTITUDE AND PRACTICES REGARDING SELF CARE ACTIVITIES OF PATIENTS WITH LEPROSY IMPAIRMENTS

Presenter: Sathish Paul

David Prakash Kumar.M., Sathish Kumar Paul

Schieffelin Institute of Health Research & Leprosy Centre, India

Objectives:
To assess the knowledge, attitude and practices (KAP) of those affected by Leprosy regarding Self care, before and after the Structured Teaching Programme (STP).

To compare the KAP of those affected by Leprosy regarding Self care between the experimental and control group after the teaching.

Methods: An experimental study design with pre-test and post-test design was adopted to assess the effectiveness of STP regarding Self care was conducted in Schieffelin Institute of Health Research & Leprosy Centre, Karigiri. The study population included 100 randomly selected patients with Grade I or Grade II impairments due to Leprosy. The control group patients had the usual self care teaching and the patients in the experimental group were taught self carte as per the STP.

Instruments

The instrument used for the data collection was a structured questionnaire that was prepared. The Questionnaire was divided into 4 different sections. They are as follows:

- Part I included the demographic and socio economic data.
- Part II had a Structured questionnaire to assess the knowledge of those affected by Leprosy regarding Self care. For every right answer, a score of one was awarded and for every wrong answer a score of 0 was given.
- Part III had an Attitude scale consisted of both positively and negatively stated items. There were 10 statements and these attitudes ranged from 'strongly disagree' to 'agree'.
- Part IV had a questionnaire on the self care practices of those affected by Leprosy.

The scores of the respondents was converted into percentage and interpreted as:
Adequate >75%
Moderately Adequate 50 – 75 %
Inadequate < 50 %.
Content validity index of the instrument was determined and the score was 0.95.

Results: Comparison of post test scores between the experimental as well as the control group, showed that there was significant improvement in knowledge. A highly significant improvement in the patients attitude in the performance of self care was also noticed. After the teaching programme, there was also a significant improvement in the practice of those affected by Leprosy.

Conclusion: A structured teaching is very important to improve the self care practices of those affected by Leprosy. It can help in effectively reducing the worsening of impairments in Leprosy. The structured teaching plan regarding self care practices plays a vital role in educating and improving the knowledge, attitude and practices of those with Leprosy.

O-321

SOME RESULTS CONCERNING THE HEALING OF NEUROPATHIC ULCERS AND THE SELF-CARE PROGRAMME AS PART OF OUR PREVENTION OF DISABILITY (POD) WORK IN NINE LEPROSY REHABILITATION VILLAGES, 2011 – 2018

Presenter: Giok Siong Liem

G.S. Liem[1], X.F.Xu[1], H.F Liu[1], M. Chen[1], J. Shiri[1], J. Erqie[1], S. Riha[1], H.Y Wang[1], S.W Yang[1], Q. Asha[1], Y. Ma[1], S. Tseung[1], K.M. Kam[1], N.F.F. Pirie[1], P.F. Barrett[1], T.O. Leung[1]

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Objective: To improve the health conditions of People Affected by Leprosy (PAL). In this abstract we mainly focus on the neuropathic ulcers as one of the most stigmatic sequels of Leprosy.

Method: Eligibility criteria include all PAL who are living in the nine rehabilitation villages. Each of them has received Multi Drug Therapy in the past. The majority of PAL are between 61-80 years old. According to the World

Health Organization's (WHO) Disability Grading, their disability distribution is 27%, 22.7% and 50.3% in grade 0, 1 and 2 respectively. We work following the International Federation of Anti-Leprosy Associations (ILEP) and WHO guidelines. Our medical team consists of nine Village Health Care Workers (HCW), two Nurses, a Public Health Doctor and an Internist. Our HCW and nurses receive periodical training concerning hygiene, health, Leprosy and its sequels. In our self-care programme we provide PAL hygiene education, the prevention and dressing of neuropathic ulcers. We provide them with: mirrors for daily foot soles inspection, buckets to soak their limbs in clean water, sandpaper to remove callosities and Vaseline to moisturize their skin. We also provide PAL with protective shoes, and amputees with prosthetic limbs. PAL who are not able to perform self-care are taken care of by our HCW. During our quarterly disability assessment, we measure the diameters and the area of the ulcers. To improve the accuracy of our assessment and to monitor adequately, we take photos of the ulcers with our standard method and document the data in PAL's individual medical files.

Results:

	Q1 2011	Q4 2011	Q3 2018
The total number of PAL	346	327	261*
PAL with neuropathic ulcers (% of total PAL)	80 (23%)	54 (16.5%)	29 (11%)
PAL who are performing self-care (% of total PAL)	none	271 (83%)	237 (91%)

Table1
*Decrease in total number of PAL is caused by death of the elderly.

Conclusion: We work following the International Guidelines and have managed to reduce the number of PAL with neuropathic ulcers in low resource situations. However the pace of further improvement is lowered by peripheral vascular disease as a sequel of the co- morbidities, such as Hypertension and Diabetes Mellitus in this ageing population (see table1 the result of Q4 2011 and Q3 2018). PAL without ulcer are no longer ignored as before. *"I didn't dare to see the doctor when I got sick. But now, I can. I can even take the bus."*

O-327

STUDIES ON THE EFFICACY OF A HOMOEOPATHIC MEDICINE IN THE TREATMENT OF OSTEOMYELITIS IN NEUROPATHIC FEET IN LEPROSY

Presenter: Dhruba Chakraborty

Chakraborty D, Sengupta J, Chakraborty T
Institute of Health Studies & Rehabilitation, India

Objectives: INTRODUCTION
In leprosy, the invasion by Mycobacterium leprae of Schwann cells with the resulting peripheral nerve damage can lead to a so called neuropathic foot. Ulceration and infection (Cellulitis or osteomyelitis) are important complications. Multi drug therapy has been found to kill the causative bacteria very effectively but it has very limited effect on associated disabilities caused due to nerve function impairment. Moreover no effect has been recorded in regain of sensation.

Different clinical study revealed that osteomyelitis in neuropathic feet could be treated successfully in Homoeopathic system of medicine.

In this double blind clinical trial [CTRI/2017/05/008612],(Funded by Ministry of AYUSH, Govt.of India), an attempt was made to study the efficacy of a single homoeopathic medicine – Mercurius solubilis in the treatment of osteomyelitis in neuropathic feet with the aid of X-Ray and Magnetic Resonance Imaging.

Methods: Total 80 number of leprosy affected patients who have completed multi drug therapy but having anesthetic hand and feet with or without ulcer having osteomyelitis or any other bony problem were included in the study.

All the patients randomly divided into two groups of equal number of forty. One group was treated with Mercurius solubilis in 200 potency (Group A) while other group received Placebo (Group B).

Assessment of all the patients were done based on clinical examination, X-Ray & MRI. Estimation of blood calcium and chloride was also done.

Results: MRI and X-Ray report of the patients of both the groups at the time of registration showed bony erosion, bone marrow edema, cellulitis and osteomyelitis of the bone in general.In addition, high chloride level was recorded in the blood of all the patients. But after two years of treatment, study revealed a very remarkable improvement in the patient of Group A. In 28 patients ulcer completely healed with no Osteomyelitis changes and remodeling of bone was noted. In all the 28 cases chloride estimation was also within normal limit and in 10 patients size of ulcer was also reduced with improvement in osteomyelitis condition. Whereas the patients of control group failed to show any such improvement.In 17 cases the condition of ulcer and osteomyelitis was found to be worsen.

Conclusion: Homoeopathy is very effective to cure the osteomyelitis and save the leprosy patient from grave consequence of chronic ulcer.

ILC-5: DISABILITY and IMPAIRMENT:

5.3 Rehabilitation

O-195

REHAPP - A TOOL FOR FIELDWORKERS TO WORK WITH PEOPLE WITH DISABILITIES

Presenter: Jannine Ebenso

J. Ebenso[1], M. Wester[2] and H. Cornielje[2]

[1]The Leprosy Mission International, Brentford, UK, [2] Enablement, Alphen aan den Rijn, The Netherlands.

Objective: RehApp is a mobile rehabilitation application that consists of different 'disability chapters', including a chapter on Leprosy. RehApp is designed to enhance the capacity of CBR field staff in low- and middle income countries to provide basic rehabilitation interventions, care and support and make suggestions for referral.

Method: The presentation will consist of:

• a poster which highlight the objectives of RehApp, its main features, goal and use;
• an interactive experience where participants can access the RehApp;
• a short informative video in which RehApp is presented.

Results:

- RehApp is freely available at the Google Play Store and Apple Store and can be used offline in any rural setting.
- In 2018, ILEP members and Enablement collaborated to develop the Leprosy chapter which was published in January 2019 as part of RehApp.
- To date there are four chapters available for RehApp, namely: Spinal Cord Injury, Amputation, Cerebral Palsy and Leprosy. It is expected that the following five chapters will be finished soon: Burns, Club Foot, Stroke, Spina Bifida and Low Vision.
- All chapters will be piloted by CBR field staff in different low- and middle income settings. The results of the pilot will be used to revise and improve the chapters of RehApp.
- RehApp is available in English but will be translated in various other languages, including Portuguese and Tajik.

Conclusion: CBR field staff in low-resources settings are occupied with a broad variety of tasks and responsibilities, requiring (medical-) therapeutic knowledge as well as technical and social kills. However, they generally have basic educational background and often received limited training. In addition, they often have limited or no access to rehabilitation services or information. Innovative mobile technology such as RehApp, are increasingly used to fill this gap as it provides access to information and resources needed by CBR field staff to carry out their work.

O-224

USING BIOMATERIAL "ALLOPLANT" IN COMPLEX THERAPY OF NEUROTROPHIC ULCERS IN LEPROSY PATIENTS

Presenter: Yuliya Levicheva

Yu.Yu. Levicheva[1], E.I. Shats[1], R.T. Nigmatullin[2],

[1]Leprosy Research Institute, Russian Federation [2]Russian Eye and Plastic Surgery Center, Russian Federation

Objective: The purpose of the research was the raising of the effectiveness of rehabilitation measures in leprosy patients with complications of the leprous process using the Russian innovative technology "Alloplant". Neurotrophic disorders, including ulcers of the feet, remain one of the main disabling factors in leprosy. Specific neuropathy, vascular disorders, secondary infection are the chief factors in the etiopathogenesis of neurotrophic ulcers. Osteomyelitis of the foot bones is one of the main causes of ulcerative process chronization.

Method: "Alloplant" is a biomaterial derived from allogenic tissue. The donor material is undergone a multi-stage physico-chemical treatment, which allows to obtain membranolysis and facilitate the extraction of the most immunogenic components of tissues, while preserving the collagen and elastic framework and the biologically active components of the amorphous matrix with low antigenicity. The material contains the whole spectrum of tissue components involved in the construction of the basic substance of connective and epithelial tissues, regulation of the processes of growth and differentiation of cells.

The results of the treatment of neurotrophic ulcers in 10 leprosy patients (2 men and 8 women) are presented. The age of patients ranged from 63 to 82 years. Neurotrophic ulcers were located on the plantar surface of the foot, most often in the projection of the heads of the metatarsal bones. The duration of the existence of ulcers was: up to 1 year - in 6 patients, up to 5 years - in 2, over 5 years - in 2. Patients received complex therapy, which included antileprosy drugs, neuro-and angioprotectors, vitamins, antibacterial therapy, taking into account the sensitivity of the isolated microflora. If necessary, primary surgical treatment of ulcer edges was performed. The technology of the use of "Alloplant" consisted in injecting the preparation in the edges and bottom of ulcerative defects with an interval of 10-14 days in combination with daily local applications of the drug in the form of powder.

Results: The healing time of primary neurotrophic ulcers ranged from 14 to 30, recurrent 30 to 60 days. The ulcer healing occurred without the formation of rough keloid scars. The processes of microcirculation, proliferation of granulation tissue and keratinocytes, the mobilization of fibroblastic and macrophage differents were significantly improved.

Conclusion: The use of "Alloplant" technology increases the efficiency of medical rehabilitation and social rehabilitation of leprosy patients with complications of the leprous process, improves their quality of life.

O-233

RECONTRUCTIVE SURGERY IN LEPROSY – A STEP TOWARDS HOLISTIC EMPOWERMENT OF LEPROSY AFFECTED PERSONS WITH DEFORMITY AND DISABILITY

Presenter: Laxman Kumar Karmi

L .K. Karmi[1] K. Eswar Rao[2,] S.P.Padhi[3],
Health and Family Welfare Department, Government of Odisha, India

Objective: After achieving elimination of leprosy at country level in 2005, Government of India launched Disability Prevention and Medical rehabilitation (DPMR) programme in the year 2007. Reconstructive Surgery (RCS) is the integral part of DPMR programme.

The study aimed at assessing the impact of the RCS in terms of Activities of Daily Living (ADL) as well as socio-economic aspects in the life of Leprosy affected persons with deformities and disabilities.

Method: RCS component was taken care by ILEP agency from 1994 to 2007.After launching of DPMR programme and functional integration of NLEP activities into General Health System in Odisha in 2007, it is being done at nine District Head-Quarters Hospitals, three medical colleges and one NGO - institution. The Pre and post-operative physiotherapy is given by qualified physio- technicians. The RCS surgeon performs the RCS as per the advanced monthly calendar. All the activities pertaining to RCS right from referral up to five years post-operative period are being maintained in individual's case sheet. A systematic review is being done every year by an expert panel.

A well-structured assessment format has been devised by a panel of resource persons to assess the impact. The evaluation schedule was communicated to all the beneficiaries well in advance to ensure good attendance. A panel of experienced Physiotherapists with Surgeon assessed the different aspects of outcome in predefined format. After completion of the evaluation, the data was compiled and analysed.

Results: After integration, more than 2700 surgeries were conducted. There is remarkable improvement in function and appearance in 70 % of the patients' assessed.Further, 13% cases have either the appearance or the function is good. But in the remaining 18% cases neither the appearance nor the function could be restored to a satisfactory level. The activities of daily living like- bathing, dressing, cooking, eating, walking and work output improved to acceptable level. There is enhancement of self esteem and self confidence with improved participation in social functions and community activities. The overall client satisfaction is excellent in 49% cases,good in 25%, fair in 11% and poor in 15% cases.

Conclusion: RCS is not only a medical component, but also takes care of socio-economic component in the life of leprosy affected persons. Thus it can be called as holistic approach towards the correction of deformities and disabilities.

Strong commitment and proper planning helps to deliver the quality outcome of RCS nearer to the homes of affected individuals.

O-260

STUDY ON INFLUENCING FACTORS OF STATUS QUO OF REHABILITATION NEEDS OF CURED LEPROSY SURVIVORS WITH DISABILITIES IN HUIAN CITY

Presenter: Dizhong Feng

Dizhong Feng[1], Zhaohui Zhang [2]

[1] Jinhu County Center for Disease Control and Prevention,[2] Huaian Municipal Center for Disease Control and Prevention

Objective: The aim of this study was to analyze the rehabilitation needs and influencing factors of cured leprosy survivors with disabilities, provide a scientific basis for developing preventive measures.

Methods: A survey was carried out on all survivors of leprosy cured by registration and management in Huaian City .The related situation of patients' rehabilitation needs was described ,and the influencing factors of rehabilitation demand were analyzed by Logistic regression model.

Results: The cured leprosy survivors with visible disability of 67.47% and the rehabilitation demand rate was 34.63%,of which the male-to-female sex radio was 2.55:1. Multivariate logistic regression analysis showed that patients with chronic diseases (OR=1.745, 95% CI:1.099-2.769)and disability certificates (OR=2.447, 95%

CI:1.497-4.000)had a higher risk of rehabilitation demand than those without chronic diseases and non-disability certificates . The rehabilitation needs risk of the patients with complete self-help ability (OR=0.314, 95%CI:0.136-0.724),no loss work ability(OR=0.565, 95%CI:0.319-0.999)and upper limb disability(*OR*=0.287, 95% *CI:*0.145-0.567)were lower than that of the patients with partial self-help of life, Permanent loss work ability and lower limb disability.

Conclusion: The rehabilitation demand rate of cured leprosy survivors with disabilities in Huian City is high, viability,work ability,chronic disease,disability sites and the possession of disability certificates were the influencing factors of cured leprosy survivors with disabilities.

O-264

CBR - LIGHT AT THE END OF THE TUNNEL

Presenter: Pius Kalathil

PIUS KALATHIL
GREMALTES HOSPITAL India

Objective: Overall improvement in the quality of life of the leprosy affected persons with disabilities after a long period of hardships, dependence and discrimination because of the stigma attached to leprosy and the ulcers and disabilities.

Methods: Identified and talked to the stake holders on the advantages of Self Care and Community Base Rehabilitation the author had learned at a training at ALERT. Assessed own capabilities and limitations, with professional assistance. Formed a Group of 14 willing Clients in 2003 which the Members chose to name “Anaikum Karangal”, meaning “Helping Hands”, with a Managing Committee from among them, elected by themselves. Professionals were invited to give motivational talks and training in self care and Income generating engagements. The members began to practice self care in order to prevent deformities; and manage ulcers and deformities. The hospital provided interest free loan to the Members for income generating engagements. The Members meet every month to review and evaluate the performance of the Group and the Members. They raised a Corpus Fund with their monthly subscriptions from which they could avail loans.

Results: Over 200 leprosy affected clients with disabilities have benefited from inception.
The Members practice self care of their ulcers and deformities at home and engage in gainful engagement and earn their living and thus their self-esteem has improved.
The Members avail loans from their own fund to further improve their trade.
The affairs of the Group are managed by their democratically elected Committee. The Members are aware of their rights and duties; and are capable of vocalizing them.

Conclusion: Working together and mentoring has helped the once dependent Members to rediscover themselves by identifying and utilizing their strengths. They have learned to do things by themselves and earn their living. This has generated confidence in them and the urge to develop further. They have built up their own fund with monthly subscription which they utilize for gainful purposes. Stopped availing loans from the hospital. Unity is strength is realized by this group of persons, who, a few years ago were totally dependent on others for their care and living, today disseminate and inspire dignity and self confidence; more than 70% of whom are ladies is another feather in the cap of the group and its efforts.

POSTER PRESENTATIONS

ILC-1: CLINICAL SCIENCE:

1.1 Best Clinical Practice, Health Systems, Training and Referral

P-022

HANSEN'S DISEASE IN ISRAEL: LONG TERM CHALLENGES AND DISABILITIES

Presenter: Karen Olshtain-Pops

Karen Olshtain-Pops, Iris Goldner, Dikla Shazo, Allon Moses
The Israeli National Hansen Center, Hadassah Medical Center, Jerusalem, Israel

Objectives: Hansen's disease (or Leprosy) is infrequent in Israel, especially during the last twenty years. Therefore, there is only one national center that follows all patients diagnosed with the disease. We performed a retrospective review of patient records from the Israeli National Hansen Center. The aim of our study was to identify patients with long term active follow up in order to characterize the main challenges facing patients after termination of MDT (multi drug therapy).

Methods: The Israeli National Hansen Center was established in 1933. This center follows and treats all patients diagnosed with Leprosy in Israel. Since its establishment, more than 530 patients have been diagnosed with and treated for Hansen's disease. Files of patients referred to the Center between 1958 and 2018 were reviewed. Patients still in active follow up during 2018 were identified and their demographic and clinical characteristics were analyzed.

Results: During the years 1958-2018, 419 patients were diagnosed with Leprosy in Israel. The annual rate changed significantly over the years. During the years 1958-1978, there was an average of 10 newly diagnosed patients every year. This number decreased to 4 a year during the last 20 years (1998-2018). Of all 419 patients, 120 have died, 20 moved away and 70 had no current follow up data. Forty (20%) were found to be in active follow up in 2018, 10 of whom were diagnosed more than 10 prior to 2018. Three of these patients were diagnosed in 1958, and are still in need of treatment and assistance in 2018. Of the 40 patients in active follow up, 20 (50%) need intensive follow up due to disabilities: 4 have severe neuropathic pain, 2 have chronic uveitis and blindness, 2 suffer from severe psychological issues, one has recurrent reactions many years after cessation of MDT, and the remaining 11 have severe disabilities due to clawing, limb shortening and chronic leg ulcers. Our center supplies treatment for chronic ulcers, special exercise programs to prevent deterioration of disabilities, as well as emotional support.

Conclusions: In our center, a small but significant number of patients require long term follow up due to disabilities. This long term follow up is important and helps improve their quality of life.

P-053

TO ANALYSE KNOWLEDGE, PRACTICES/SKILL AND ATTITUDES IN HEALTH WORKERS AT COMMUNITY LEVEL HEALTH INSTITUTION TOWARDS MANAGEMENT OF LEPROSY PATIENT AFTER TRAINING

Presenter: Raj Kumar Paudel

Raj Kumar Paudel[1], Gopal Hari Pokheral[1], Divye RSJB Rana[2]

[1]The Leprosy Mission Nepal, Anandaban Training Canter
[2] The Leprosy Mission Nepal, Mycobactetial Research Laboratory

Objectives: to assess the level of knowledge, social attitude towards patients, and diagnostic and management capabilities of health worker (KAS/P) regarding leprosy

Methods: Sampling: probability= simple random sampling, sample size 172 out of 514 staffs trained by the leprosy mission in last 5 year. Data collection: face to face, skill test, tool and analysis data statistics use R and SPSS tool.

Results: Only 26% health worker received refresher training and 67% of health worker manage the leprosy cases after comprehensive leprosy training. Whether staff post impact ability of KAP, measured by ability to check strength of little finger X-squared = 9.9807, df = 3, p-value = 0.01873. Welch two sample t-test, whether patient treating habit impact KAP, t = 3.0952, degrees of freedom = 82.494, p-value = 0.002686. Whether refresher training impact KAP t= 2.3717, degrees of freedom = 108.44, p-value = 0.01947.

Conclusion: Impact of staff post, patient treating habit of health staff also affects knowledge, skill, practices. The study reveal that the community level health institution workers have a general lack of basic clinical knowledge of leprosy and a very low level of practical involvement in leprosy work at the health institution clinics in the area.

P-054

ANALYSIS OF OLFACTORY FUNCTION IN PATIENT WITH LEPROMATOUS LEPROSY

Presenter: Gang Zhang

Gang Zhang[1], Zi Rong Zhu[2]

[1]Department of Dermatology of Shangluo Sanatorium in Shaanxi province, Shangluo , China; [2]Department of Dermatology and Venereology，the Eighth Hospital of Xi'an,Xi'an ,China

Objectives: To understand the situation of olfactory function in patients with LL

Methods： Excluding the influence of nasal and other diseases on the detection, 33 LL patients, 29 males and 4 females, aged 15-66 years, with an average age of 45.86 years, were enrolled.50ml of 75% ethanol, vinegar and gasoline were loaded into 100ml containers respectively.Under the dark field, the individual inhaled single, single and single nasal inhalation.For odour particles to reach the olfactory area smoothly,First clean the nasal cavity and then breathe in the odor of the stimulant.Smelling the smell of olfactory cells with air flow.The exact answer to the name of each detection within 1 minutes is normal olfactory.Over time respondents are less likely to have a sense of smell, and not to respondents, lose their sense of smell.

Results： Among 33 cases, 26 cases (78.79%), 28 cases (84.85%) and 29 cases (87.88%) had normal olfaction for 75% ethanol, vinegar and gasoline respectively.The inaccurate respondents were 7 cases (21.21%), 5 cases (15.15%) and 4 cases (12.12%) with loss of olfaction.

Conclusion: In this experiment, LL olfactory dysfunction was detected in late cases.Associated with atrophic rhinitis of leprosy.It is easy to be neglected clinically. Early leprosy control is a good way to protect olfactory function.Early leprosy control is a good way to protect olfactory function.

P-055

STANDARDIZATION OF A SOFTWARE FOR READING AND INTERPRETATION OF RESULTS OF A RAPID TEST TO DETECT DAPSONE IN URINE SAMPLES

Presenter: Rodrigo Moura

RL Oliveira[1], IS Camargo[1], LAX Silva[2], VA Silva[2], S Bührer-Sékula[3], WP Santos Junior[2], RS Moura[1]

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Objectives: The Uniform Multidrug Therapy for Leprosy patients was already implemented in several endemic countries. Monitoring patient's compliancy to daily self-administered dapsone might be an important aspect to be considered. The simple test to detect dapsone in urine samples, developed in the 1960's, was abandoned by the WHO and never implemented due to a low sensibility, mainly when reading results subjectively. The present study aimed to standardize a simple test to detect dapsone in urine samples using digital reading of results by using a smartphone and an app for colorimetric reading.

Methods: Tests were produced and executed as described by de Mello and Ellard. In brief, paper filters were impregnated with all reagents and let to dry naturally. A drop of a urine sample is added to the paper strip and after one minute the positive sample will present an orange spot at the center of the drop. Known concentrations of dapsone were added to urine samples and were individually tested with reading of results performed visually and by using the colorimetric reading by the app under development. Shortly, the performed tests were photographed, and each pixel extracted from the picture was analyzed in a series of parameters. An equation was established using raw data data from the analysis to determine how close to an Orange-yellowish pattern each pixel matrix was, which correlates with the quantity of dapsone in each urine sample.

Results: The app herein developed was used for reading and interpretation of test results and promising findings have been made. After repetitively readings of samples containing 0, 1, 2.5, 4 or 5 mg/L of dapsone, a parameter was established to quantify dapsone in urine samples using the given raw data. Statistical analysis of results demonstrated a significant difference among readings of samples with different concentrations of dapsone made by the app with p values below $5x10^{-5}$. The present study presents pioneer results in the development of an app to support leprologists and other healthcare workers in the monitoring of leprosy therapy.

Conclusion: Results obtained up to this point demonstrate a potential application in the clinical routine. The procedure is fast, simple and cheap, guaranteeing whether the patient is fully compliant to treatment. This is especially important in this moment of transition to a shorter regimen for MB patients in Uniform-MDT.

P-056

CLINICOHISTOPATHOLOGICAL CORRELATION OF ASTEATOTIC ECZEMA IN LEPROSY

Presenter: Pullabatla Venkata Srinivasa Prasad

P.V. S Prasad, R. Abinaya, P.K. Kaviarasan, P.Viswanathan
Rajah muthiah medical college and hospital, Chidambaram, India

Objectives: Leprosy is a slowly progressive disease caused by Mycobacterium leprae. The organisms are usually found in the sub-epidermal zone, inside the nerves, sweat glands, arrector pili muscle, macrophages and around

the hair follicle. Asteatotic eczema in leprosy occurs due to the destruction of the sweat and sebaceous glands. Definite histological changes are seen even in the normal appearing skin of leprosy patients. There is paucity of studies describing the histopathological features of asteatotic eczema in leprosy patients. Histopathological findings may help in defining the disease activity of leprosy patients, so our aim is to study the detailed histopathological findings of asteatotic eczema in leprosy patients, to correlate their clinical status and to find out the importance of such correlations in relapse of the disease.

Methods: Skin biopsy was done from 40 patients from the asteatotic patch and the features were studied histologically.

Results: Ridley Jopling classification was followed. Pure neuritic leprosy was also diagnosed appropriately. Among the study patients, 33% were pure neuritic, 17% borderline tuberculoid, 45% were borderline lepromatous and 5% were histoid leprosy. The male to female ratio was 4:1. Histopathological picture of asteatotic eczema showed epidermal changes like both hyperkeratosis and atrophy. Interestingly, we noted acanthosis in 17% in contrast to atrophy which is usually seen in leprosy. Dermal changes like infiltrates were noted in 80% and granuloma in 20%. Though the pure neuritic cases were adequately treated and inactive, the histopathological picture from asteatotic eczema showed granuloma. Thickened collagen bundles with kinking were observed in 65% of cases.

Conclusion: Our study revealed that asteatotic eczema is more commonly noted in lepromatous spectrum. Histopathological findings may help in defining the disease activity of leprosy patients. Presence of granuloma in inactive and adequately treated cases is an interesting finding which has to be explored further. Hence, asteatotic eczema can be an index of predictor for assessing the resolution of the disease.

P-057

EVALUATING SPATIAL ROUTING MODELS FOR FACILITY BASED AND HOME-BASED CARE FOR PEOPLE AFFECTED BY LEPROSY

Presenter: Suresh Munuswamy

Suresh Munuswamy [1] ,Shyamala Anand [2], Jayaram Parasa [3], Steffi Sam[1], Priyadarsini Suresh[1], Robin Lizzy Sunny[1], Rony Sunny[1], Angeleena Singh[1], Sushmita Paul[1]

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Objectives: To estimate travel distance of people affected by leprosy in the study area to the nearest health care facility, and compare the travel distance to the shortest euclidean distance connecting all villages with people affected by leprosy. (37)

Methods: 78 contiguous villages in a known leprosy endemic block of Vizianagaram district, Andhra Pradesh, India were selected for this study begun in 2018. Using Excel, ArcGIS spatial analyst software module, and custom built routing and optimization software developed with Python: (1) all study villages and health facilities were plotted; (2) villages with people affected by leprosy were highlighted; (3) the shortest euclidean distance connecting villages with people affected by leprosy to the nearest health care facility was arrived at; (4) the shortest euclidean distance connecting all villages with people affected by leprosy was arrived at; (5) the two models were compared with the numbers of people affected by leprosy and percentage of variation arrived at.

Results: The shortest distance covering all the villages with people affected by leprosy is 45 kilometers whereas the distance from the same villages to the nearest health care facility times the number of people affected by leprosy is 192 kilometers, which is a three-fold increase in travel distance.

Conclusion: People affected by leprosy require health care to manage complications of the disease and even post treatment to prevent new disability or worsening of existing disability. Unfortunately, treatment seeking behavior is often poor among people affected by leprosy, and treatment and capacity to manage leprosy complications is not always available closer to home. As a result, travel for leprosy care can cause high out of pocket expenses and poorer treatment compliance for leprosy complications resulting in greater probability of leprosy disability with all its negative consequences. Availability of geo tagged data of people requiring leprosy care and clear visual representations of that data on maps with spatial optimization of routing can better inform relevant government and non-government sectors in planning for delivery of leprosy services. Optimized routing can improve the efficiency and effectiveness of any planned home-based services and mapping can also determine the best accessible locations for periodic facility based specialized leprosy services like reconstructive surgery, podiatry, assistive devices etc.

P-058

DESIGNING DISABILITY MANAGEMENT SYSTEM THROUGH STAKEHOLDERS ENGAGEMENT

Presenter: Bino Berry

Bino Berry[1], Karthikeyan G[2], Famkima Darlong[2], Joydeepa Darlong[2]
[1]TLM Hospital Faizabad, Uttar Pradesh, India; [2] The Leprosy Mission Trust India, New Delhi, India

Objectives: To understand the disability status and quality of life of persons with disabilities due to leprosy who underwent treatment at TLM Hospital, Faizabad.To design a model for disability management, engaging the affected communities, health workers, health system managers, health policy-makers, researchers, non-state, non-health sector actors, based on the findings of the former objective.

Methods: The study was carried out in and around the community of TLM Hospital Faizabad, Uttar Pradesh, India. Mixed methods were used to assess the disability status and quality of life of persons with disabilities due to leprosy. SALSA and Participation scale in the local language were used to assess the activity limitation and participation restriction, respectively. Mapping was done to understand the spatial distribution and define the clusters to implement the interventions. Participatory approach was used to elicit inputs from local communities, affected persons andother stakeholders in creating disability management system. The change in the activity limitation and Participation restriction are the main outcomes which was compared before and after the intervention.

Results: The data collection and analysisis in progress and the findings will be presented in the conference.

Conclusion: Expected outcome: The findings will inform health policies related to disability management focusing on early identification and better management of disabilities within the community.

P-111

AN APPROACH OF EDUCATION AND MOTIVATION AMONG GENERAL PUBLIC TOWARDS LEPROSY AND OTHER HEALTH DISORDERS

Presenter: Rashmi Nayak

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Objectives: The lack of knowledge and awareness about leprosy and other major disease will lead to non-adherence to treatment, lack of reporting on time, perceived stigma about the certain disease, development of

deformities and sometimes makes the situation critical. The aim of the study was to create a cost-effective wide range of awareness about leprosy and other general health disorders with the available resources.

Methods: This study was conducted among the whole population who visited Bethasda leprosy mission hospital, Champa, chattisgarh, India during the period of 2013 to 2016 for Leprosy and general health services. A total of 2825 Leprosy affected person and 19735 general public attended this program. The education program was planned based on the need of community and current issues which can be addressed. It covers mostly the Leprosy and its complications (need of early reporting and prevention of deformities: self-care, footwear etc) General Health disorders (Hypertension, Diabetics, malaria, dengue, typhoid, seasonal diarrhea, need of healthy food habits, child and maternity health care issues). Weekly three days the training was conducted for a minimum of half an hour to maximum 45 minutes. The session will be briefing the importance of topic among participants and they encouraged to participate in a active manner. Attention was given to each participant; the questions were carefully listened by the trainer and answered. Avoided unnecessary deviations during the session.

Results: The participants have shown interest in learning new things, which was helpful to their healthy life style. Most of the participants were not aware about leprosy and its complications, self care, physical fitness and healthy lifestyle. To enhance their attention various types of training methods are helpful (videos, flip charts etc). This program increases the audience knowledge and awareness about health issues and influence their behaviour and attitude towards health issue.The detailed findings will be presented in the conference.

Conclusion: The awareness will help to identify new cases and encourage in voluntary reporting, prevention of deformities and also to lead a healthy life and have knowledge about other threatening diseases which occur frequently in their communities.

P-120

MOBILE PHONE AS A MONITORING TOOL IN LEPROSY CONTROL SERVICES IN CEBU, PHILIPPINES – AN UPDATE

Presenter: Junie Abellana

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Objectives: This study was aimed to assess the role of mobile phone in monitoring leprosy cases in a well-defined leprosy community in Cebu, Philippines

Methods: This study was conducted at the Cebu Skin Clinic, a leprosy case detection and treatment facility of the Leonard Wood Memorial Center for Leprosy Research in Cebu Philippines. Surveillance records of more than 300 leprosy cases detected and treated between 2014-2016 when the mobile phone was already available for case monitoring were reviewed and compared with the same number of cases detected and treated during the pre-mobile phone era, between 2001-2003. The rate of attrition and treatment completion, staff time & monitoring costs invested on case follow-up; and staff output on other leprosy- related services rendered between two periods were reviewed, compared and analyzed.

Results: Initial findings suggest significant reduction in staff time (3 hours vs 0.25 hour) and patient monitoring costs ($8 vs $0.5); higher treatment completion rate (82% vs 94%); and lower attrition rate of mobile-phone monitored cases compared to cases personally followed-up by field staff. Likewise, the use of mobile phone saved a lot of staff time because health workers were instead assigned to other clinic-based leprosy control services. This resulted to an increase in the number of patients served each day at 10-15 patients/staff compared to only 2-3 patients/staff if the surveillance team were to go out to the field to personally locate and monitor the patients.

Moreover, though not statistically significant, there was an observed decline in the incidence and/ or worsening of deformities during the mobile phone period compared to the pre-mobile phone period.
Detailed findings will be presented during the congress.

Conclusion: Mobile phone is a time efficient and a cost-effective field monitoring tool. It is a very affordable monitoring device that allows prompt and regular communication between patients and health workers resulting to an enhanced quality and a wider coverage of patient services. Using this tool, higher treatment completion and reduced attrition rates are readily attainable.

P-140

IMPROVING THE LEPROSY INFORMATION SYSTEM IN THE LOCAL HEALTH SYSTEM IN THREE PROVINCES OF DR CONGO

Presenter: Jacob Kabamba Kadima

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[1]The Leprosy Mission Congo, Kinshasa, Democratic Republic of Congo

Objectives: To evaluate the performance of the leprosy information system in the local health system in three provinces.

Methods: Descriptive study

Data collection – desk review of the Leprosy Information System at all levels (Health Centre, Health Zone and national Leprosy Programme), looking particularly at:

1. **Data management**: review of national level collection, sharing, storage, data flow and feedback processes
2. **Key indicators**: comparison with the global strategy of leprosy focused on the triple-zero priorities of ILEP
3. **Data sources**: population surveys, activity reports, operational level supervision reports, patient records and other management documents, monthly health zone reviews as well as annual leprosy reviews, epidemiological reports
4. **Quality of information produced**: the coherence, completeness, promptness and the method of collection of the data
5. **Dissemination and use of health information**: the scope of the dissemination of information and the use the information produced by the stakeholders of the National System of Health Information makes for the taking decisions

Results:

- Data management: Annual report of national leprosy information is produced with important delays and kept in hard copy papers.

- Key indicators: Unfortunately, the National Health Information System (NHIS) does not incorporate key indicators of leprosy in order to measure the triple-zero**.**

- Data sources: Frequently information differ between health centre and health district.

- Quality of information produced: inconsistencies and delays are common.

- Dissemination and use of health information: data are not used for planning and development of the leprosy programme.

Conclusion: Actions are needed to improve the existing leprosy information system in DR Congo:

- Innovative data collection methodologies (electronic data, film recording, etc.) are needed to collect and interpret the triple-zero indicators.
- Geo-spatial technology and data is necessary to support the existing health information system.

- Standardization of tools and methods of data collection and transmission is crucial in order to compare between provinces and also interpret trends in data. The definition of the key indicators is something that urgently needs standardization.
- Training of staff in the correct management of leprosy data is an urgent need in DR Congo.

P-210

THE PROFILE OF NEW LEPROSY CASES REPORTED IN TWO LEPROSY REFERRAL CENTERS – HYDERABAD & MAHABUBNAGAR IN S. INDIA

Presenter: G. Swamy Reddy

G. Swamy Reddy
LEPRA Society, Hyderabad, India

Objectives:

- To study the profile of new leprosy cases reported at Referral Centers.
- To understand type of disease and condition / complications of the patient at the time of reporting to the Referral Centers.

Methods: This is cross sectional study. Referral Centre of LEPRA Society offer comprehensive care to all leprosy affected persons through networking and collaboration with the Govt.Health care staff and ILEP partners for specialized services like diagnosing difficult cases, demonstrating self care practices, provision of protective footwear, supplementary aids, pre & post operative management, reactions/neuritis management, ulcer management and counseling.

All the new leprosy cases reported at the two Referral Centers during April 2016 to September 2018 (2½ years) were included in the study. The profile of the new cases was analyzed.

A total of 201 new cases reported at the center. Analysis done in terms of type of the disease, age, gender, disability status, slit skin smear status, complications, duration of disease and mode of referral.

Results: Among the total no. of new cases 65% of cases are male, 87% are MB type and 20% cases had lepromatous leprosy. slit skin smear positive in 48 cases (24%), 66 cases (33%) cases reported with Grade II deformity, 34 (17%) with reactions, 26 (13%) with ulcers and 12% were child cases. 18% of the new cases had history of contact with persons affected by leprosy. In 20 families 2 persons had leprosy in each of the families, in three families 3 persons had leprosy in each of them and 3 families had more than four persons affected by leprosy in each of them.

More cases were in the age group of 16 to 30 years 38% (76) in both the RCs. High percentage (92%) of males reported in the age group of 61-75 years.

Conclusion: Referral center is more useful to the patients who have reaction, complications, ulcers etc. Surveillance, follow ups, nerve function assessment and demonstrating and training on self-care is very important to all active and inactive cases. The follow ups should include clinical examination including nerve function assessment should be done every quarter. Counseling is a must to all new cases and their family members.

P-219

TINEA CORPORIS RECALCITRANT IN ERYTHEMA NODUSOM LEPROSUM PATIENT

Presenter: Mochammad Ayyub Arachman

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Objectives: Dermatophytes infection of the glabrous skin (tinea corporis) are fungal infection that invade and multiply within keratinized tissues like skin, hair, and nails. Dermatophytes can also be responsible for extensive or invasive forms in immunocompromised hosts. Leprosy type two reaction also known as erythema nodosum leprosum (ENL), a serious and often chronic complication caused by changes in immune system that often require use of steroid as treatment. This case to present tinea corporis recalcitrant in ENL patient on steroid therapy.

Methods: The patient was observed at Dermatovenerology outpatient clinic, dr. Soetomo Hospital, Surabaya Indonesia, complete history, physical examination, supporting test and treatment was performed.

Results: A 42-year-old man was suffering from ENL on treatment with prednisone. From history, he was released from treatment (RFT) 2 year ago. He suffered recurrent ENL several months ago and got a steroid treatment. Patient suffered from tinea corporis after that, treated with griseofulvin and improved. Two months afterward, he came to the outpatient clinic due to redness patches in the abdomen, which are accompanied with itching specially while sweating. He came from a low level of socio-economic status. Dermatological examination revealed polymorphic plaques in abdomen area with erythematous fluorescence with papulosquamous changes in the shape of circles which are accompanied with intensive itching. The center of the circles is inactive while the surrounding is active with distinctive bordering line to the skin around. We have found hyphae from potassium hydroxide (KOH) examination of skin scrapings. He has been treated with griseofulvin for 6 weeks, but patches still persist and KOH examination positive too. Gross and microscopic colony found on cultured Sabouraud Agar Dextrose (SDA) + antibiotic show the characteristics of *Trichophyton mentagrophytes*. We changed griseofulvin and used terbinafine 250mg daily for 4 weeks, and the result there was no itchy, nor redness patches and KOH examination became negative.

Conclusion: ENL on steroid treatment often lead to immunocompromised condition in leprosy patient. Thus, patient in this condition should be educated regarding the possibilities of complication, including dermatophyte infection. Early diagnosis and appropriate drug choices are necessary to decrease recalcitrant rate. Patient should be made aware of the maintenance of personal health and hygiene to reduce the incidence of dermatophytosis.

P-225

FOCAL SURVEY OF VILLAGES WITH MULTI BACILLARY (MB) LEPROSY CASES; LEPRA SOCIETY EXPERIENCE IN NABARANGPUR DISTRICT OF ODISHA, INDIA

Presenter: Allu Appala Naidu

A Appala Naidu[1], Michael Sukumar[1], NN Sahoo[1], SN Pati[1]
[1] LEPRA Society India

Introduction: Swabhiman project provides referral centre activities which includes complication management, slit skin smear testing and provision of protective foot wear. Swabhiman project covers 3 districts i.e. Koraput, Nabarangpur & Subarnapur.The project also provides outreach services through CHPs (Community Health Promoters).Leprosy disability rate is gradually rising in several parts of our state including the district of Nabarangpur. Therefore, LEPRA Society is focusing on school survey, contact survey and focal survey in addition

to the IEC/BCC to support Govt health system in the new case detection drive. Nabarangpur is one of the Tribal districts of Odisha with 57% tribal population. This district is having 2,735 villages including hamlets, in which 370 villages are having MB cases since last 5 years. LEPRA Swabhiman project did focal survey in 93 villages in last14 months and detected 92 cases.

Objectives:
1. To highlight the significance of focal survey in MB case villages to detect early cases.
2. To reduce the MB ratio & Disability ratio among new cases.

Methods: The villages with MB cases were listed from the last 5 years new cases detection in the district and selected the villages with prioritization of villages with smear positive MB cases, villages with Grade 2 disability and MB cases without disability & positivity for survey. Survey findings from October 2017 to November 2018 recorded at field level and compiled data at Project level.

Results:

Category of Villages surveyed	No.of villages surveyed	Population Enumerated	Pop examined	% of exam	Cases detected			Gender Segregation of new cases				
					MB	PB	Total	M	F	Mc	Fc	Total
MB case with Smear Positive	32	9028	6407	71%	10	45	55	27	24	3	1	55
MB cases with Gr-2 Disability	42	11651	8155	70&	5	20	25	16	8	1	0	25
MB case without smear & Disability	19	3971	2740	69%	3	9	12	6	5	1	0	12
Total	93	24650	17302	70%	18	74	92	49	37	5	1	92

Conclusion: Govt of India advised to do focal survey where Gr-2 case is newly detected. But it is observed in the project that more number of new cases detected by doing focal survey in villages with smear positive MB cases.

P-267

RETROSPECTIVE DATA ANALYSIS OF TERTIARY CARE LEPROSY HOSPITAL SERVICES IN INDIA

Presenter: John K George

John K George
FAIRMED India, FAIRMED Switzerland

Objectives: FAIRMED (FM) India is supporting tertiary leprosy care services through its 5 hospitals across 3 states in India. With the rejuvenated National Leprosy Eradication Program (NLEP) where new activities have been initiated since 2015, it was useful to ascertain it's impact on the tertiary care services in the FM supported hospitals. Hence, a retrospective data analysis of the hospital services was undertaken to understand the current trend and it's implications for the future.

Methods: Data being reported through 5 FM supported hospital was analysed retrospectively. Data reported via FM's hospital information system (HIS) during 2016, 2017, & 2018 was reviewed and analysed. FM supports 11 services in it's hospitals, where 3 of them are out-patient (OP) services and 8 are in-patient (IP) services. Besides

FM's supporting tertiary care hospitals, it also implements field based prevention of impairment and disability (POID) project in 3/5 hospitals in collaboration with the Government. The health systems were strengthened in order to provide out-patient services to people.

Results: In 2016, inspite of FM cumulatively supporting 19,344 services the 5 partners were only able to extend 19,205 services. However, this trend changed in 2017 & 2018 as well. In 2017, 15,153 services were supported whereas the partners extended 17,744 services. Likewise in 2018, 15,153 services were supported, but the partners extended 16,981 services. It was found that more OP services were supported than IP services suggesting that still a significant number of people were referred to the tertiary hospital inspite of implementing the field based POID projects. FM's funding mechanism know as the output based aid (OBA) is deployed to financially support tertiary care services.

Conclusion: In spite of the Government initiating new activities as a part of it's NLEP program there wasn't a significant drop in the numbers of people being referred to FM supported leprosy tertiary care hospital. It was also found that in districts with tertiary care hospital where POID project was implemented the numbers of referral to the tertiary care hospital was higher than in districts with tertiary care hospital where POID project wasn't implemented. It is recommended that in districts where POID project was implemented the tertiary care hospital should refer people to the Governments primary health care centre against physician's advice as leprosy OP services are available at Government primary health care centres. People utilising the services at Government health care centres further strengthens the public health system.

P-274

SELF MEDICATION AND LESS ADHERENCE TO ANTIMICROBIAL MEDICATION IS COMMON PROBLEM IN DEVELOPING COUNTRY, FUTURE IMPACT ON NEGLECTED TROPICAL DISEASES

Presenter: Joshi Shambhu

S.Joshi,

CHES.Nepal, KTM, Nepal

Objectives:

- to determine the abuse of self-medication and its impact
- to explore the non-medical use of prescription medicines

Methods: This study was conducted among the patients (N=25, M=15;F=10) who have purchased the drugsfrom Pharmacy . Totally, 25 consenting respondents were selected by random sampling and in depth interviewed, closed-ended question-based, semi-structured questionnaire.

Results: About 85 percent of the patients did not have medical prescriptions. Majority (68%) of respondents were treated for fever, throat pain, fungal and herpes with over the counter (OTC) drugs, and most were taking antibiotics (55%) alone, antihistamine plus antifungal(30%), 15% with antifungal soap vitamins, and low dose of steroid. The common medicines they wanted and taken frequently was Tab. Cetrizine, azithromycin, cefixine, doxycycline, itraconazole, fluconazole, prednisolne. Fever with unknown cause (32%), with some known aggravating factor (28%), and believe in traditional healer (22%), due to some kind of herbal or chemical (14%) was most prevalent. Respondents with herpes were had low quality of life. About 28% of patients lost ≥3-4 hours of house work in the past month. 55% of the patients did not have the knowledge about the dose, duration, side effects, and interactions of drugs they had used. The mean age of the participants was 39+/-4. 2 years. In all cases, chemist shops were the main source of obtaining the drugs non-medically. Less than 2 % had one episodes of Fix drug eruption in past one year and 18% having culture and sensitivity report of first line major antibiotics.

Conclusion: Antimicrobial and some herbal products were the most common drugs abused for self-medication who have redness in skin. Adequate health education is needed and was found mandatory to make people aware of the use and misuse of drugs, especially antibiotics/antifungal, and regarding the potential adverse effects they can show, especially when used repeatedly, or on a chronic basis. Fever, herpes, fungal disease, TB, leprosy, Cutaneous Leishmaniasis, HIV in developing country where the geographic is difficult, no road service, hard working, less rest and not access of physician experts and patients suffers from it and their QoL is affected. Government should control the schedule D and H drugs without clinician prescription. Most of the drugs are second and third line for Tropical diseases. This will also minimize the drug abuse and make pharmacist towards ethical behaviour.

P-275

USES OF TRADITIONAL MEDICINE AND THE HEALTH CARE SYSTEM: HOW THE COMMUNITY RESPONSE ORAL HISTORY IN DEVELOPING COUNTRY.

Presenter: Mandeep Joshi

S.Joshi

CHES.Nepal, KTM, Nepal

Objectives: To find out the knowledge, practice and belief of skin infections among traditional healing faith community.

Methods: It was the in-depth structure questionnaire among the patients with skin infections attending hospital. Dermatology quality of life also done. Data were analyzed with SPSS, Epi Info.

Results: The total number of patients were 342 in a eight month period (Jan-Aug 2018). Among them 8 percent having viral infections, herpes zoster with different disease like HIV sero positive, 3 patients having leprosy, 12 patients having TB. Male were 42 percent and female were 58 percent. 62 percent of the patients were above 50 years old. Most of the patients (92 percent) came to hospital for check up after going to traditional healer. 23 percent have complications or adverse effects. They belief that this disease is due to god and demon angriness. So, as soon as traditional healer should make the artistic picture of lion, dragon etc. If the two sides artistic picture meet, the chances of death is high. Besides artistic picture, they worship the god and restrictions of some food habit. Dermatology quality of life is less in those patients than others.

Conclusion: Traditional healers in developing country is still one of the consultation practices due to long term belief in oral history. Evidence based practice and its awareness program is essential to improve the quality of life of people. It is not changing over-a-night to many generation who have faith on oral history in medical practices, which is the most challenging job in the era of globalization. Early diagnosis of neglected tropical diseases, HIV, TB is important to reduce drug resistance as well. The world is culturally endowed with various forms of traditional healing practices. Nepal is situated between India and China. Ayurveda of the Indian subcontinent, the Traditional Chinese Medicine of China, the Tibetan Medicine so close with Nepalese society since hundreds of years. Still the people have faith and practice to follow the oral history of such practice in the community.

World Health Organization (WHO) document, the traditional medicine is described in the following way: “the sum total of the knowledge, skills, and practices based on the theories, beliefs and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health as well as in the prevention, diagnosis, improvement or treatment of physical and mental illness”

P-318

KNOWLEDGE AND SELF-CARE PRACTICE OF LEPROSY PATIENTS AT ALERT HOSPITAL, ETHIOPIA

Presenter: Edessa Negera

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[1]All African leprosy, tuberculosis rehabilitation and training centre (ALERT). Addis Ababa, Ethiopia; [2]Armauer Hansen Research Institute (AHRI), Addis Ababa, Ethiopia, [3]London School of Hygiene and Tropical Medicine, UK

Objectives: This study was aimed to assess the knowledge and self-care practices of leprosy patients and associated factors at ALERT leprosy referral Hospital in Ethiopia.

Methods: A cross-sectional study was conducted ALERT leprosy referral Hospital. A total of 424 leprosy patients were interviewed using pre-tested structured questionnaires. The questionnaires included core points such as socio-demographic characteristics, knowledge of leprosy and self- care practices. Bloom's cut off point was used to describe the knowledge and self-care practice of the respondents and statistical significance was assessed at 95% confidence interval with 5% of level of significance.

Results: The knowledge score of the respondents was poor for 276 (65.1%) and good for 148 (34.9%). The level of knowledge was significantly varied within age groups (P= 000), sex (P=000), marital status (p=0.003), educational status (p=000) and income (p-000). About 77.4% of interviewed patients had poor self-care practice and only 22.6 of patients had good self-care practice score (P=000). Age (p=0.002), Previous disability due to leprosy (P=000), Knowledge of leprosy (p=0.038) and income (P=0.028) significantly associated with poor self-care practice.

Conclusion: Although, leprosy treatment, disability prevention and rehabilitation program run in the country under general public health care service for decades, poor leprosy self-care practice and poor leprosy knowledge had been confirmed in this study. Therefore, the leprosy service program should re-visit its strategy and mode of delivery to improve the leprosy knowledge and leprosy self-care practices of patients.

P-321

AN INTEGRATED HEALTH CARE SYSTEM TO IMPROVE LEPROSY SERVICES: THE EXPERIENCE OF SOUTHERN PHILIPPINES MEDICAL CENTER

Presenter: Maria Vinna Crisostomo

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Objectives: To share the experiences of the Southern Philippines Medical Center, the end referral institution for dermatology services in Mindanao, in collaboration with the Department of Health (DOH)- Regional Office XI. This provided significant improvement in case detection, case holding, and community support to patients with leprosy via government funding, and implementation of the National Leprosy Control Program (NLCP) strategies.

Methods: This report revisits the accomplishments of our institution from 2015 to 2017 in terms of the improvement and transformation that underwent to address the growing need for leprosy services in Mindanao.

Results: Between 2015 and 2017, the DOH-Regional Office XI allotted a total of 2 million pesos to our institution to augment our budget to improve the leprosy services in Mindanao. Various activities were conducted such as research studies, workshops and trainings, case finding, health education and information dissemination. The Heart in Hand Club, a social support group for patients with leprosy was also established. As a result, an increased

number of patients were reached through these activities. During this three-year period, our leprosy clinic had detected and treated a total of 142 new cases with an average of 602 consults per month. We also held monthly social support programs with our patients and their families through the Heart in Hand Club.

Conclusion: Alliances between the national government through the DOH-Regional Office XI and Southern Philippines Medical Center are vital in the delivery of quality health care services in maintaining leprosy control. We envision for the establishment of a Leprosy Research Center in Mindanao with collaborative partnership with other international health agencies to develop new knowledge in disease prevention and control.

P-349

HEALTH SYSTEMS STRENGTHENING IN LEPROSY SERVICES: EXPERIENCES FROM TWO BANGLADESH INITIATIVES

Presenter: Shaikh Hossain

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Objectives: Weak health systems may pose many barriers to effective Leprosy control in any context. Bangladesh national leprosy control strategy 2016-2020 has adopted the WHO Zero leprosy initiatives in its objectives, particularly to establish effective government ownership, coordination and partnership to support further integration of leprosy services in the general health systems as one of the main agendas. The objective of this study is to describe the experiences of two health systems strengthening projects implemented during 2014 till date in 16 districts (8 districts in each project) in Bangladesh.

Methods: A mixed method study was undertaken including rapid reviews of reports and records, examining service statistics, short discussion with key implementers, outcomes of discussions at the national technical committee meetings and short interviews with NLP managers. Policies, strategies and practices of the two project areas were analyzed based on a framework proposed by Walt and Gilson.

Results: Both the Integrated Leprosy Services-Health Systems Strengthening (ILS-HSS) and Community Level Health System Strengthening (CLHSS) had the objectives to render the public health systems more responsive and resilient to leprosy services, yet they differed in their approaches, areas of intervention and in resource allocation in terms of human resources to financial inputs. The degrees of implementation and financial management decisions varied between the projects, so varied the decision making and implementation process. The epidemiological outcomes showed some progress with time and duration of intervention and reflected in significant decrease in detection of G2D cases and child cases. The changed ownership by the public sector providers and managers was noticeable. Joint supportive monitoring and supervision had impacted on the outcomes in this connection.

Conclusion: The outcomes were probably influenced by multiple factors acted in cross cutting or an integrated manner. Further analysis looking into cost and cost effectiveness analysis will be useful for scaling up for policy makers. Results indicated the necessity of fortifying the managerial capacity of local and national public health managers from the beginning at the design phase to all through the implementation phases. Regardless of the modality of strengthening the systems, emphasis must be given to the need for continuation of public and NGO collaboration at all levels.

P-386

ERRANCE DIAGNOSTIQUE D'UN CAS DE LEPRE NERVEUSE DANS UN CONTEXTE D'ENDEMIE LEPREUSE

Presenter: Amina Nomtondo Ouédraogo

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Introduction: La lèpre, ou maladie de Hansen, est une maladie infectieuse chronique due à *Mycobacterium leprae,* affectant préférentiellement la peau et les nerfs périphériques. L'atteinte peut être essentiellement nerveuse rendant le diagnostic difficile. Nous rapportons le cas d'une forme dont les manifestations neurologiques étaient au premier plan ayant faitl'objet d'une errance diagnostique.

Observation: Un patient de 62 ans, ayant dans ses antécédents la notion d'un contage lépreux familial, nous était adressé par un neurologue pour une rétraction tendineuse des doigts et un discret steppage bilatéral, suspectant une lèpre sans signe cutané. Cette symptomatologie aurait débuté progressivement quatre ans auparavant. L'examen dermatologique retrouvait une macule hypopigmentée de 0,5 x 1cm, hypoesthésique sur la face antéro externe du tiers moyen de l'avant-bras droit ainsi qu'une chute de la queue des sourcils et une xérodermie. L'examen neurologique notait une hypertrophie nerveuse des membres et un deficit sensitivomoteur. Les troubles moteurs consistaient en une fonte des éminences thénars et hypothénars, des muscles interosseux des mains, une camptodactylie et un steppage. Le diagnostic de maladie de Hansen avec névrite silencieuse était retenu. L'examen histopathologique de la macule confirmait le diagnostic de lèpre. La polychimiothérapie antibacillaire était prescrite. L'évolution après 12 mois de traitement était marquée par une régression des signes cutanés et de la fonte musculaire des mains.

Discussion: Ce cas clinique nous interpelle sur l'existence des formes neurologiques pures et des formes initialement nerveuses de lèpre et sur la nécessité de renforcer les enseignements à tous les niveaux, mais surtout dans les centres de santé périphériques sur le dépistage de la lèpre en zone d'endémie.

P-411

GROUP-BASED COGNITIVE INTERVENTION FOR PEOPLE AFFECTED WITH LEPROSY AND MILD CONGITIVE IMPAIRMENT: A CLINIC BASED STUDY

Presenter: Minwoo Lee

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Objectives: Mild cognitive impairment (MCI) represents a cognitive state between the subject memory impairment and early dementia. Proper cognitive interventions at this period can delay its development into dementia. The purpose of this study was to investigate the efficacy of group-based cognitive intervention in patients with ex-Hansen's disease and MCI.

Methods: We consecutively recruited the PALs who came to the neurology clinic in Sorokdo National Hospital form 2018 Jan to Sep complaining with cognitive decline. Of 25 patients who visited, 10 patients were diagnosed

with amnestic MCI and non-amnestic MCI. 5 patients agreed to participate in structured group-based cognitive intervention(CogMCI) which was validated through nation-wide randomized clinical trial. For 12 weeks, subjects received CogMCI twice per week by a trained instructor. They were assessed with neuropsychological screening battery (Seoul Neuropsychological Screening Battery-2) at baseline and postintervention. We performed Wilcoxon signed rank test to validate efficacy of the CogMCI program.

Results: In comparison to the baseline score, the subjects receiving CogMCI showed significant improvements in SNSB-2 at postintervention. Memory domain and Frontal/Executive function score was significantly improved (30.3% to 69.1%, p=0.043 and 12.8% to 26.7% p=0.043) respectively. K-Mini-Mental-Status-Examination was increased from 24.2 ± 2.6 to 26.4 ± 4.5 though not significant(p=0.102). K- Instrumental-Activity of Daily Living score was decreased from 0.32 ± 0.41 to 0.18 ± 0.18 and Short-term Geriatric Depression Scale was also decreased from 7.6 ± 3.5 to 5.6 ± 3.2 (p=0.180 and 0.102 respectively).

Conclusion: CogMCI, the group-based cognitive intervention program resulted in cognitive improvements, especially in memory and frontal/executive function domains in PALs with MCI. Further study is needed to assess the persistent effect of cognitive intervention program after it is discontinued.

ILC-1: CLINICAL SCIENCE:

1.2 Chemotherapy

P-008

CASE REPORT: RELAPSE OF MULTIBACILLARY LEPROSY TREATED WITH MINOCYCLINE AND OFLOXACIN

Presenter: Mallika Lavania

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Objectives: Leprosy is curable with multidrug therapy (MDT). In the post elimination era there have been reports of relapses from many endemic countries. A possible explanation of this might be a mutated resistant strain of M. leprae under drug pressure or reinfection. Drug resistance is a potential disrupter of any communicable disease control/elimination program. In previous studies especially from The Leprosy Mission Trust India, we reported primary rifampicin resistance as well as multidrug resistance.

Methods: Case: A 25-year-old male diagnosed with leprosy at the age of 15, visited TLM Purulia Hospital in Jul 2017 with complaining of swelling and pain in left leg. He had taken MDT for one year from Govt Primary Health Centre and released from treatment. He belonged to a middle class family from Purulia, West Bengal. In his family mother, father and one brother were leprosy affected also. His elder brother was under treatment of leprosy currently.

Our patient noticed few hypo pigmented patches on his body, painless flesh coloured nodules all over the body, ENL's appeared on and off. Skin biopsy was done for histopathology and PCR for testing drug resistance.

Results: HPE of this specimen showed atrophy of epidermis, with dense diffuse granulomatous inflammatory cell collection consisting of foamy macrophages, lymphocytes in dermis and neutrophils around blood vessels, neuro vascular bundles and around hair follicle. Granuloma fraction was about 10%. Acid fast stain showed numerous bacilli both solid and fragmented. BI of the granuloma was 5+. He was confirmed as active LL with resolving ENL reaction. Acid fast staining showed BI 5.66+. Molecular drug resistance testing by using PCR sequencing was performed. Patient was found resistant to rifampicin and sensitive to dapsone and ofloxacin. WHO recommended regimen for rifampicin resistant cases was started. clinical symptoms and signs of the infection improved rapidly in the next 12 months. On his last visit, t the skin lesions of the patient had gradually subsided and that his bacillary index had dropped to 1.66 log i.e. 4.0 at present. He is feeling better physically and mentally.

Conclusion: This case highlights therapeutic efficacy of Minocycline and Ofloxacin in producing clinical improvement and bacterial killing and should to used sparingly in other conditions for cases so that sensitivity to these drugs remain in the society.

P-019

CASE REPORT - RECURRENT RELAPSES IN A PATIENT AFFECTED WITH LEPROSY FROM WEST BENGAL , INDIA

Presenter: K Abhishek Reddy

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The Leprosy Mission Hospital, Purulia. West Bengal, India

Objective: This is a case of a patient who relapsed three times after successfully completing WHO MB multidrug therapy. Both the episodes were confirmed by slit skin smear examination and Skin biopsy, treated with MDT and achieved satisfactory reduction in BI before relapsing again. Drug resistance study revealed that M. leprae was susceptible to MDT. This is the first case report of a patient who suffered with relapse of leprosy multiple times.

Discussion: Relapses in leprosy are an alarm for new challenges of leprosy. Repeated relapses are difficult to explain especially when M. leprae susceptibility is seen. It confounds the routine knowledge of management of leprosy. With absence of Post RFT surveillance, relapses will elude treatment and continue to transmit the disease.

Conclusion and recommendation: Relapses are increasing as recent reports show. We cannot wait for voluntary reporting of relapses. Monitoring of BI in highly positive individuals must be done because they are the transmitters of infection. Post RFT surveillance system needs to be in place (ref 1). There is a need to make a strategic provision for long-term follow-up of leprosy patients after RFT in the existing health systems (ref 2). Clinicians must suspect and diagnose relapse. Diagnosis of lepromatous cases will be missed without smear tests. Slit skin smears must be made available at all government hospitals. Treatment regimens for relapsed patients even if susceptible to conventional drugs must be modified. Is childhood infection a risk factor for relapse as immunity profile changes? Prospective immunological studies and monitoring of child cases must happen. This calls for change in policy for management of such cases. Otherwise the “zero transmission “dream will never be a reality.

P-026

EFFICACY OF UNIFORM MULTIDRUG THERAPY (U-MDT) REGIMEN FOR ALL TYPES OF LEPROSY PATIENTS: A SYSTEMATIC REVIEW

Presenter: Santhosh Kumar

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Objectives: To synthesize available evidence on the 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

Methods: We searched Medline (PubMed), Science Direct, Ovidmedline, Web of Science of Core Collection, Cochrane, LILACS, SciELO and Google Scholar. The search was done using keywords “Multidrug therapy” AND “Leprosy”. After removing the duplicate records all the articles identified were examined by two reviewers independently using COVIDENCE, online software for systematic review. We considered trials evaluating U-MDT regimen comprising of rifampicin, clofazimine, and dapsone for six months for all types of leprosy patients irrespective of WHO classification criteria and WHO recommended multi-drug therapy regimen for 12 months for patients with MB leprosyand for six months among patients with paucibacillary (PB) leprosy. Risk of bias was assessed using RoB 2.0 for randomized controlled trials (RCT) and ROBINS-I for non-randomized studies of interventions (NRSI). The primary outcome measure assessed was occurrence of relapse. We considered secondary outcomes such as acceptability, safety, compliance, and improvement in clinical status of skin lesions,

leprosy reactions, nerve impairment, and reduction in bacillary index.The review protocol was registered in the PROSPERO database (Registration number:CRD42018080035).

Results: We searched the databases and identified 7308 records. After removing 2106 duplicate records, two reviewers independently screened title and abstracts of 5202 records and included 38 full text articles for assessing eligibility. Finally 17 papers from eight studies met the inclusion criteria and included in the qualitative synthesis. Among them six were NRSI and two were RCTs. Three trials reported relapse rate as the main outcome measure and all of them reported low level of relapse rate. These trials also reported significant reduction in bacillary index among patients receiving U-MDT. All the trials found addition of clofazimine to leprosy patients with PB leprosy is acceptable without any major adverse effects. The WHO trial reported 91% and 81% of skin lesions were clinically inactive among PB and MB patients receiving U-MDT regimen after five years. The Brazilian trial reported 64% and 62% of participants were found to be free from leprosy reaction by 180th day in U-MDT and WHO regular MDT groups and the difference was not found to be statistically significant.This review brought out the need and appropriateness of tools for review of NRSI.

Conclusion: Uniform multidrug therapy is effective for all types of leprosy patients.

P-059

CLINICAL-MEDICATION PROFILE OF PATIENTS IN POLYCHIMIOTERAPIC TREATMENT FOR LEPROSY IN A SPECIALIZED AMBULATORY IN THE CITY OF MANAUS, AMAZONAS, BRAZIL

Presenter: Jacqueline Sachett

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Objectives: To describe the clinical and pharmacological profile of patients in the treatment of polychemotherapy for leprosy in a specialized outpatient clinic in the city of Manaus, Amazonas, Brazil.

Methods: A cross - sectional study, based on the consultation of records of active patients in December / 2018, attended at the reference center for leprosy in the state of Amazonas. We excluded patients and those who had the treatment suspended.

Results: 140 active patients, 70% (98) males and 30% (42) females. The predominant mode of entry was the New Case with 101 cases (72.1%), with a recurrence of 19 cases (13.6%). The age of patients was 10 years and 79 years, with the predominant age group being between 46 and 60 years, totaling 43 (30.7%) individuals. The polychemotherapics were controlled in the following aspects: multibacillary and paucibacillary in adult and infantile forms, such as Rifampicin, Dapsone and Clofazimine, indicating a standard scheme guided by the Ministry of Health. However, a percentage of 10.71% (15) patients who have used alternative treatment for Dapsone intolerant. Of the total number of patients, 75.1% were in male use, different from alternative polychemotherapy, in which 60% were women. The paucibacillary or percetual form with respect to sex was equal. In patients with polychemotherapy, 65 (46.4%) patients were in the second half of treatment and 13 (9.3%) patients were in the second year, in the indication of 24 months of treatment.

Conclusion: Among the patients treated, a predominance of males, who had their first tolerance to multibacillary therapy, contrary to what was evidenced in alternative polychemotherapy, whose female percentage was higher. The periodic follow-up of patients with reactional age groups and, in time, to insert adjuvant therapy to control the reactions in order to avoid sequelae and worse health conditions, as well as to observe the drug intolerances, suggest the substitution of the treatments for the alternative polychemotherapy or prolongation of treatment.

P-060

CLOFAZIMINE AS AN IMPORTANT DRUG FOR LEPROSY: A CASE SERIES

Presenter: Peppy Fourina

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Objectives: To report a case series of paucibacillary (PB) leprosy patients who have given clofazimine as their therapy for leprosy.

Method: We report three cases of PB leprosy type patients who have given clofazimine as their therapy. We gave clofazimine for the first and second case due to its anti-inflammatory effect. And for the third case due to sulfa allergy.

Result: First case, 22 year-old-female, with a 7-year history of erythematous plaques on her left cheek. The results of the acid-fast-bacilli examinations were negative. Skin biopsy was taken from the plaque, and the histopathological examination was revealed epithelioid granulomas consistent with borderline tuberculoid type leprosy. She was given MDT regimen for PB leprosy plus clofazimine for 6 months (uniform-MDT) and achieved excellent result.

Second case, 26 year-old-female, with a solitary erythematous plaque on her left cheek. The results of the acid-fast-bacilli examinations were negative. Skin biopsy was taken from the plaque, and the result was borderline tuberculoid type leprosy. She was diagnosed with borderline tuberculoid type leprosy. She was given MDT regimen for PB leprosy with clofazimine for 3 months and without clofazimine for next 3 months. The result was also excellent.

Third case, 66 year-old-female, with a 1 year history of solitary erythematous plaques on her left lower forearm. The plaque was numbness. The acid-fast bacilli examinations were negative and the skin biopsy revealed borderline tuberculoid type leprosy. The patient a sulfa allergy, so we switch Dapsone to Clofazimine for her regimen. After 6 months, the result was excellent.

Conclusion: Clofazimine is a synthetic dye that has been used in treatment of leprosy since many years. Clofazimine is a lipophilic antibiotic that possesses antimycobacterial activities. It has an anti-inflammatory effect, and the occurrence of resistance in M. leprae is extremely slow. We gave clofazimine to our three PB patients, one of which is due to her allergy to dapsone. The results were excellent, and there were no hyperpigmentation as an adverse effect of clofazimine.

P-115

ANAYLSIS OF THE EFFECT OF NEWLY DISCOVERED LEPROSY CASES IN YUNNAN PROVINCE FROM 2015 TO 2017 WITHOUT TAKING DDS

Presenter: Li Xiong

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Objectives: To analyze the effect of newly discovered leprosy cases not taking DDS treatment from 2015 to 2017, and to provide a basis for developing next treatment plan.

Methods: Collection of newly discovered leprosy case treatment data from 2015 to 2017, analysis of skin lesion regression and bacterial density index decline.

Results: The average annual decline in bacterial density index of patients taking daps one in multi-bacterial leprosy cases was 1.34; the average annual decline in bacterial density index for patients who did not take DDS was 0.94, there is a significant difference between the two group.

Conclusion: For those leprosy cases that cannot take DDS, it is best to take alternative antibiotics such as levofloxacin during the treatment, in order to further improve the therapeutic effect and accelerate the decline of the bacterial density index.

ILC-1: CLINICAL SCIENCE:

1.3 Reactions and Nerve Injury

P-009

AN ANALYSIS OF CLINICO-DEMOGRAPHIC CHARACTERISTICS OF PEOPLE AFFECTED BY LEPROSY WITH LEPRA REACTIONS BEING TREATED AT LEPRA SOCIETY REFERRAL CENTER IN HYDERABAD, INDIA

Presenter: Adiraju Kameswara

Adiraju Kameswara Rao1, Arunabala Chaudhury[1]
[1]LEPRA Society

Objectives:
• To assess the socio-demographic characteristics of people affected by leprosy with lepra reactions
• To assess the clinical characteristics of lepra reactions among the people affected by leprosy

Methods: This is a cross sectional study. The patients reported with the symptoms of lepra reactions during 2017 and 2018 year comprise the study population. A pre-designed questionnaire was used to assess the socio-demographic details and clinical characteristics of the patients with lepra reactions. The data was analyzed using the Excel 7.

Results: A total of 50 patients reported to the centre with the symptoms of lepra reactions.
Their Socio-demographic characteristics revealed:
• 30 (60%) were male
• Mean age was 34.22 yrs.
• 38 (76%), 10(20%), 2 (4%) were Hindus, Muslims and Christians respectively
• 26 (52%) belonged to Other Caste (OC), 9 (18%) each of Scheduled Caste (SC) and Scheduled Tribe (ST) and 6 (12%) Backward Caste (BC)
• Socio-economic status with respect to modified B.G. Prasad's classification revealed 19 (38%) belonged to upper middle class and 13 (26%) to upper class

The clinical characteristics revealed:
• All had MB type of leprosy
• 31 (62%) had ENL while the other 19 (38%) had RR
• 29 (58%) completed anti-leprosy treatment, 11 (22%) were continuing, 7 (14%) were yet to start and 3 (6%) were defaulted
• Slit skin smear was positive in 38 (76%) cases
• The lepromatous group (BL & LL) comprised 37 (74%) of cases, BT with 10 (20%) and BB with 3 (6%)

Conclusion:
• Patients should be informed about the occurrence of reactions so that the morbidity can be minimized and for better compliance to treatment.
• Integrated comprehensive approach is needed to manage leprosy reactions

P-025

TYPE 1 REACTION IN RELAPSE LEPROMATOUS LEPROSY INDUCED BY ACUTE PHARYNGITIS IN JAVANESE PATIENT DIAGNOSED BY HISTOPATHOLOGY EXAMINATION: A CASE REPORT

Presenter: Medhi Denisa Alinda

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Objectives: To report an isolated case about type 1 reaction or reversal reaction in relapse lepromatous leprosy. A reaction may be suspected when there is increased inflammation of preexisting skin lesions. Hypopigmented or only slightly erythematous macules become red and swollen. Patients may complain of a burning, stinging sensation in the skin lesions and verbalize aches and pains in the extremities or in the face and loss of strength and/or sensory perception. Relaps in MB leprosy is defines as the multiplication of M.leprae in various tissues in Multibacillary leprosy.

Methods: A 38 year old Javanese man presented with red spots appear throughout the body since 1 week. It was also accompanied with thick sensation with burning sensation. Pains in the extremities. A lump is denied. Eyelashes and eyebrows fall out. Sores on the soles of the feet for 1 week. And patient has complained about sore throat. The patient had finished MDTL treatment 4 year ago. Recent treatment history of methylprednisolone 3x4 mg. The slit-skin smear revealed BTA BI 5+ and MI 0 and 2 year ago BI was +2. Body temperature 37,8°C. Dermatological status of facial region of madarosis, generalized region of erythematous plaques, and infiltrate in ear lobe. There is acute pharyngitis.There are no nodules. Hemoglobin 13,700, leukocytes 22,430, platelets 78,000. Histopathological examination comprised a loose and disorganized granuloma in the upper and mid-dermis, dermal edema and epithelioid cells was positive.

Results: Lesion was decrease after 5 months treatment and there is no complaint about new lesion and no pain in the extremities again. The patient was treated with single morning dose prednisone 40 mg, paracetamol 3x500, amoxicillin 3x500mg. Multidrug treatment (MDT) for multibacillary leprosy is given again.

Conclusion: I conclude that this patient respond to prednisone and MDT, even after being considered cured and released from treatment, may suffer from reactional episodes for long periods of time. Clinically, a reaction may be suspected when there is increased inflammation of preexisting skin lesions. Relapse usually occurs within 3 years of starting anti leprosy treatment and is acute in onset with pain and tenderness of the old lesions. Steroid treatment (prednisone/prednisolone) with a starting dose of 30 to 40 mg is still considered the treatment of choice for type 1 reaction.

P-061

TREATMENT OF TYPE II LEPROSY REACTION WITH CHRONIC HEPATITIS B AND DIABETES MELLITUS

Presenter: Yulan Niu

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Objectives: Explore the treatment of leprosy patients with other chronic diseases and explore the advantages of the new leprosy prevention model.

Methods: A retrospective analysis of the clinical data of a patient with leprosy and chronic hepatitis B and type 2 diabetes admitted to our hospital.

Results: This patient was diagnosed with metastatic leprosy with type II leprosy reaction, and the symptoms improved after timely application of thalidomide and dapsone, clofazimine and rifampicin. In the course of treatment, hepatic dysfunction and abnormal blood glucose were found. He was diagnosed with chronic hepatitis B and type 2 diabetes. Oral entecavir anti-hepatitis B virus therapy and glimepiride hypoglycemic therapy, the patient's liver function returned to normal and blood sugar was well controlled. In the course of the disease, oral anti-leprosy drugs were continued, and the patients were followed up. At present, the patient's rash subsided, the lower extremity edema subsided, and the treatment was smooth.

Conclusion: Some leprosy patients also have other chronic diseases. The treatment of leprosy to a designated medical institution can promptly diagnose the complication and ensure the comprehensive treatment of the patient. The treatment of leprosy in the new situation has shifted to a designated medical institution that is worth promoting.

P-083

ERYTHEMA NODOSUM SEVERE LEPROSY: ABOUT 02 CASES OF ABORTION OBSERVED IN PATIENTS WITH LEPROMATOUS LEPROSY AT THE HOSPITAL OF THE ORDER OF MALTA IN DAKAR

Presenter: Lahla Fall

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Objectives: Several studies have been reported on leprosy and pregnancy interactions. Leprosy appears to have little effect on the fertility of young women of childbearing age. On the other hand, pregnancy can reveal leprosy and is a factor favoring the risk of reaction episodes, sometimes serious, but ultimately, without risk for the newborn. Post partum leprosy reactions are recurrent and more severe requiring for the most part a general corticosteroid treatment which allows a regression of the clinical signs.

Methods: We report in this observation, two cases of early abortion occurring in the first trimester, in 2 young patients with lepromatous leprosy who showed signs of severe type 2 reaction. These two parturients had no particular ground or medical history.

Results: Severe erythema nodosum leprosum appears to be the cause of early termination of pregnancy. No study in Senegal has yet reported similar cases.

Conclusion: Research should be carried out on the therapeutic and preventive aspects in the event of pregnancy or breastfeeding, in order to institute an adequate treatment and to reduce the risk of aggravation of the disease, or the occurrence of leprosy reactions in the mother, with consequences on the fetus or newborn. In all these women of childbearing age, having a lepromatous form of leprosy (so at risk of developing ENL), it is strongly recommended to institute long-term contraception

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P-159

APPROACH FOR PREDICTION OF LEPRA REACTION BY EVALUATING *M. LEPRAE* RNA EXPRESSION

Presenter: Yuji Miyamoto

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Objectives: In the past few decades, leprosy patients drastically decrease due to the introduction of Multi-drug therapy (MDT). However, MDT often triggers the lepra reaction which promotes peripheral nerve damage, leading

to the irreversible disability of leprosy. According to the WHO report, lepra reaction occurs as much as 40% in patients with multibacillary leprosy, but at the present, there is no way that can precisely forecast the occurrence of lepra reaction in the patients who start the MDT after diagnosed as new cases of leprosy. In this study, we characterized some of *Mycobacterium leprae* RNA in various stages of leprosy patients, such as before and during MDT, and evaluated the relationship between their expression pattern and development of lepra reaction.

Methods: Skin biopsy samples were collected from each leprosy patient at four time points: before and duration of MDT treatment with 1, 6 and 12 months. By using total nucleic acid extracted from above skin biopsy samples, the presence or absence of *M. leprae* DNA (RLEP) and two RNA (16S rRNA and *hsp18*) were assayed by Quantitative PCR (qPCR) or RT-qPCR and their results were checked with the clinical history of each patients, especially onset of the erythema nodosum leprosum (ENL: Type 2 lepra reaction).

Results: The RLEP region was detected in all skin biopsy samples, meaning that *M. leprae* DNA was remaining in all patients throughout 12 month-MDT. With regard to *M. leprae* RNA, the detection rate of both 16S rRNA and hsp18 decreased at the end of MDT, while that of *hsp18* has tendency to decline along with the duration of MDT. Focusing on the time point of before MDT, the 16S rRNA was found in all patients regardless of whether ENL occurred or not. In contrast, the detection rate of hsp18 was more likely to correlate with the incidence of ENL.

Conclusion: The results demonstrated that *M. leprae* hsp18 RNA has potential to monitor the lepra reaction (ENL).

P-202

SMALL MOLECULES IN LEPROSY: APREMILAST AS A TREATMENT OPTION FOR CHRONIC RECURRENT ERYTHEMA NODOSUM LEPROSUM

Presenter: Tarun Narang

T Narang[1], S Dogra[1], A Kaushik[1]

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Objectives: To assess the efficacy of apremilast in chronic recurrent ENL patients with steroid-dependence and not responding to high dose clofazimine or minocycline.

secondary objective was to document adverse effect profile and clinical tolerance to apremilast in these patients.

Methods: Five adult patients (age 30-45 yrs) of lepromatous leprosy with chronic recurrent ENL, treated with multiple courses of corticosteroids and not responding to clofazimine and/or minocycline were selected. Patients were treated with oral apremilast at a dose of 30 mg twice a day and evaluated every four-weekly for a period of 6 months. Detailed clinical examination, clinical photography, ENLIST severity assessment and adverse effect documentation was performed at each visit.

Results: All five patients responded favourably to Apremilast,, there was resolution of ENL lesions within 4 weeks with significant improvement in constitutional symptoms. Four patients were tapered off oral corticosteroids in 3 months period after starting apremilast and in one patient steroids were stopped at 5 months. Apremilast was well-tolerated and no adverse effect requiring dose-reduction or withdrawal from therapy were seen. No new ENL lesions were noted at the end of 6-month follow-up.

Conclusions: Management of severe recalcitrant erythema nodosum leprosum (ENL) in leprosy patients is challenging, with no current therapy being uniformly effective and significant adverse effects seen with most immunosuppressive agents, including corticosteroids.

Apremilast, selective phosphodiesterase-4 (PDE-4) inhibition is an immunomodulator and produced significant improvement in chronic recurrent ENL in all patients with excellent tolerance in our study, it can be considered a safe and effective alternative in these steroid dependent patients who do not respond to other anti-inflammatory agents(clofazimine, minocycline, pentoxifylline) or who cannot be given thalidomide .

P-249

ENLIST SEVERITY SCALE - AN ASSESSMENT TOOL FOR TYPE 2 REACTION PATIENTS AND THEIR CLINICAL CORELATION

Presenter: Vivek Pai

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Objectives: Erythema nodosum Leprosum (ENL) is a severe Inflammatory condition in bacteriologically smear positive patients specially in LL and BL patients. Patients may present with ENL, occurs during and after MDT treatment involving multiple systems. ENLIST Group (Walker et al 2015) developed and validated the ENLIST severity scale (EESS) for assessment of patients with ENL reaction and to measure outcome measures validated and standardized.

Methods: 26 patients with ENL reaction attending our Referral centre were subjected to ENLIST severity scale. 7 females and 19 males between age group of 17 to 60 years with BI ranging from 1+ to 4.7+ were assessed applying the EESS.

Amongst 26 patients, 4 were in acute reaction, 3 were of recurrent reactions and 19 patients were of chronic ENL reaction. Clinically 10 patients were in mild type 2 reaction, 6 were of moderate severity and 9 with severe reaction.

Severity score ranged from lowest 7 up to highest 31 in severe cases which corelated well with clinically and with Physicians assessment. Amongst 26 patients, 14 had more than 5 episodes of reactions, 4 had single episode while 7 had more than one but less than 5 episodes of reactions.

17 patients had completed their MB-MDT, while 8 were on anti-leprosy treatment. Two of the relapse patients presented with Type 2 reaction.

Conclusion: EESS is a good validated tool to measure the severity of ENL/ type 2 reaction useful for assessing the patients and also for measuring the outcome of treatment.

P-264

STEROID DEPENDENT ERYTHEMA NODOSUM LEPROSUM AFTER 20 YEARS RELEASE FROM TREATMENT OF LEPROSY AND IT'S COMPLICATION- A CASE REPORT

Presenter: Marissa Astari

Marissa Astari , Afif Nurul Hidayati, Bagus Haryo Kusumaputra, Medhi Denisa, Cita Rosita SP, M. Yulianto Listiawan, Indropo Agusni

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Objective: To present a case report complication of steroid dependent in Erythema Nodosum Leprosum (ENL) in a 31 years old male.

Methods: Leprosy could be understood as two conjoined disease. A chronic mycobacterial infection itself and lepra reaction. Lepra reaction can cause sequelae often extend many years after the treatment and have severely physical, social, and psychosocial consequences. ENL requires control with immunosuppression which may itself pose life-threatening risks for patients.

Results: A thirty one years old man was admitted to Dr. Soetomo General Hospital Surabaya with chief complaint there were multiple eritematous nodules with pain sensation all over his body since 3 weeks before admission. Patients also complaint about severe pain in his lower back. He had been diagnosed with Lepromatous Leprosy 20 years ago and had completed the Multi Drug Therapy of Leprosy (MDTL) treatment. He led a completely healthy life for one year. A year after, it gradual appears pain erythematous nodule everytime he was tired or stress. He always consume steroid everytime its appear and he found steroid as a savior, which provoked him to self-administered steroid without any prescription whenever he thought required. He was found having features of cushing syndrome with puffy face, along with fever, fatigue and severe lower back pain. He undergo for a X-Ray for his lower back pain and the results was wedge compression fracture corpus vertebra lumbal 1 with irregularity and sclerosis superior endplate and spondylosis lumbalis. On admission he was started on oral methylprednisolone 40 mg daily single morning dose. For his lower back pain consulted to orthopaedic division. The progression was good and he is on regular follow up now.

Conclusion: We present an unusual case of steroid dependent ENL with wedge compression fracture vertebra lumbal 1 and sclerosis suoerior endplate and spondylosis lumbalis because if the self administered and without prescription steroid the he consume for 19 years. Recurrent tender, evanescent, erythematous nodule ssociated with fever and other constitutional symptoms characterize classic ENL. The real challenge we faces during the management of the ENL's patients. Because its recurrent and chronic.

P-367

EXPLORING THE POSSIBLE TARGET OF HISTONE DEACETYLASE IN MANAGEMENT OF TYPE 2 ERYTHEMA NODOSUM LEPROSUM REACTIONS

Presenter: Pugazhenthan Thangaraju

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Objectives: Since there is only minimal handful drugs in the management of chronic recurrent ENL reaction there is always a search for another alternative drugs in the situation when all the available drugs like thalidomide, etanercept etc. fails.

Methods: A search was made regarding the major pathway involved in the mechanism of steroids in low doses and at high doses. We found the role of histone deacetylase and histone acetyl transferase as important in the orchestrations of inflammatory signals. So a search in PubMed for available evidence was sorted out with the search words "histone deacetylase inhibitors"[Pharmacological Action] OR "histone deacetylase inhibitors"[MeSH Terms] OR ("histone"[All Fields] AND "deacetylase"[All Fields] AND "inhibitors"[All Fields]) OR "histone deacetylase inhibitors"[All Fields]) AND ("anti-inflammatory agents"[Pharmacological Action] OR "anti-inflammatory agents"[MeSH Terms] OR ("anti-inflammatory"[All Fields] AND "agents"[All Fields]) OR "anti-inflammatory agents"[All Fields] OR "anti-inflammatory"[All Fields].

Results: A huge amount of studies done in animals and in human were found proving it efficacy in the management of inflammatory conditions apart from their usual indication in management of cancerous conditions. The same will be presented for better understanding.

Conclusion: So based on this background information and various pharmacokinetic and safety profile of the groups of drugs under this category, it could be a tried as an alternate drugs in case there is no efficacy with the available ENL controlling drugs. A planned pilot followed by case controlled or randomized controlled studies should be initiated for the betterment of the patients suffering from recurrent ENL reaction. In addition there is also evidence of theophylline enhancing the response of steroids. If it is possible then we can try adding theophylline with low doses of steroids for better response than only with high doses of steroids. Theophylline also works on the pathway as above.

P-401

DIFFERENTIAL EXPRESSION OF IFN-γ, IL-10, TLR1 AND TLR2 AND THEIR POTENTIAL EFFECTS ON DOWNGRADING REACTION AND ERYTHEMA NODOSUM LEPROSUM

Presenter: Douglas Eulalio Antunes

Douglas Eulálio Antunes[1], Isabela Maria Bernardes Goulart [1, 2], Mayara Ingrid Sousa Lima[3], Patrícia Terra Alves[4], Paula Cristina Brígido Tavares[4], Luiz Ricardo Goulart[1,2,4].

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Objectives: The aim of this study about associations among antigens, receptors and expression of cytokines, using the path analysis, is providing new insights into the immunological mechanisms involved in triggering leprosy reactions.

Methods: A cross-sectional study using blood samples from 17 leprosy reaction patients and 17 reaction-free was carried out to verifying the associations and causal relantionship among variables. The quantifications of TLR1, TLR2, interferon gamma (IFN-γ), and interleukin 10 (IL-10) were obtained by means of quantitative real-time reverse transcription polymerase chain reaction (RT-qPCR) and serology anti-PGL-I IgM and anti-LAM IgG by ELISA method. The statistical analyses were performed by means of GraphPad Prism 7.0 (GraphPad Software, San diego, CA, USA) and the Software for Experimental Statistics in Genetics® (GENES Software, Lavras, MG, Brazil) specifically designed for path analysis.

Results: The TLR1 and TLR2 expression in the reaction-free MB group presented balanced expression (TLR1: 1.01 ±0.23; TLR2: 1.22 ±0.18, p = 0.267). On the other hand, the groups with downgrading reaction (TLR1: 1.24 ±0.17; TLR2: 2.88 ±0.37, p = 0.002) and erythema nodosum leprosum (TLR1: 1.93 ±0.17; TLR2: 2.81 ±0.15, p = 0.160) presented an unbalance between the levels of expression of these receptors due to higher expression of TLR2 in these two groups. The IL-10 was associated with PGL-I (r= 0.95; p< 0.001) and TLR2 (r= 0.91; p= 0.002) in the downgrading reaction. While in the type 2 reaction, this cytokine had correlation with LAM (r= 0.95; p= 0.001) and TLR2 (r= 0.91; p= 0.004). When the path analysis was approached, it was noted that IL-10 expression showed a dependence relation with PGL-I in downgrading reaction (Direct effect= 0.503 larger than the Residual effect= 0.364), whereas in the type 2 leprosy reaction, such relationship occurs with LAM (Direct effect= 0.778 larger than the Residual effect= 0.280). On the contrary, analyzing the reaction-free leprosy group, it was noted a positive and significant correlations between IFN-γ expression and both receptors, TLR1 (r= 0.74; p= 0.023) and TLR2 (r= 0.78; p= 0.0133), what pointed out an indirect effect on the expression of this cytokine caused by the association of this receptors (TLR1/TLR2; 0.8735).

Conclusion: The high TLR2 expression associated with IL-10 expression, in the leprosy reaction groups, may be hypothetically related to the formation of TLR2/2 homodimers and/or TLR2/6 heterodimers linked to evasion mechanisms in downgrading reactions and the pathophysiology of type 2 reactions.

ILC-1: CLINICAL SCIENCE

1.4 Dermatology (Leprosy and Its Differentials)

P-029

INVESTIGATION ON THE RESULTS OF THYROID HORMONE AND THYROID AUTOANTIBODY AMONG 43 EX-LEPROSY PATIENTS IN LEPRASARIUM

Presenter: Jingquan Wang

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Objectives: To investigate the thyroid dysfunction situation to better the health care of ex- leprosy patients in a leprosy colony.

Methods: A total of 43 ex-leprosy patients in a leprosy colony were enrolled, undergoing an examination including the detection of triiodothyronine(T3), freetriiodothyronine(FT3), thyroxin(T4) ,free thyroxin(FT4) ,thyroid-stimulating hormone(TSH), antithyroglobulin antibody(Tg-Ab), thyroid peroxidase antibody (TPOAb) with electrochemiluminescence immunoassay. Their fasting venous blood samples were collected in the early morning. The results were analyzed with SPSS17.0.

Results: Among 43 ex-leprosy patients, the thyroid dysfunction cases accounted for 37.21% (16/43) . There were 9 cases(20.93%) with reduced thyroid hormone, in which abnormal T3, FT3, T4, FT4 represented 6.98%,2.33%,13.95%, 11.63% respectively. 9 cases （20.93%）showed higher TSH level and 3 cases (6.98%) had positive thyroid auto-antibodies ,in which 3 cases (6.98%)with positive TPOAb and 1 case(2.33%) positive TG-Ab. Logistic regression analysis showed sex, age, leprosy type , diseased period and cure period were not the influencing factors of thyroid dysfunction.

Conclusion: Abnormal thyroid hormone and thyroid auto-antibodies are common in ex-leprosy patients in Zhejiang leprosy colony in China. We feel that the determination of thyroid hormone and thyroid antibodies are necessary and valuable in the healthy physical examination in ex-leprosy patients to improve their health care.

P-030

A CASE PRESENTATION OF HANSEN'S DISEASE WITH PURE NEURAL INVOLVEMENT

Presenter: Marianne Panlilio

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Objectives: To present a case of a patient diagnosed with Pure Neural leprosy (PNL) and subsequently treated in a tertiary hospital in Caloocan City, Manila Philippines.

Methods: We present a case of a 43 year-old male who consulted at the Department of Dermatology due to loss of sensation.

Patient noted a gradual decrease of sensation over the left foot ascending to the left legs and thighs over a period of 5 years. A year later a decreased sensation was noted on the contralateral leg. At this time no consult done. Until 2 weeks prior to consult, patient sustained a thermal burn over the left knee, prompting consultation with a neurologist. Various test and examinations were done and did not reveal any primary neurological pathologies. Hence, he was referred at our institution for further evaluation of possible leprosy.

Upon initial contact at our out patient clinic, physical examination revealed no primary and secondary lesions over the skin, but with anaesthesia of left foot, leg and thigh; hypoesthesia over right foot leg and thigh

AFS smear was done revealing negative bacteriological index. Skin punch biopsy was done over the anaesthetic leg revealing infiltrates of lymphocytes in the superficial perivascular area of the dermis and seen around eccrine structures; with associated nerve enlargement.

Results: Patient was started with Multidrug therapy under Multibacillary regimen: Rifampicin 600 mg once/month, Clofazimine 300 mg once/month, Dapsone 100 mg once/month, Dapsone 50 mg/daily and Clofazimine 100 mg/daily for12 months. He was also given Prednisone 30 mg tapered by decrements of 10 every month.

Conclusion: The absence of skin lesion commonly found in Hansen's disease and a negative slit skin smear, impose a challenge for health care providers in diagnosing and managing a patient. In these cases, ideally a nerve biopsy is gold standard if available and accessible.

Currently, there are no WHO guidelines for patients presenting with pure neural leprosy. For treatment purposes, there is a need to classify patient under paucibacillary or multibacillary. For this patient we started him under MDT-MB regimen. According to the NLEP Training Manual for Medical Officer in India PNL is classified as paucibacillary when one nerve trunk is involved and considered multibacillary when more than 1 nerve truck is involved.

MDT in patients with Hansen's Disease is insufficient in preventing or halting nerve dysfunction. However, prompt diagnosis and management can be nerve sparing and can prevent permanent nerve damage.

P-037

MOLECULAR CHARACTERISTICS OF MYCOBACTERIUM TUBERCULOSIS STRAINS ISOLATED FROM CUTANEOUS TUBERCULOSIS PATIENTS

Presenter: Jin Yali

Jinyali [1], Xueguang [1], lvchengzh [1], Qugang [1] Wanghongsheng[2]

[1.]Dalian Dermatosis Hospital; [2.]Institute of Dermatology, Chinese Academy of Medical Sciences and Peking Union Medical College

Objectives: The aims of this study were therefore to define the genotypes of strains and to assess drug resistance associated with first-line drugs for TB in a panel of 30 CTB isolates.And the genotypes were compared against a panel of published regional, national and global PTB genotypes to reveal any patterns unique to CTB.

Methods: Using several established universal molecular markers for TB phylogeny and strain typing. The genotypes were analyzed by 15-loci MIRU-VNTR. Genotypes.

Results:
1. Study population, clinical findings and CTB culture results : The spectrum of the cutaneous infections included 4 cases (13.3%) of TB ulcerosa ,16 (53.3%) of lupus vulgaris, 2 (6.7%) of scrofuloderma, and 8 (26.7%) of TB

verrucose cutis. Ziehl–Neelsen staining for bacilli in the skin tissue samples showed positive results in 15 cases. Sequence analysis of PCR amplification products of hsp65 and 16S rRNA genes from DNA samples of CTB and PTB strains showed 100% similarity with M. tuberculosis genes

2. Spoligotyping analysis : Among the 30 CTB strains, 29 (96.7%) were successfully assigned to 5 known spoligotypes (STs), but one strain(3.3%) was undefined by referring to the SpolDB4.0 database. The predominant STs were the Beijing and Beijing-like genotype (n = 21, 70%), T1 (n = 4, 13.3%),and U (n = 2, 6.7%), thereby representing approximately90% of the total strains (Table SII1). The 58 PTBstrains yielded 7 distinct STs. Among them, 2 strains (3.4%) which have identical spoligotype were undefined,whereas 56 (96.6%) were successfully clustered by spoligotyping into 6 types.MIRU-VNTR and molecular cluster analysis: A high discriminatory power was obtained by MIRU-VNTR. A total of 88 distinct MIRU-VNTR genotypes were observed.

Conclusion: Molecular characterization of multiple types of genetic markers (RD105, direct repeats and MIRU VNTRs) has determined that the dominant CTB strain in China is of the Beijing family type, which is also the genetic background of the majority of PTB strains in China. Although many of the CTB and PTB strains share a phylogenetic lineage and spoligotype family, they can be segregated as sub-populations by MIRU-VNTR markers. The PTB Beijing strains were more similar to each other than to the CTBs, even though there were no epidemiological criteria applied in assembling the collection.this first worldwide exploration of the molecular characteristics of CTB shows that they are predominantly of Beijing family type. they differ at the level of several MIRU-VNTRs and in the proportion of drug resistance.

P-038

POLYARTERITIS NODOSA MIMICKING TYPE II LEPRA REACTION

Presenter: Abeba Mitike Yetaye

Abeba Mitike Yetaye[1] , Assegid Geleta Tucho[2]

[1]ALERT CENTER Ethiopia, [2]Addis Ababa University, Ethiopia

Objectives: To create awareness about lepra reaction in managing vasculitis

Methods: Clinical Observation

Results: A 47 years old female patient presented with a one year history of severe pain and fever over joints and burning sensation over all upper and lower extremities; for the first 7 months which is followed by painful lesion over upper and lower extremities. The lesion initially starts from the thigh, lower leg; later on distributed to gluteal area, lower back forearm and palm. She has history of arthralgia, myalgia, tingling and burning sensation. She has no habit of using hot water bottle or no habit of staying in fire place; not alcoholic and nonsmoker. No family history of similar illness; no history of Hansen's disease in the family. No cough or night sweating. She gave history of unquantified weight loss. No history of melena; no known chronic illness. She is married and a mother of two. House wife by occupation

On presentation she was acutely sick looking with pain score 10/10; walks by limping, BP=170/130 mmHg, PR;86/min. physical findings:-Integumentary System; Multiple tender and hot subcutaneous nodules, over her right side of abdomen, gluteal area, leg shin and bilateral forearm and palm. Multiple tender reticulated plaques; over lower back and thigh. No nerve enlargement and voluntary muscle dysfunction in all the involved extremities. No lymphadenopathy. What makes our patient different is; she presented with multiple tender subcutaneous nodules on her upper and lower extremities which typically imitates typeII lepra reaction (erythema nodosum leprosum) which creates diagnostic dilemma.

Investigations:-
1) CBC with in normal range
2) LFT,RFT with in normal range
3) CXR NORMAL
4) HCV and HBsAg negative
5) U/A and microscopy; non revealing
6) BI/MI O,O,O
7) VMT/ST NORMAL
8) PICT: negative
9) ECHOCARDIOGRAPHY –LVH
10) ANA negative
11) ANCA negative: P-ANCA-negative; C-ANCA negative; Titer=1:20
12) Lipid profile: WNR
13) Histopathology: Mixed cell infiltrate in the wall of medium sized arteries in a septum of the upper part of the subcutaneous and surrounding vessel: POLYARTERITIS NODOSA
14) Echocardiography: grade 1 Left ventricular diastolic dysfunction; left ventricular hypertrophy.

Conclusion: Our patient fulfills the American college of rheumatology 1990 criteria for PAN:
Livedo reticularis
Myalgia, weakness or leg tenderness
Diastolic blood pressure>90mmHg
Biopsy of small and medium –sized artery containing, polymorphonuclear Leucocytes (PMNL)
But on her presentation she imitates type II Lepra reaction which initiates us to share our observation

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P-039

THE RNA-SEQ ANALYSIS OF LEPROSY IN CHINESE POPULATION

Presenter: Zhenzhen Wang

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Objectives: This study is a genome-wide expression analysis using RNA-Seq to explore DEGs (different expression genes) between leprosy patients and healthy controls in skin tissue.

Methods: In this study, we performed whole transcriptome sequencing on skin tissues of 34 leprosy patients and 18 normal controls in a Chinese population. We use Tophat2 to mapping our pair-end reads. Use HTSeq to determine the abundance of each genes. UQN (Upper quartile normalization) normalization method were used to normalize the library size. DESeq, edgeR, baySeq and Cuffdiff method were used to test different expression genes. For each method, we use FDR<0.01 to select DEGs, final we use the overlap DEGs to do the next analysis.

Results: Using a cutoff of 0.01 for false discovery rate (FDR), we found that 3,172 (16.4%) out of 19,387 known genes were differentially expressed in leprosy patients, including 2,262 (11.7%) over-expression genes and 910 (4.7%) under-expression genes. Then we separate DEGs to two groups, over-expression and under-expression genes in cases to do pathway analysis. We find that the under-expression genes top three pathways are all associated with skin development, the over-expression genes top three pathways are all associated with immune response.

Conclusion: The discovery of immune pathways, again proved the function of the immune system in the event of leprosy. Maybe because the under-expression of genes associated with skin development, the Mycobacterium leprae can entry leprosy patients' body easier.

P-040

THE ENIGMA AND GREAT MIMICKER: A CASE OF 66-YEAR OLD FEMALE WITH LEPROMATOUS LEPROSY

Presenter: Katrina April Martin David

Katrina April M. David, MD[1], Patricia Anne O. Ramirez, MD[2], Elizabeth P. Prieto, MD, FPDS[3]
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Background: Leprosy or Hansen's disease is a chronic granulomatous infection caused by Mycobacterium leprae, commonly affecting the peripheral nerves and skin. There are pockets of leprosy that still persist in Southeast Asia, and the western Pacific, including the Philippines and Indonesia.

Observation: A 66-year-old female, from the Philippines, reported to the outpatient clinic with a 5-year history of enlarging erythematous plaques and nodules on the face and over her extremities with sparing of the trunk. There was no fever, weight loss, weakness, and lymphadenopathy. There was no history of penetrating trauma or insect bite on the affected areas. Unremarkable past medical, family history as well as social history.

On physical examination, patient presented with erythematous infiltrated nodules and plaques on her face, upper and lower extremities topped with dry scales. There was no sensory loss or peripheral nerve enlargement during the time of examination. Histopathology from a biopsy of her right cheek and right arm was positive for dense diffuse dermal foamy lymphohistiocytic infiltrate containing numerous globi filled with acid-fast organisms were seen on Fite Faraco stain. A diagnosis of Lepromatous leprosy was made and patient was started on a multidrug regimen of Rifampin 300mg, Dapsone 100mg and Clofazimine 50mg for a planned treatment course of atleast 24 months. Three weeks into treatment, patient responded well with significant improvement of the lesions.

Key message: Advanced cases of Leprosy is characterized by symmetric skin lesions including nodules and plaques, with frequent involvement of the nasal mucosa. The present case had symptoms representing an early lepromatous form of the disease. Although leprosy may present a spectrum, this case highlights the need to keep leprosy in the differential diagnosis for patients with plaques and nodules as it is called a great mimicker, and particularly in regions where leprosy is endemic.

P-041

PECULIAR CLINICAL MANIFESTATION IN CHILDHOOD LEPROSY – A REPORT CASE

Presenter: Nisa Pairayayutakul

Pairayayutakul Nisa[1]
Bangkok Skin Clinic, Rajchapracha Samasai Institute, Thailand[1]

Childhood leprosy was not so rare in Thailand. It was important epidemiological indicator for active and recent transmission. When the surveillance report shown a new childhood leprosy patient (index case) in a particular area, so that the SRRT team would go immediately to find out at least one new untreated Lepromatous Leprosy (primary case) in that area. I reported a case of a 5 years old, irritable, anorexia girl from Chonburi, eastern part of Thailand, who presented with generalized bilateral asymmetrical multiple hypopigmented macules and patches mix with multiple dark red papules, plaques and hyperpigmented infiltration on face, chest, upper back, extremities and less

on trunk for 5 months. She was treated at provincial hospital for two months without improve so her grandmother sought another treatment and bring her to my office. At first visit though clinical manifestation, Differential diagnosis were chronic eczema, drug allergy, photosensitivity disease, leprosy. SSS was done and BI = 0.25. Histopathological examination was consistent with mild superficial dermatitis. As the consultation was done and finally give diagnosed as leprosy, Borderline lepromatous leprosy according to clinical manifestation and severity of skin lesions. She was treated with MDT- MB children regimen and skin lesions were improved nearly to normal skin in second doses of MDT. Now she was so happy and increase in weight. Hence, this case reported to highlight the diagnostic dilemma that not in concordance of clinical manifestation with SSS and Histopathological examination.

P-062

STRATEGY TO CONTAIN LEPROSY IN A CLOSED KNIT COMMUNITY – A CASE STUDY

Presenter: Ilse Horo

IlseHoro Paul[1], Sobha Johnson[1], Sheela Daniel[1]
[1]Schieffelin Institute of Health Research & Leprosy Center, Karigiri, Vellore, India

Objectives: The mode of transmission is mostly through nasal droplet infection in leprosy. Contacts of index cases with high bacillary load are at a higher risk of contracting the disease especially when the living conditions are poor and when the immunity is low. This case report presents the contact tracing of a nomad family where the index case was a case of lepromatous leposy.

Methods: In a tertiary leprosy referral hospital in Tamil Nadu, India,a 38 year old male presented with diffuse infiltration, ear lobe thickening, flesh colored nodules on the face, buttocks, around the elbows for the last 4 years. There was no history of treatment with anti-leprosy drugs and also no history of contact. Skin smear revealed an average Bacillary Index (BI) of 4.25+, highest BI being 5+ on the chin. The Skin biopsy was suggestive of lepromatous type of leprosy. Bilateral (b/l) ulnar, b/l Lateral popliteal, b/l ulnar, b/l radial cutaneous nerves were thickened. Voluntary muscle testing (VMT) and sensory testing (ST) was normal with no neuritis.

Results: The routine contact tracing of the immediate family revealed that the patient's youngest 4 year old son, of the three, was found to have a small single hypopigmented patch on the hip which was biopsied. Biopsy was suggestive of tuberculoid type of leprosy and Paucibacillary (PB) multi drug therapy (MDT) was started for the child. Mutibacillary (MB) MDT was started for the father, who is on his way to completing his 8th pulse. During this period he has had no episode of any Type 1, type 2 reaction and neither any nerve function impairment. Further, his nomad clan was traced and health education sessions on leprosy and contact screening were done. This tracing had further no new cases of leprosy

Conclusion: Contact survey and ring survey should be strengthened to identify any new cases and to further prevent transmission/ halt the disease process even in the post elimination era. Post exposure prophylaxis (PEP) and Single dose rifampicin (SDR) as chemoprophylaxis would be efficacious in containing the disease in closed knit communities like these.

P-063

TUBERCULOID LEPROSY AND PSORIASIS: A COMPARATIVE CLINICAL AND HISTOPATHOLOGICAL STUDY

Presenter: Thaverit Sittiwakin

Thaverit Sittiwakin

Rajprachasamasai Institute, Thailand

Objectives: To compare the clinical and histopathological features of patients with tuberculoid leprosy and psoriasis.

Methods: This was a retrospective descriptive study by making analysis from their registration cards of the Wat Makut Skin clinic, department of disease control from 2014 to 2017.

Results: Results revealed definite differentiation of clinical features on family history, delayed diagnosis, type of skin lesions, common location, number and distribution of lesions.Characteristics of clinical features for differential diagnosis included findings of anesthetic erythematous plaque with clear cut margin and dry surface together with findings of palpable thickening peripheral nerves and disabilities of hands and feet among 30 cases of tuberculoid leprosy. Meanwhile, non – anesthetic erythematous plaques covered by silvery and greasy scales with shiny surface and finding of hemorrhage after removal of scales were found among 30 cases of psoriasis. Definite differentiation of histopathology of epidermal and dermal layers of skin were also found among two groups of diseases.

Conclusion: Family history was one of the clues to diagnose tuberculoid leprosy. Clinically, tuberculoid leprosy were the anesthetic erythematous plaques and thickening of peripheral nerves. Silvery scales and hemorrhage after removal of scales were found in psoriasis with a predilection for scalp palms soles and nails. The histology of the two diseases were definite but there was limitation of skin biopsy.

P-064

STUDY COMPARING THE CLINICAL PROFILE OF NEW UNTREATED PAEDIATIRC AND GERIATRIC IN THE POST ELIMINATION ERA

Presenter: Sheela Daniel

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Objectives: The children and the elderly - the two extremes of age group need special care. In this study, the clinical profile of new untreated leprosy child cases and elderly are compared

Methods: This is a descriptive study. Clinical data were obtained from charts of children (15 and less than 15 yrs of age) and from elderly (60 and more than 60 yrs) during the period 2007 to 2016 attending SIHR&LC, Karigiri Hospital. Data were analyzed using SPSS software.

Results: During the period 2007 January to 2016 December a total of 1349 new untreated leprosy patients were registered. The child leprosy cases were 111 cases (8.2%) and elderly leprosy cases were 172 cases (12.7%). The male/female Ratio was 60.4: 39.6 in children and 59.9: 40 in elderly. History of contact was present in 41.8 % (p=0.000) in children and 6.4% in the elderly. When classified according to Ridley Jopling classification 80.2% (p=0.003)of children belonged to BT leprosy. In the elderly also BT cases were more 51.7% and BL cases were 19.8%. In children the PNL cases were only 1.8% where as in elderly there were (15.7%) PNLcases. In children single patch was present in 50.5 of patients and in elderly 43% of patients had more than 10 patches. Most of the elderly belonged to MB (91.9%) (P=0.000) where as in children, there were only 37.8% MB case. Type I reaction was more in elderly (26.2%) than in children (7.2%). Type 2 reaction was present in 1.7% elderly. None of the

children had type 2 reaction. The smear positivity was more in elderly (30.8%) than in children 7.2%. The grade 2 deformity was 36.6% in elderly and 8.1 in children.

Conclusion: In this study the percentage of MB cases, smear positivity, grade 2 deformity are more in elderly than in children. Since the elderly may have other coexisting diseases like diabetes, Grade 2 deformity due to leprosy adds to the burden. Since smear positivity is 30.8% they may be a source of transmission of leprosy to children in the family. So elderly population also need to be screened regularlyto interrupt transmission of *M.leprae.*

P-065

PULMONARY TUBERCULOSIS AS A PREDISPOSING FACTOR OF RECURRENT ERYTHEMA NODOSUM LEPROSUM AFTER RELEASE FROM MULTIDRUG THERAPY: A CASE REPORT

Presenter: Melani Marissa

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Objectives: To report a case of pulmonary tuberculosis in a leprosy patient who has completed the multi drugs therapy, which has a chronic and recurrent erythema nodosum leprosum (ENL).

Methods: We report a case of 19 year old Sulawesian male, a borderline lepromatous type and one year release from treatment patient with a history of chronic and recurrent ENL due to tuberculosis infection the patient got during long-term corticosteroid treatment for the ENL.

Results: A 19 year old patient with a chronic and recurrent ENL came to our outpatient clinic with complaints of painful and swelling skin lesions in the upper and lower extremities accompanied by massive hemoptysis. For the ENL lesions, patient often treats himself by taking methylprednisolone for several months. For the massive hemoptysis, we consulted the patient to Internal Medicine Department and various examinations were performed. The hematological profile was suggestive for anemia of chronic disease. The bronchoalveolar lavage analysis for Mycobacterium tuberculosis was found positive, but negative in sputum analysis. From chest radiography, there were bilateral fibrocavity lesions appear in the upper and middle regions of the lung. The results of the examination of acid fast bacilli on the skin are negative. Skin biopsy was taken from the painful swelling lesion, and the histopathological examination was revealed depicting foamy macrophage and neutrophil infiltrate in the dermis with vasculitis, consistent with ENL. The patient was then treated with the antituberculosis (OAT) category 1. After 2 weeks of OAT begins, methylprednisolone was given to treat ENL with a strict side effects monitoring followed, include the worsening of tuberculosis infection.

Conclusion: Leprosy reactions cause significant morbidity in Leprosy. These reactions can still arise even though the patients have completed treatment for leprosy. ENL often occurs in borderline lepromatous and lepromatous type leprosy patients. ENL treatment requires long-term corticosteroid use which can cause many side effects, one of which is pulmonary tuberculosis infection. Pulmonary tuberculosis that appears as a side effect of ENL is also a risk factor for chronic and recurrent ENL.

P-129

LOCALISATION OF SINGLE LESION LEPROSY AT THE SAME SITE IN FAMILY MEMBERS: A CASE SERIES

Presenter: Indira Padmapani Kahawita

I. P. Kahawita [1], G. D. Pathirana[2], G. Amarathilaka[2], U. G. Rathna Kumari[2], H. S. Sudusinghe[3]

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Objectives: To describe an interesting phenomenon of single lesions leprosy occurring in the same location in several members of the same family.

Methods: Hypopigmented anesthetic patch is the commonest presentation in leprosy. We report 3 families presenting with single lesion leprosy with the lesions being localized in the same location. To our knowledge this phenomenon has not been reported earlier.

Results:
Family 1
40 year mother from Homagama, Sri Lanka, presented with a single hypopigmented patch with impaired sensation over the back of the right arm. Her 16 year old eldest son had a hypopigmented patch with impaired sensation over the back of the right arm. The 10 year old son had a hypopigmented anaesthetic patch above his left elbow. All the lesions were of 6-8 months' duration. All were started on MDT PB according to age.

Family 2
A 17 year old girl from Polonnaruwa, Sri Lanka, presented with an ill-defined anaesthetic patch over the dorsum of the left hand for 9 months. Biopsy confirmed leprosy and she was started on MDT PB. During family screening her 19 year old sister was found to have a similar lesion on the back of the left hand and was started on MDT PB. There were no other skin lesions or nerve thickening in both patients. Both lesions responded well to MDT.

Family 3
An 18 year old male from Polonnaruwa, Sri Lanka, presented with a hypopigmented, dry anaesthetic patch at the back of the right elbow. His 15 year old brother had a less well defined patch in the same location. Both were treated with MDT PB.

Absence of other lesions, nerve thickening and nerve function impairment were common to all 3 families. A house to house survey around the residence of family 1 yielded a case of multibacillary leprosy with BI 6+ living next door. In family 3 the mother recalled that a domestic aide had used MDT MB packs sometime earlier.

Conclusion: Occurrence of single lesion leprosy in the same location in family members is an interesting phenomenon. Further studies including genetic testing should be carried out to explain this entity.

P-148

ONE CASES OF AIDS IMMUNE RECONSTITUTION INFLAMMATORY SYNDROME COMPLICATED WITH LEPROSY

Presenter: Gang Zhang

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Abstract: The patient，female，33 years old，Confirmed HIV positive for 7 years, upper extremity and abdominal macula for 4 years.Physical examination:The infiltrating dark erythema on the right upper arm is distributed in a

satellite shape, and the tactile disappearance in the lesional area is absent.In the left upper abdomen, there was a red infiltrated plaque around the upper abdomen.The right ulnar nerve is thick and tender, and the right little finger and ring finger have sensory missing points, and the right little thumb adduction dysfunction.Biopsy specimen showed epidermis atrophy,Partial erosion, the epidermis is seen with dense lymphocytes surrounded by epithelioid cell granuloma.Smear of tissue fluid to investigate acid fast bacilli:BI=0.16.Diagnosis:AIDS,BT.After HAART, the number of CD4 + T cells increased from 182 cells/ul to 232 Cells/ul to 640 Cells/ul. During the recovery of cellular immune function, leprosy type I reaction occurred, which changed from BT to TT. The response of co-infected patients to standard MDT is as good as that of non-HIV-infected patients.No aggravation and serious adverse drug reactions occurred.HIV infection did not alter the basic characteristics of pathological infiltration of leprosy in this case.The pattern of IRIS is more common in co-infection of leprosy, suggesting that early identification of risk factors and diversity of clinical manifestations of leprosy in IRIS is very important.Especially for HIV/AIDS patients from leprosy endemic areas who have been treated with HAART for 1 to 2 years, skin rash should be carefully examined for peripheral nerve, superficial sensation and motor function to prevent leprosy leakage, misdiagnosis or delayed diagnosis.

P-221

A CASE OF LEPROSY THAT ONLY MANIFESTS AS NASAL PLAQUE

Presenter: Huiying Wan

Huiying Wan

Institute of Dermatology and Venereology, Sichuan Academy of Medical Science & Sichuan Provincial People's Hospital, Chengdu, P.R. China

Objectives: Leprosy is a chronic bacterial disease that has many clinical presentations. We are reporting a patient who presented with a plaque over the nose, which was proved to be due to leprosy. We think that this type of clinical feature is not a common presentation for leprosy.

Methods: A 24-year-old male presented with a 2-month history of dark brown plaque on his nose. Skin examination showed that irregular dark brown plaque on his nose, which have rough surface and slightly raised edges. The rest of the physical examination was normal with no other skin lesions or neurologic findings. Dermatological biopsy demonstrated a dense infiltrate composed predominantly of foamy histiocytes and scattered neutrophiles. These histiocytes contained numerous filamentous organisms, which stained with Fite (modified acid fast) stain.

Results: The histological features and staining characteristics were characteristic of Mycobacterium leprae. The patient was then started on triple drug therapy, which included rifampin, clofazimine, and dapsone. He demonstrated improvement in skin symptoms within weeks of starting treatment.

Conclusion: Leprosy is a very serious, mutilating, and stigmatizing disease in many parts of the world, and early diagnosis and therapy represent the most important strategy for its control.

P-234

CLINICAL PROFILE OF NEW UNTREATED LEPROSY CASES AMONG THE ELDERLY

Presenter: Sheela Daniel

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Objectives: To determine the clinical profile of new untreated elderly leprosy patients attending a tertiary leprosy centre

Methods: This is a descriptive study. Clinical data were obtained from charts of patients who were 60 years and above during the period 2007 to 2016, and findings were analyzed using SPSS Software

Results: During the period 2007 to 2016 December, a total of 1349, new untreated leprosy patients were registered in Karigiri Hospital. The number of patients who were 60 and above were 172 (12.7 %), 59.9% males and 40.1% females. History of contact with leprosy patient was present in only 6.4% of cases. 69.2% patients gave history of duration of disease less than 12 months. The MB case were 91.9% and PB cases were only 8.1% and most of them belonged to BT (51.7%) then BL (19.8%) and PNL (15.7%) according to Ridley Jopling classification. Forty five patients (26.2%) had type I reaction and 3 patients (1.7%) had type 2 reaction. Smear was positive in 30.8%, and grade 2 deformity was present in 36.6% of cases. Grade 2 deformity was present more in male (68.3%) more in MB and in BT, BL, and PNL cases.

Conclusion: With increase in India's aging population there is likely to be a rise in leprosy in geriatric population. Difficulty in diagnosis in present since initial presentation of neuropathy may be falsely attributed to other condition such as diabetes. Elderly with Grade 2 deformity are at high risk of osteomyelitis, chronic non healing ulcer and injuries. The process of aging itself causes a general decline in health and leprosy deformity adds to the already existing burden. Since some elderly are already ignored in society the presence of leprosy adds to the stigma. So elderly patients also should be screened regularly, so that early diagnosis and adequate management will help prevent deformity and in endemic areas to interrupt transmission of M. leprae.

P-242

ATYPICAL CUTANEOUS LEISHMANIASIS AFTER TREATMENT FOR LEPROMATOUS LEPROSY - REPORT OF A CASE.

Presenter: Isadora Rosan

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Brazil is a country with a high prevalence of leprosy and cutaneous leishmaniasis (CL). Although each of them is a spectral disease, the nature of the relationship between them remains unclear. Rare cases of co-infection had already been encountered.

Objectives: To report a case of two spectral diseases with an opposite immune response – atypical disseminated cutaneous leishmaniasis in a patient previously treated for lepromatous leprosy.

Methods: Case report

Results: We report a case of a 50-year-old male patient, rural worker, born in the Brazilian northeast. The patient was treated for lepromatous leprosy during a 24-month Multibacillary Multi-drug Therapy. At that moment of diagnosis, histopathologic exam showed macrophagic granuloma with acid-fast bacilli smear 6/6+, in addition to widespread skin lesions. In the last six months, fifteen months after finishing the treatment described, the patient developed multiple well-defined erythematous and verrucous plaques, their size was about 4-6 cm, located on the face, limbs, and torso. They were, at first, interpreted as leprosy type 1 reaction of prominent clinical presentation, but had shown no satisfactory improvement with prednisone. After the histopathologic exam review, a granulomatous infiltrated with epithelioid cells was found, which lead to suspect about co-infection. After the skin biopsy studies resulted negative for fungus, a conventional polymerase chain reaction for Leishmania (primers for the kDNA – k20/k22 – target in triplicate) was proceeded in the cutaneous lesion sample and resulted positive. Therefore, treatment for CL was indicated.

Conclusion: This case reports co-infection with two endemic diseases in Brazil. The nature of the relationship between these two cutaneous diseases needs to be better elucidated. Each of these diseases is spectral and have an important relation to the immune system, but this patient shows an opposite immune response to each of them. The connection between these two pathologies, as a chronic and polymorphic disease, involvement tissue, chronic granulomatous response, relation to the host's immunity and epidemiology, suggests that the co-infection may be sometimes unrecognized.

P-254

LEPRA REACTION SUCCESSFULLY TREATED WITH PENTOXIFYLLINE

Presenter: Julius Gatmaitan

Ma. Teresita G. Gabriel[1], Julius G. Gatmaitan[2]

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Objectives: To present a rare case of Lepra reaction successfully treated with Pentoxifylline in a 44 year old female.

Methods: Complete history and physical examination was taken and course of the disease was discussed. Biopsy and AFS done.

Results: 44 year old female diagnosed in June 1995 as HD, BL (B.I. 4.3) and was given 24 packs MB-MDT and was released from treatment on June 1997 (B.I. 1.6). She had yearly follow up from 1998 till 2002 and yearly B.I. was 0. Patient had relapse in 2011 (B.I. 3.5) so MB-MDT was given for 2 years. In Jan. 2015 , B.I. was 1.33 which decreased to B.I. 0.5 in July 2015. In Aug. 2016 B.I. was 0.33 and became negative in Feb. 2017 and Jan. 2018. For the past years, from 1995-2018, patient continuously suffered from lepra reaction. Prednisone was taken at doses ranging from 20-50mg/day with minimal improvement. Colchicine was added for the lepra reaction but patient developed abdominal distention hence Colchicine was discontinued. Fusidic acid, 2 tabs TID was given with Prednisone but was financially draining although had showed mild improvement. Due to the high cost of Fusidic acid, Prednisone was used as monotherapy for the reaction. In Aug. 2016, cortisol level was found to be below normal due to prolonged intake of systemic steroids. In June 2017, Pentoxifylline at a dose of 400mg TID was started together with Prednisone. Pentoxifylline was given for 8 months. Prednisone was tapered and discontinued on Nov. 2017(6 months on Pentoxifylline). Repeat cortisol level was normal on Jan.2018. At present, AFS taken is negative and there are no signs of lepra reactions for 1 year now.

Conclusion: Pentoxifylline is a good alternative treatment in patients suffering from lepra reactions uncontrolled with oral steroids.

P-325

HANSEN'S DISEASE: CASE REPORT OF AN INVISIBLE DERMATOSIS

Presenter: Bruno de Carvalho Dornelas

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Objectives: To report a case of Hansen's disease clinically occult and to emphasize the necessity to search for bacilli when clusters of foamy macrophages are present in skin biopsy in endemic regions.

Methods: Patient's medical records and pathology archives were reviewed. Literature search based on "Hansen's disease", "leprosy", and "invisible dermatosis" using Medline and PubMed was performed.

Results: An 80-year-old man presented with erythematous patches and infiltrative skin plaques on both forearms. Plastic Surgery staff suspected of hypertrophic actinic keratosis and squamous cell carcinoma and excision of the skin lesions was then performed. Microscopic exam confirmed previous clinical diagnoses. However, foamy macrophages aggregates were observed beneath all lesions extending into the subcutaneous tissue which led to microorganism searching. The presence of globias and macrophages containing large amounts of bacilli inside were highlighted by Faraco-Fite stain (bacillary index: 6). Thus, the diagnosis Virchowian leprosy was also stated.

Conclusion: Hansen's disease is a chronic contagious infection and endemic in Brazil. It is caused by *Mycobacterium leprae* and can evolve to cure or towards different clinical forms based on patients' immune response variations. For that reason, leprosy may mimic different dermatological conditions and even occur occultly. Invisible dermatosis encompasses a diverse group of dermatological diseases in two different scenarios. One group involves those disorders with no defined clinical features, so they present themselves invisible to clinicians, although can still be diagnosed by ancillary tools. The other group involves those dermatoses that do have certain and obvious clinical characteristics, but subtle or hidden histological features. Under these circumstances, Hansen's disease may go unnoticed due to its clinical polymorphism or masked by other conditions. Invisible dermatoses diagnosis presents a great challenge for both dermatologist and pathologist experts. In endemic areas, clusters of foamy macrophages in skin samples should include Hansen's disease in the diagnostic approach.

P-339

TUBERCULOSIS PRECEDING LEPROSY: FIVE CASE REPORTS. WILL SINGLE DOSE RIFAMPICIN (SDR) AS CHEMOPROPHYLAXIS BE ENOUGH?

Presenter: Santoshdev Rathod

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Objectives: Both leprosy and tuberculosis (TB) are known to have similar geographic endemicity. In the largest review of Tuberculosis with Leprosy co-infection by Magnum et al[1] described 10 such reported cases in the published literature in last five years; in which 7 patients had leprosy as first infection and 3 had co-infection at time of diagnosis. In this paper, we are reporting 5 cases in which diagnosis of Tuberculosis preceded that of leprosy. The aim of these case reports is to investigate effect of prior anti-tubercular therapy (ATT) on clinical leprosy.

Methods: It is a simple descriptive case series of patients who had prior history of taking treatment for tuberculosis (Duration > 1 month) and later on developed clinical leprosy. The study duration was of 6 months. Inclusion criteria: Diagnosis of first infection with tuberculosis and/or history of treatment with rifampicin based anti-tubercular treatment for more than 1-month duration.

Results: We describe 5 such cases. Case 1, A 42-year old patient was receiving 3-drug ATT for lymph node tuberculosis for 5 months presented as erythema nodosum leprosum with lepromatous leprosy. Case 2, A 26-year old Patient was receiving 3-drug anti-ATT for lymph node tuberculosis for 2 months who then presented as lepromatous leprosy. Diagnosis of lymph node tuberculosis was confirmed by FNAC in all three cases. Case 3, A 17-year old patient with cervical lymph node tuberculosis and while on ATT for 2 months manifested lepromatous leprosy with type 2 lepra reaction. Case 4, A 48-year old patient with sputum positive pulmonary tuberculosis on 3-drug ATT for 1.5 months presented as lepromatous leprosy. Case 5, A 36-year-old patient with sputum positive pulmonary tuberculosis on 3-drug ATT for 2 months and subsequently manifested tuberculoid leprosy.

Conclusion: Occurrence of tuberculosis & Leprosy co-infection is not uncommon and in 4 out of 5 cases, Lepra reactions were precipitated by prior anti-tubercular therapy. This fact should be kept in mind When globally some countries are in the process of implementation of single dose rifampicin (SDR) as chemoprophylaxis of leprosy.

ILC-1: CLINICAL SCIENCE:

1.5 Ophthalmology

P-042

BORDERLINE LEPROMATOUS LEPROSY WITH OCULAR COMPLICATION

Presenter: Nathasia Ayunda Pardina

Nathasia Ayunda Pardina[1], Dhelya Widasmara[1], Santosa Basuki[1], Ovi Sofia[2]

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Objectives: Leprosy is an infectious disease that is predominant on the skin and peripheral nerves but can invade other organs, including the eyes. Leprosy has the highest incidence of ocular involvement of bacterial infectious diseases in humans. In a study, the ocular involvement was found higher in lepromatous leprosy (75.36%), followed by borderline leprosy (14.49%) and tuberculoid leprosy (10.14%). The cornea was involved most commonly (78.3%). This disorder occurs due to bacterial invasion mechanism directly on the anterior segment of the eye nor through the process of bacillaemia which can damage the trigeminal nerve and facial nerve, decreased corneal reflexes and triggered minor trauma that could lead to blindness. Recent studies have stated that the disorders of the cornea become the main factor threatening vision related to the duration of the leprosy. In an analysis study, the durations of leprosy > 7 years related with visual impairment significantly.

Methods: A case woman 30 years old with complaints of red eyes and blurry vision for 1 week, numbness patches were found on her face for 3 years. These clinical findings and laboratory results, rendered the diagnosis of Borderline Lepromatous type of Multibacillary Leprosy. The patient was treated with Multidrug Therapy since 3 month ago. Then the patient was consulted to the ophthalmologist and examined with slit lamp.

Results: Nummular infiltrates were found in the anterior stromal layer. These results, rendered the diagnosis of nummular keratitis, treated with Fluorometholon eye drop 6xgtt1 and Sodium/Kalium Chloride eye drop 6xgtt1 and then evaluated per week.

Conclusion: *Mycobacterium leprae* is most often attacked the anterior segment of the eye. Lepromatous infiltrates on corneal layer started as punctate keratitis with small white spot that are usually appear on the top line of the temporal quadrant that can be through the membrane of Bowman. In that case nummular infiltrates were found in the anterior stromal layer. Complications of keratitis include corneal ulcers and perforations, that could lead to blindness. We should consult to ophthalmology department so that eye damage can be known early.

P-390

COMPARISON OF ENTROPION TREATMENT IN EX-HANSEN PATIENTS

Presenter: Sunghoon Lee

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Objective: To compare the efficacy of different treatment strategies in ex-hansen patients with entropion

Method: Ex-hansen patients with entropion were consecutively recruited from a Sorokdo National Hospital. Patients with lagophthalmos were excluded. One of three treatments were applied including epilation, electrolysis, and entropion repair surgery. Objective and subjective assessment were performed before and after treatment; erosion grade, pain severity and subjective satisfaction. The duration of the recurrence of symptoms after treatment was also assessed.

Results: A total of 113 entropion patients were assessed for eligibility and 27 patients with lagophthalmos were excluded. 86 patients were finally enrolled. Before treatment, there was no statistical difference of pain severity(*p=0.338*) and erosion grade(*p=0.482*) among three treatment groups. After treatments, subjective satisfaction was higher in electrolysis group than any other treatments(*p=0.021*). There was no statistical significant difference in the changes of erosion grade(*p=0.279*) and pain severity(*p=0.234*) among three groups. Entropion repair surgery group(12.5±4.8month) showed the longest duration of the recurrence of symptoms after treatment but had lower subjective satisfaction than electrolysis group due to hard treatment accessibility.

Conclusion: There was no significant difference of improvement of objective signs among three groups. However, patients with electrolysis more satisfied with treatment than other groups due to easy accessibility of the treatment. Therefore, not only the objective signs, but also the subjective satisfaction and treatment accessibility should be considered when choosing entropion treatment for the ex-hansen patients.

ILC-2: SOCIAL SCIENCE:

2.1 History

P-013

STIGMA, PHILANTROPY AND CHILDHOOD: PREVENTORIA BUILT FOR HOUSING HEALTHY CHILDREN BORN TO LEPROSY-AFFECTED PARENTS IN BRAZIL

Presenter: Yara Monteiro

Yara Nogueira Monteiro
Discrimination Studies Center / University of São Paulo and Paulista Foundation against Hansen´s Disease

Objectives: Since the beginning of the 20th Century, the condition of severe vulnerability the children of leprosy-affected parents are found in has been widely discussed in the Brazilian medical and legal areas, without getting any type of solid assistance on the government's part. Within this situation, the performance of women's groups, organized into Associations, stands out, since they were able to gather the necessary funds for building Preventorium models in several regions across the country.

Our goals include analyzing: a) the scientific community's attitude toward the topic; b) the civil society's participation in assisting these children and building additional Preventoria; d) how these institutions were built and organized; e) the life of those children while at the Preventorium and after they were discharged.

Methodology: We referred to bibliography on Hansen's disease, childhood and institutions, and analyzed Brazilian and international congress proceedings, legislation, Preventorium architectural projects, iconographic material, publications from Associations and patients' clinical history. We used the Oral History methodology for the interviews.

Results: The implementation of compulsory isolation led to broken families, which resulted in a situation of increased vulnerability to the healthy children of leprosy-affected parents. We observed that the children were also affected by the stigma the disease brings, and were rarely welcomed by family members, becoming undesirable. The large number of abandoned children and the government's lack of action led a group of women from the city of São Paulo to join forces and solve the issue. They established an Association and, with the support from a major newspaper, after a few years, they were able to gather the necessary funds for building and opening in 1926 the first Brazilian Preventorium, named Santa Terezinha, which, later, became the model to the others that followed.

Conclusions: Almost every Brazilian Preventorium was built thanks to the civil society and had Santa Terezinha as model. This also influenced the prophylactic policy to be adopted in Brazil, which is based on the tripod consisting of Leprosaria for admitting leprosy patients; Dispensaries for identifying new patients; Preventoria for housing healthy children. Every Preventorium was built far from urban centers and, despite functioning autonomously, were under the supervision of the Leprosy Prophylactics Department. Children were isolated from the social environment and would rarely contact their institutionalized parents. They had their lives stigmatized and did not have many opportunities for social interaction, education, and finding jobs because they were raised at that Preventorium.

P-067

LEPROSY HISTORY AND FUTURE THROUGH THE STUDY OF POSTAGE

Presenter: William Dibb

W. L. Dibb

[1]Bon Secours Barringtons Hospital, Limerick, Ireland

Objectives:
To provide an understanding of the history of leprosy through the collection and study of postal items.

To understand how the popular understanding of leprosy and people afflicted with leprosy has evolved using the medium of philately.

To suggest how, in the digital age, the leprosy message may be propagated in a parallel way to postal items earlier.

Methods: The author has collected and studied postal items related to leprosy for many years. These items include postage stamps, envelopes and correspondence.
The items have been scanned and presented in a database for use by researchers.
Some of the postal items will be presented that will attempt to show changing views and aspects of the leprosy story.

Results: A wide variety of leprosy related postal items have been obtained. They illustrate well the discovery, history and treatment of leprosy and prevailing attitudes at the time. Philately provides a valuable opportunity to educate populations on leprosy.
Postcards, often with dramatic images of advanced leprosy, influenced public opinion around the world.
Philately has also been an important source of fundraising for leprosy and charity stamps illustrate this.
Electronic communication such as email has largely taken over but parallel opportunities can be developed from the philately story.

Conclusion: Leprosy has been the subject of much philatelic interest over time. Stamps and other philatelic objects have provided the opportunity to educate large numbers of people about leprosy and influence public opinion. Messages covered include discovery, treatment and the prevention of leprosy. Charity stamps have helped to raise funds for leprosy. Dramatic postcard images helped to spread the popular negative connotations of leprosy. Electronic communication also provides opportunities for similar benefits in the future, as the importance of the postal service diminishes. A wide variety of images will be presented that illustrate this study.

P-068

HEALTH POLICIES IN BRAZIL AND THE OLD COLONY HOSPITALS: A HISTORICAL REVIEW.

Presenter: Magda Levantezi

M. Levantezi[1,2,3]; L. Lima [1]; C. R. F. Coriolano[1], G.F. Moraes [4]. C.N. Souza [4], A.C.M Sousa [4]

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Objectives: Describe the main public policies focused on the former colonies and the patients hospitalized in these institutions.

Methods: Bibliography review using the "Portal da Legislação do Brasil" as a database to search for the public policies to patients treated in hospital colonies.

Results: The compulsory hospitalization of people affected by Hansen's disease ceased to be a Brazilian State policy with Decree nº 968 (1962). After this Decree, many patients continued to live at these institutions, experiencing daily violations of the basic human rights. The Ministry of Health's Administrative Rule nº 165 (1976), which emphasized outpatient treatment, social and physical rehabilitation, maintenance of the patient's family unit and the restructuring of hospitals, did not have their guidelines implemented in a concomitant and egalitarian manner in all colony hospitals. Law nº 9010 from March (1995), deals with the official terminology related to "leprosy" in the country, is an important milestone in facing stigma and discrimination. In April 2003 the Inter-Sectoral Commission for the Elimination of Hansen's Disease was created, which recommended the survey and monitoring of the situation of the formers hospital colonies. In 2007, the publishing of Law nº 11,520 marks the recognition of violation of human rights committed by the State the people who lived in these former colonies until 1986, granting them a lifelong indemnity. The Administrative Rule nº 585 (2004), a purpose the performing a Situational Diagnosis of the reality of these institutions. In 2013, efforts were made to expand family health strategy units in the former colonies area. In 2018, a group of experts was created to know the quality of actions aiming the promotion, rehabilitation and maintenance of public health users and the successful experiences that could serve as a model for all institutions around the country.

Conclusion: There are important achievements in published policies aimed at former colonies and patients. We especially highlight two of the most important achievements to combat stigma and discrimination by Law nº 9010 (1995), and recognition of human rights violations by Law nº 11,520 (2007). It is necessary that new policies be adopted for these Institutions and extend them to their residents in order to guarantee the rights to health, the preservation of technical and scientific expertise, and the preservation of the history of these people and places.

P-121

LEPROSY IN PREHISTORIC ERA IN INDONESIA

Presenter: Toetik Koesbardiati

T.Koesbardiati [1], D.Adriaty [2], D.B Murti [1], C.R Prakoeswa[2], I.Agusni[2] , S.Izumi [2]

[1]Department Anthropology, Social and Politics Faculty Universitas Airlangga, Dharmawangsa Dalam Surabaya 60285, Indonesia
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Objectives: Archaeological-paleoanthropological excavation in Lembata island, Flores Indonesia, yielded 5 individual human remains. Macroscopic observations based on the categories presented by Ortner and Rodriguez-Martin suggest that one of those 5, suffered leprosy i.e. LL I/5. In addition, biomolecular study continued to provide the information about the evolution of microorganisms and related diseases by using PCR. The aim of this research is to detect *Mycobacterium leprae* DNA from archaeological specimen to study leprosy infection in prehistorical era especially in Indonesia.

Methods: The skeletal code LLI/5 have dating result of LL I/5 is 2990 +/- 160 BP according to Carbon14 examination method and to identify the bacteria, the 18 kDa antigen *M.leprae* in regio RLEP3 repetitive element (X17153) was chosen to amplify by nested PCR, it is also based on several recent report.

Results: Positive result was detected from the isolates using spesific primers LP-1, 2 and LP3, 4. It is mean that the archaeological speciment contain *M.leprae* DNA.

Conclusion: It is concluded that in Indonesia, especially in the eastern part, leprosy has already infected in human since prehistoric time.

ILC-2: SOCIAL SCIENCE:

2.2 Human Rights and Discrimination

P-098

ACCEPTANCE AND DISTINGUISHED LIFE OF LEPROSY DISABLED BY ADULT LITERACY IN BANGLADESH

Presenter: Surendra Nath Singh

Mr. Surendra Nath Singh
Community program, DBLM hospital, Notkhana, Nilphamari 5300, Bangladesh

Objectives: To assess improvement of acceptance and distinguished life of people with leprosy disability by Adult literacy in 4 districts of North West Bangladesh.

Methods: 150 People have selected for adult literacy training by 15 different groups & with 15 different teachers. Out of 150 participants 135 have completed 1 year adult literacy course. Out of 135 clients 33 leprosy disabled, 55 general disabled and 47 general marginalized people. The participants were invited to be interviewed about their social accessibility, acceptance, reading & writing skills and livelihood at the start and end of the 1 year adult literacy course. A questionnaire was used to get information.

Results: The results are compared with the baseline records that have been done 1 year ago. There are 81% participants told that their acceptance in the family has been increased. 46% participants told that after completion of adult literacy training they receive health and occupational information better than before but regarding entertainment information 81% told they get better than before. Regarding reading skill like mobile phone, signboard, and medicine name 80% participants told they are very satisfied. 50% participants told that after completion of 1 year adult literacy training now they can perform personal accounting and support Self-Help Group accounting as well as income generating activities and support their children education as coaching. 75% participants told that they are very proud to have adult literacy training as they read and write and respected by the family and society.

Conclusion: Adult literacy can provide much better life of people with disability including leprosy. Better improvement seen on social acceptance and receiving information for daily living but huge improvement found on receiving information for entertainment. Very good improvement found on using cell phone, reading signboard, medicine name, performance in Self-Help Group and daily accounts. They told us that now they see their world differently by reading signboard, billboard beside the road and market. They feel proud that they receive entertainment information, reading book and newspaper and supporting child education.

P-110

INCLUSIVE EDUCATION OF DISABLED CHILDREN INCLUDING LEPROSY

Presenter: Dalwor Hossain

Dalwor Hossain[1], Surendra Nath Sing[2]

[1]The Leprosy Mission International Bangladesh; [2]Community Program TLMIB, Bangladesh

Objectives: To know assess the inclusive education environment of education institute in 5 districts of North West Bangladesh.

Methods: 3304 schools have been surveyed to assess the inclusive education environment of general primary education institute in 5 districts of North West Bangladesh in 2017 and 2018. 5 interviewers have been selected from each Sub-district who are disabled by leprosy and other than leprosy and trained them about questionnaire to fill up. 28 Sub-district education office staff are also discussed about the survey, questionnaire and purpose. Then permission for survey has been obtained. The interviewer visited the schools, discuss the questionnaire and fill up issues.

Results: Out of 3304 schools 1848 (56%) have told that disabled student admitted. 1169 school found that have functional Ramp. Around 60% school found that have wider door, wider space enough light in the room. Around 35% school found that do not have better sitting system and knowledge of teacher in it. Only 7% teacher found who have better knowledge on disability inclusive environment that consequence on the disabled student to complete of primary education (10%), having better result (2%) and other student to help disabled student as peer education (16%). There are 8 % students found who agreed to play with disabled student. 16% student found who are satisfied in primary education as inclusive

Conclusion: Inclusive education in Bangladesh is a very big challenge. Present Government is very positive for the people with disability and their development. Education of disable children including leprosy is the first and essential issue for disabled people development. A big awareness on inclusive education for mass population and training of teachers on inclusive education are essential for inclusive education in Bangladesh.

P-113

STRUGGLE AND EMPOWERMENT: EXPERIENCES OF LO-SHENG RESIDENTS

Presenter: Yu-Chan Tung Hsu

Yu-Chan TUNG HSU[1], Yun-Ming LEE CHANG[1], Yeh-Yin CHANG[1]

[1]Board committee member of IDEA Taiwan

Objectives: Three IDEA Taiwan board committee members of IDEA Taiwan, all of us are resident of Lo-sheng sanatorium, are the typical cases of people affected by Hansen's disease (PAHD), will tell the transformation from the individual experience to self-collective history.

Methods: This study is not purely academic research, but is an experience sharing of a social movement. We also hope it will be a basis of sociological and anthropological research in the future. In Taiwan, only leprosy sanatorium, Lo-sheng was established in the colonial era, reflected Hansen's disease force segregation policy, which was succeeded by the Taiwanese government after the war, caused severe social discrimination. Lo-sheng residents also faced the crisis of forced moving in the last fifteen years. At that time, we established a self-help organization of PAHD first time in Taiwan.

Results: PAHD in Taiwan instead get empowered through the struggle process and overcame the difficulties. We not only took to the streets but discussed the strategies of the movement so many times, and also interacted with so many people who wish to support our campaign, many of them are belonging to the younger generation. On the other hand, we also got so much international support, especially form IDEA. All of them became considerable assistance in organizing IDEA Taiwan.

Conclusion: Our movement continues still now. We are groping for the effective strategy of succeeding our history to the next generation. We believe that the international solidarity of PAHD will continue to afford us wisdom and courage in future days.

P-133

A STUDY ON THE BURDEN OF STIGMA IN LEPROSY AMONG EDUCATED PEOPLE IN NEPAL

Presenter: Ramesh Kumar Choudhary

Ramesh Kumar Choudhary , L. Labh, K. Jha, A. Kumari
Nepal Leprosy Trust (NLT)- Lalgadh Leprosy Hospital & Services Centre (LLHSC)

Objectives: Many surveys show a reduction of stigma in leprosy, but important gaps in our understanding remain. This study focuses on the level of stigma seen in more educated sections of society, with the following objectives:
• To assess the level of stigma among higher educated people
• To identify major causes of stigma among higher educated people
• To study methods to reduce the stigma among this group

Methods: Knowledge about leprosy has increased but it is not clear whether attitudes and practice among higher educated people have changed much. A few years ago, the name of leprosy had itself stigma. Nowadays, only those leprosy affected people who have disability feel stigma. Different studies have shown a reducing level of stigma. This presentation examines the hidden stigma that still exists in the behavior of higher educated people. This study will support new approaches for behavior change towards stigma in leprosy.

This is cross-sectional study will interview 200 randomly selected participants from urban and rural areas in province 2 of Nepal. Eight districts of southern Terai of Nepal will be included. This study will explore the difference between knowledge and practice. It will also compare the level of understanding among highly educated people, educated people and non-educated people. It will also describe the behaviors and practices found among these people.

Results: The study is going on and under process to collect information. The result of the study will make available on time and will be shared in the International Leprosy Congress, Manila

Conclusion: The findings of the study will explore the hidden stigma among higher educated people. It will describe that the level of knowledge about leprosy among educated people how they internalize and change the behavior towards reducing stigma personally and socially. This study will helps to design the programme on stigma reduction not only for knowledge but also in practice.

P-188

EFFECTIVENESS OF MOBILISING ADVOCACY POTENTIALS IN THE COMMUNITY TO REDUCE STIGMA AND DISCRIMINATION TOWARDS PEOPLE AFFECTED BY LEPROSY AND ENSURING THEIR RIGHTS AT VILLAGE LEVEL

Presenter: Ashutosh Prabhavalkar

Ashutosh Prabhavalkar[1], Abhijit Kamble[1], Gunvanta Vaidya[2] and Antony Samy[1].
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Objectives: The persistent stigma attached to leprosy and discrimination towards people affected is still one of the major challenges that obstruct process of leprosy elimination.

A study was conducted to determine the feasibility and the role of community level advocacy groups consisting of community members, volunteers and representatives of unorganised people affected by leprosy (right holders) to enunciate community resolve to reduce stigma and discrimination toward people affected at the village level and ensure rights.

Methods: The study was conducted in eight tribal & rural blocks of two most leprosy endemic districts (Chandrapur and Gadchiroli) in Maharashtra State-India.

One Regional Advocacy Forum (RAF) and eight Block Advocacy Cells (BAC) comprising of representatives of various strata of the society and people affected by leprosy in the community were constituted in addition to 232 village level volunteers as Community Counsellors (CC).

Sensitization and orientation sessions on leprosy and human rights of persons affected by leprosy followed by capacity building workshops were conducted for members of RAF, BACs and CCs.

Besides periodical one to one counselling sessions with 5,687 people affected by leprosy and their family members by CCs, 224 health sub-centre level sensitization meetings on issues of rights violation of people affected by leprosy were organised for 6,292 community members including elected members of Panchayat-Raj-Institutions (village Panchayat)

Issues of rights violation identified by CCs were addressed through collective efforts by members of RAF & BACs, CCs and community members including Panchayat-Raj-Institutions.

Key success stories are also presented in the paper.

Results:

- 3,139 (87%) out of 3,604 issues of rights violation raised by 2,454 (88%) among 2,785 right holders were successfully resolved.
- 1,400 (69%) out of 2,038 people affected obtained 1,970 entitlements under various govt welfare schemes. The rest were under process at the end of study period.
- 200 Village Panchayats passed resolutions, the most authentic democratic assertion, against stigma and discrimination towards people affected by leprosy ensuring their rights.
- This created conducive atmosphere at the village level wherein the people affected could claim and avail their entitlements.
- The representation of people affected in advocacy groups increased from 26 to 44%.

Conclusion: The study serves as a pointer to an effective village level advocacy potential that can be exercised through community resolve leading to appropriate action. If widely promoted, can influence public opinion to deal with and eliminate stigma and discrimination against people affected by leprosy and in effect protect their rights.

P-201

COMPARISON OF QUALITY OF LIFE BETWEEN PEOPLE AFFECTED BY LEPROSY IN LEPROSY COLONIES AND SURROUNDING COMMUNITIES AND PEOPLE IN SUCH COMMUNITIES: AFTER 20 YEARS OF POST ELIMINATION OF LEPROSY

Presenter: Gomes Unarat

Gomes Unarat
Office of Disease Prevention and Control 3 Nahkonsawan Thailand

Objectives: This study was conducted to compare the quality of life of people affected by leprosy who lived in integrated villages (ex-leprosy colonies) with those who lived in leprosy colonies, general villages and villages surrounding leprosy colonies.

Methods: Using mixed method. Sample random sampling method was used to selected 1,372 subjects. Information was collected by using WHO questionnaire (WHOQOL-BRFF-THAI) and Focus group discussion open-ended questionnaire. Frequency, Unpaired t-test and One-Way ANOVA and content analysis were used to analyses the data.

Results: The result showed

1. That people affected by leprosy who lived in different settings such as those who lived in integrated villages (ex-leprosy colonies), those who lived in leprosy colonies and those who lived in general villages have significantly different quality of life *(p<0.05)* as below:

1.1 People affected by leprosy who lived in integrated villages (ex-leprosy colonies) have better quality of life than those who live in leprosy colonies and general villages

1.2 People affected by leprosy who lived in general villages have different quality of life from general community members

2. General community members have better quality of life than people affected by leprosy.

3. The focus group discussion from people affected by leprosy revealed that anxiety, depress and self-stigma on physical deformity due to leprosy.

Conclusion: Integrating leprosy colony into general community and improve the quality of life of people affected by leprosy to equal general community members is essential to sustainably eliminate leprosy as a public health problem.

P-207

A LITERATURE SYSTEMATIC REVIEW: THE EFFECTS OF STIGMA ON PEOPLE AFFECTED BY LEPROSY, TUBERCULOSIS AND HIV / AIDS

Presenter: Silatham Sermrittirong

Silatham Sermrittirong Ph.D[1.] , Pojana Thanyakittikul M.A[1] , Shutiwan Poladech M.N.S.[1]

[1] Raj Pracha Samasai Institute,Thailand

Objectives: This systematic literature review was conducted to investigate the effects of stigma on people affected by leprosy, tuberculosis and HIV/AIDS.

Methods: Research articles on leprosy/tuberculosis/HIV AND (delay or stigma or treatment or mental health or impact) published after the year 2000 were purposively selected. In the search, 54 articles fit with the pre-set criteria were included in the content analysis process.

Results: It was found that stigma negatively impacted people affected by leprosy, tuberculosis and HIV/AIDS resulting in delayed treatment, non-adherence, non-disclosure of disease status, mental health problems, and disruptive marriage life and occupation. These consequences hindered the success of the prevention and control program.

Conclusion: Stigma reduction was suggested to be one of the key strategies of the national strategic plan that practically implemented under seriously monitoring process. Further study was suggested to be conducted focusing on the causes and determinants of stigma towards leprosy, tuberculosis and HIV/AIDS; other causes than stigma that impact affected people, the prevention and control program in either positive or negative way; and de-stigmatizing interventions implemented to date. Future de-stigmatizing interventions should be performed in tailor made manner. Integration between de-stigmatizing intervention of tuberculosis and HIV/AIDS was also suggested.

P-227

THE PERCEIVED STIGMA TOWARDS LEPROSY AND TUBERCULOSIS OF HEALTH PERSONNEL IN CHAIYAPHUM PROVINCE

Presenter: Shutiwan Ponladech

Silatham Sermrittirong Ph.D[1]., Siramas Rodchan M.Sc.[1] , Gomes Unarat M.P.H.[1] , Pojana Thanyakittikul M.A[1], Shutiwan Poladech M.N.S.[1]
[1]Raj Pracha Samasai Institute,Thailand

Objectives: This cross-sectional survey was conducted to study the perceived stigma towards leprosy and tuberculosis of health personnel.The study populations were 236 health personnel working at sub-district health promotion hospitals and district hospitals of 4 districts in Chaiyaphum Province.

Methods: Sample size was selected by convenience sampling method. EMIC stigma scale was used to collect the data which was later analyzed using a software package. A frequency distribution was used to determine the percentage of health personnel who had perceived stigma and the percentage of each item. A paired t-test was used to compare the EMIC score of health personnel regarding leprosy and tuberculosis. Logistic regression analysis was used to find the association between personal factors and perceived stigma.

Results: It was found that there was no association between personal factors and perceived stigma. Health personnel had perceived stigma towards both leprosy and tuberculosis. They had more perceived stigma towards leprosy than tuberculosis in most aspects accept avoidance and causing troubles to others. The difference was highly significant (p=0.000, paired t-test). Even perceived stigma towards leprosy is higher than that towards tuberculosis, but the perceived stigma towards tuberculosis is also high.

Conclusion: The authors suggest arranging a training or refreshing course for health personnel, providing knowledge regarding leprosy and tuberculosis to the community members, conducting further study investigating the effects of stigma on people affected by leprosy or tuberculosis, and conducting a survey to find the causes and measure stigma towards both diseases in leprosy and tuberculosis prevalent area and develop de-stigmatizing intervention if stigma is found.

P-229

STIGMA AND SOCIAL DISTANCE RELATED TO LEPROSY IN A HYPERERENDEMIC TERRITORY IN THE NORTHEAST REGION OF BRAZIL

Presenter: Maria Solange Pinto

M.S.A. P. Pinto[1,2]; J.A. Menezes[1]; A.N. Ramos Jr[2]; E.A. Souza[3]; H.X. Oliveira[1]; N.N.L. Ferreira[1]; G.S.M. García[2]; A.F. Fuentes[2]; M.A.G. Carneiro[2]; I.M. Donato[2]; M.S. Florêncio[2]; L.G. Teixeira[2]; G.K.A. Rocha[2]; N.R.N. Andrade[2]; A.S. Reis[2]; T.I.B. Andrade[2]; D.C.M Santos; J.C. Barbosa[1,2]

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[3] Multidisciplinary Institute for Health, Campus Anísio Teixeira, Federal University of Bahia, Vitória da Conquista; [4] Faculty of Nursing Our Lady of Grace, University of Pernambuco, Brazil

Objectives: To analyze the stigma and social distance related to leprosy in a hyperendemic territory in the Northeast region of Brazil.

Methods: A cross-sectional study carried out in the city of Fortaleza, capital of the state of Ceará, Brazil, as part of an international multicenter study between Brazil, India and Indonesia linked to the Post Exposure Chemoprophylaxis Project (PEP++). The study includes closer contacts (20 hours of living/week) of people affected by leprosy, as reported in the Notification System of Notifiable Diseases in 2017 and 2018; community health agents

(CHA) and a random sample of community members, all interviewed after free and informed consent. Socio-demographic questionnaire, Social Distance Scale (SDS), and Community Stigma Scale (EMIC-CSS) were used. EpiInfo 7 was used for data consolidation with analysis in Stata 11.2. For analysis purposes, contacts and community members were grouped. The analysis included the 95% confidence interval. The study was approved by the National Commission for Research Ethics, CAAE: 86480218.9.0000.5054, and funded by the Netherlands Hanseniasis Relief-Brazil (NHR Brazil NGO).

Results: A total of 153 ACS were evaluated, mostly women (78.4%, n=120), mean age of 42.7 years (Std 8,9) and complete secondary education (64.1%, n=98). Among the 147 community members included, women (74.8%, n=110), with a mean of 44.0 years (Std 15.9) and race/color brown (46.1%, n=68) predominated; of the 55 contacts, the majority was female (23.7%, n=42), mean 43.2 years (Std 17.0), race/color brown (49.1%, n=27). The EMIC-CSS presented approximate scores for the study populations, reaching averages above 50.0% considering the maximum score of the scale (30 points): 15.73 (95% CI: 14.74-16.71) for Contact/Community and score of 17.26 (95% CI: 16.38-18.14) for ACS. Lower mean scores were observed for the SDS score, where for Contact/Community it was 2.50 (95% CI: 2.00-2.99) and for ACS, 0.86 (95% CI: 0.56-1,16).

Conclusion: The high prevalence of stigma in all study populations reinforces the challenges to control leprosy in this hyperendemic area, the fourth largest capital city in Brazil. These results reinforce the perception of attitudes and stigmatizing behaviors towards people affected by leprosy in this specific social context. However, the social distance of those affected by the disease was considered low, particularly among ACS. Evaluating different perspectives contributes in understanding how stigmatization processes are established as a social phenomenon, helping to outline coping strategies that consider possible psychosocial repercussions for individuals, families, and communities.

P-238

USING PARTICIPATORY METHODS TO EDUCATE PERSONS WHO HAVE EXPERIENCED LEPROSY IN NORTHWESTERN NIGERIA ABOUT THEIR HUMAN RIGHTS

Presenter: Shehu Abdullahi Sarkin Fada

S.A. Sarkin Fada[1]

[1]IDEA Nigeria; Gusau Local Government

Objectives: To increase the understanding of persons who have experienced leprosy of their human rights

Methods: Participatory: video-recording; collecting testimonies; discussions

Results: A workshop organized by the IDEA Nigeria Coordinator was held in Gusau, Zamfara State. The project Research Consultant, IDEA Coordinator Mozambique and AIFO Representative Mozambique trained in participatory methods as part of the LRI research project helped lead the workshop. It was attended by 63 males, 59 females and 25 children.

The IDEA Nigeria Coordinator explained the UN human rights guidelines on leprosy that had been translated into Hausa. There was a discussion of rights people are entitled to and a presentation on how to claim rights. This includes creating unity among people; the recognition of everyone's right to contribute; listening to each others viewpoint; and plan development. In their testimonies, women said they had not been familiar with the UN document but now with this knowledge appreciate the recognition of their rights. They highlighted the fact that representatives from two other countries, Mozambique and the US, were present and interacted without discrimination.

After the workshop the workshop leaders paid an advocacy visit to the Emir and second in command of Zamfara State. Because of the presence of international visitors, they received a warm welcome, as well as the opportunity to speak and take photos with the emir, which is highly unusual.

A second workshop was held at Amanawa Leprosy Hospital, Sokoto State that was attended by 32 women and 45 men. Because of time limitations, no video-recording was done. A follow-up workshop was scheduled for Sokoto in early 2017; this has not taken place as the region is unsafe due to kidnappings of local officials and international workers, as well as cattle steeling.

Conclusion: People realized that they had rights and learned that their rights are delineated in a formal document. They gained skills to advocate for their rights. An audio-visual, unique to each community where the videoing took place, will be produced to share with other communities, to promote understanding among people about their human rights. Intangible outcomes also have significant impact. Involving international representatives locally, can elevate the work of the project within the local community. As the IDEA Nigeria Coordinator remarked, “I feel like I am the Governor of Zamfara.” Working in local communities there can be unanticipated challenges which can delay projects.

P-269

STIGMA TOWARD LEPROSY AMONG LEPROSY STAKEHOLDERS IN LEPROSY HIGH RISK AREA, LOWER SOUTH THAILAND

Presenter: Vallop Ditsuwan

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[1] Research and Development Institute, Thaksin University, Thailand; [2] The office of disease prevention and control, 12 Songkhla, Thailand

Objectives: The study was aimed to assess knowledge and information related to, attitude on and perceived of stigma toward leprosy in lower South Thailand.

Methods: The cross-sectional survey was conducted between May and September 2017. The purposive sampling was used and stakeholders in (Raman District, Yala province) lower southern Thailand was carefully selected. The knowledge and attitude were accessed, using explanatory model interview catalogue (EMIC) questionnaire. Descriptive and inferential statistics were used for data analysis.

Results: 170 respondents (17 old/new leprosy patients, 22 leprosy volunteers, 26 household close contacts, 26 leprosy care providers, 37 village health volunteers, and 42 community leaders) were willing to participated and recruited. In the community, health officers were principal leprosy information (65.88%) provider. Average knowledge score on leprosy was 16.63 (SD 5.62). High knowledge score (Mean 22.22, SD 2.05) was found in executive staffs and leprosy practitioners (52.94%) while average score (12.80, SD 7.44) was low in community leaders. Knowledge and EMIC scores were significantly difference, (Mann Whitney U test, p-value < 0.05). We found that stakeholders’ attitude, in the community, toward social stigma was high (Mean 14.08, SD 7.92). The EMIC social stigma score was high among village health volunteers (Mean 15.19, SD 6.25) and community leaders (Mean 15.12, SD 7.42). The lowest EMIC stigma score (Mean 8.76, median 4, p25=2.50, p75=18.00) was reported in leprosy group.

Conclusion: In leprosy high risk area, lower South Thailand, stigmatization is existed, particularly in leprosy’s community leaders. To provide health services, we recommended that carefully designed and concerned on culture-community context and social structure would avoid and reduce stigma in leprosy.

P-270

RELIABILITY OF STIGMA SCALE EXPLANATORY MODEL INTERVIEW CATALOGUE (EMIC) APPLIED TO PEOPLE AFFECTED BY LEPROSY AND COMMUNITY MEMBERS – BRAZILIAN PORTUGUESE

Presenter: Maria Solange Pinto

H.X. Oliveira[1], M.S.A.P. Pinto[1,2], A.N. Ramos Júnior[2], E.A. Souza[3], J.C. Barbosa[2]

[1] Netherlands Hanseniasis Relief, Brazil; [2]Departament of Community Health, School of Medicine, Federal University of Ceará, Brazil; [3]Multidisciplinary Institute for Health, Campus Anísio Teixeira, Federal University of Bahia, Brazil

Objectives: To evaluate the internal consistency of the Stigma Scale Explanatory Model Interview Catalogue for people affected by leprosy (EMIC-AP) and for community members (Community Stigma Scale - EMIC-CSS).

Methods: Methodological study of cross-cultural adaptation of two stigma scales, based on the universalist model. The EMIC-AP was transculturally adapted to Brazilian Portuguese, along with its adjusted version for community members - people not affected by the disease. The scales were validated in municipalities from the North and Northeast of Brazil, encompassing diverse demographic, socioeconomic and cultural contexts. Reliability is one of the psychometric properties evaluated during the validation process of standardized instruments such as scales. For this, the Cronbach alpha coefficient was used to determine the internal consistency of the instruments. It was also evaluated the floor and ceiling effects, which are present when 15% or more of the interviewees obtain minimum or maximum scores in the scale, reducing their reliability. EpiInfo 7 was used for data entry and consolidation, and the analysis was performed in the Statistical Package for Social Science for Windows (SPSS, IBM Corp., Armonk, NY, USA), version 22.0. The project was submitted to the Research Ethics Committee of the Federal University of Ceará and funded by the Netherlands Hanseniasis Relief - NHR Brazil NGO and National Council for Scientific and Technological Development.

Results: EMIC-AP was applied in 203 people affected by leprosy, Cronbach's alpha showed good internal consistency (α = 0.79). The effects of floor and ceiling were not observed, since only 24 participants (11.8%) presented minimum score and there was no maximum score. In turn, the EMIC-CSS was applied to 300 members of the community, evidencing the high internal consistency (α = 0.84) of the instrument. Ceiling floor effects were not observed, only six (6) participants had a minimum score (2.0%) and two (2) a maximum (0.7%).

Conclusion: The scales were adequate for the psychometric properties analyzed. In this way, they presented internal consistency and, therefore, can be considered reliable for its use in the Brazilian context. The application in territories of primary health care has shown that they can be incorporated into the daily routine of health services as tools for a first approximation with social stigma resulting from leprosy. In addition to constituting a possibility to discuss aspects of stigma in community. It is recommended that the validity and reliability of EMIC-AP and EMIC-CSS continue to be tested, especially for other Neglected Diseases.

P-305

PARTICIPATORY GRIEVANCE REDRESSAL MEETING AT PRIMARY HEALTH CENTRES (PHCS); A VIABLE MECHANISM TO IMPROVE ACCESSIBILITY TO LEPROSY REFERRAL SERVICES BY INVOLVING HEALTH FUNCTIONARIES, COMMUNITY MEMBERS AND PEOPLE AFFECTED BY LEPROSY.

Presenter: Ashutosh Prabhavalkar

Ashutosh Prabhavalkar[1], Kingsley S[1], Abhijit Kamble[1], Gunvanta Vaidya[2], and Antony Samy[1]

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Objectives: Absence of Care after Cure component for people affected by leprosy at primary level in public health system unlike during vertical programme and weak referral mechanism are among crucial factors attributed to low

accessibility for leprosy referral services thwarting the prospects of reducing leprosy burden in terms of disability, stigma and discrimination.

ALERT-INDIA, during LEAP HRBA project, conducted a study to assess the feasibility of Participatory Grievance Redressal Mechanism (PGRM), a new initiative, at primary level in public health system by involving community members inclusive of representatives of people affected by leprosy to promote their health rights in eight leprosy endemic and tribal blocks of Gadchiroli and Chandrapur districts.

The paper presents the process, scope and determines the effect of PGRM on accessibility to leprosy referral services by people affected by leprosy.

Methods: Orientation sessions on leprosy referral system and health rights of people affected by leprosy were conducted for 1,279 health care service providers in 50 primary and secondary level health facilities.

232 Community Counsellors (CC) and 76 members of community level advocacy forums, from local community, were trained in process of empowerment of persons affected by leprosy and advocacy.

Periodical PHC level meetings with health functionaries were organised for people affected by leprosy to discuss and raise their issues and grievances related leprosy; MDT, treatment for reaction, disability care and allied services. CCs and the members of advocacy groups facilitated meetings and advocated for effective redressal of issues as health right.

Process, scope and impact of PGRM is presented in the paper.

Results: 2,615 (46%) out of 5,687 persons affected by leprosy, including 44% female, were identified with health issues participated in PGRM and raised their issues.

78% of the issues raised (3,366 out of 4,317) were successfully addressed by health functionaries of PHC during PGRM.

The overall accessibility to referral services at secondary level LRCs was increased by 300% during study period and average by 33% per year.

The process resulted in formation 181 Self Help Committees of People Affected by Leprosy for strengthening PGRM.

Conclusion: The study concludes that a Participatory Grievance Redressal Mechanism in public health system serves as a viable and effective means to improve the accessibility to referral services by bridging a gap between health care service providers and people affected by leprosy. If widely promoted through national programme can greatly contribute to reduce disease burden.

P-365

CAPACITY BUILDING OF CHAMPIONS (PERSON AFFECTED BY LEPROSY) WILL LEAD TO STIGMA REDUCTION, ACCESSING RIGHTS & ENTITLEMENTS AND ADDRESSING DISCRIMINATORY ISSUES.

Presenter: Harsha Gudasalamani

Harsha Gudasalamani, Tina Mendis, James George, Ram Robert and Sneha Powar
The Leprosy Mission Trust India

Introduction: Leprosy is the oldest disease known to mankind and is caused by bacteria M. Leprae. Leprosy is a chronic infectious disease which leads to a risk of permanent and progressive disability. The visible deformities and disabilities associated with the disease leads to stigma and discrimination experienced by persons affected by this disease, even after getting cured of the disease.

Stigma towards person affected by leprosy adversely affects the life of person and their families, impact their mobility, interpersonal relationships, participation in community, employment and social activities. This further result in, exclusion of persons affected by leprosy from the mainstream society and violation of their human rights at multiple levels. Self-stigma impacts their position to challenge the existing injustice, and raise their voice on issues that affect them.

Many people affected by leprosy, with their courage and determination try to come out of their self-stigma and start working towards improving their life. The Leprosy Mission Trust India's CREATE project started its interventions among people affected by leprosy in the year 2016, identified more than 175 individuals affected by leprosy(who are courageous and have the zeal to work for the betterment of people affected by leprosy) and built their capacities on Human Rights, Advocacy, leadership skills, engaging the concerned Government authorities and addressing the discrimination issues.

Objectives: The objective of this study is to determine the outcome of the capacity building training of the individuals, identified as champions(persons affected by leprosy) resulting in increase in Human rights, advocacy, and become confident to access their rights and entitlements, and addressing their and community issues

Methods: Study design & Location: This is an impact assessment study conducted in 4 states of India- Andhra Pradesh, Chhattisgarh, Uttar Pradesh and Tamil Nadu.

Study Sample and participants: Fort the study; random selective sample of 60 individuals affected by leprosy – 15 persons from each of the 4 states, From the group of 175 individuals who have been identified as Champions and who have undergone capacity building trainings under the project intervention. The persons are from both rural and urban areas.

Data Collection: Structured questionnaire was used for data collection; including the demographic details, disease related information and their occupation.

For the present study, data collection was done 2 times. Firstly, before the starting of capacity building trainings and secondly after the capacity building trainings and follow-up activities have been completed.

Data analysis: The data collection was done using the structured questionnaires in the paper printed forms. Then the data was entered and analyzed using the Microsoft excel data base.

Results: The results will be presented during the conference.

Conclusion/s: The results will show the impact of the capacity building activities resulting in Champion's increase in knowledge about Human Rights, advocacy and being confident in accessing their rights and entitlements, and addressing their and as well as community issues.

P-366

LESSONS FROM ENGAGEMENT IN THE PROCESS OF REPEALING DISCRIMINATORY LEGAL PROVISIONS: THE INDIAN SCENARIO

Presenter: Sarah Nikita

N. Sarah[1], S. Baquer[2]

[1]Head, Advocacy and Communications Domain, TLMTI, [2] Consultant, Advocacy and Communication Domain, TLMTI

Objectives: To work towards the effort to ensure that the concerned government(s) in India take up the identified 119 discriminatory legal provisions for appropriate action.

Methods: Working within our own organisation to build knowledge on the discriminatory provisions and the Law Commission on India Report No. 256 and the suggested model EDPAL Bill, 2015 therein. In addition, to identify and network with other organisations and individuals who will adopt the agenda of taking forward the EDPAL Bill, 2015 before the concerned government(s).

Results: Regular interaction with the staff of our own organisation, at various levels, has resulted in the recognition of a model bill on the issue of leprosy. However, this recognition and understanding of what EDPAL Bill, 2015 is, remains varied amongst the staff at TLMTI.

In the process of raising awareness about leprosy and the discriminatory laws, TLMTI got introduced to Rajya Sabha (upper House) MP Mr. KTS Tulsi who is also a practicing lawyer. He took up the issue in his personal capacity and drafted and filed a private members Bill on leprosy, which has been introduced in the Rajya Sabha in 2018. This private member's Bill is modelled on the lines of EDPAL Bill, 2015 and other rights-based legislations and is more comprehensive in its structure and content.

External support was provided to another organisation, Vidhi Centre for Legal Policy that had worked with the Law Commission on Report No. 265, to file a public interest litigation (PIL) in the Supreme Court of India challenging the 1119 discriminatory provisions. This case has highlighted the issue and need for action before the Central and State Governments.

Along-side TLMTI is working with other disability organisations to take forward the demand for action on EDPAL Bill, 2015. One of the organisations has taken lead in the matter at present but our involvement in their strategic choice of action is limited.

Additionally, the Central Government in the recent move of reviewing all personal family laws has moved and passed a Bill for repealing leprosy as a ground for divorce and denial of maintenance to the spouse under 5 personal laws in the Lok Sabha in the 2018-19 winter session of Parliament.

Conclusion: Need for more sustained action and strategy for targeting States. The need to assess and map sharing, risks and conflicts while working with other organisations while continuing the individual level work.

P-379

THE CONTRIBUTION OF A PRIVATE LEPROSY CENTRE IN DANJA-MARADI ASSOCIATED WITH THE EFFORT OF PEOPLE AFFECTED BY LEPROSY AND THEIR FAMILIES IN HAUSA COMMUNITIES FOR STIGMA REDUCTION IN NIGER REPUBLIC

Presenter: Yohanna Abdou

Yohanna Abdou[1], Aboubacar Mamane Joshu'a[2]

[1] Social-anthropologist, IDEA Niger Founding Member, Head of Programme of The Leprosy Mission (TLM) Niger [2] Environnementaliste, IDEA Niger National Coordinator

Objectives:

- To explore the contribution of a leprosy private center in fighting against the disease and its consequences in Niger Republic;
- To investigate the effort and contribution of people affected by leprosy and their family members for stigma reduction into their Hausa communities

Methods: Qualitative study using document review of available data at the hospital, observation, interviews and case studies. Interview guide, testimonies guide were the tools developed.

Results: Records of Danja Leprosy Centre (working from 1956 to 1984) showed that more than 97% of persons affected by leprosy were detected with disability grade 2 before starting their treatment. The deformities they developed are the result of the ignorance of the disease and because of the lack of information; the diagnosis was delayed before reaching the health center. Religious and traditional beliefs coupled with various types of local (non-medical) treatments also fully contributed to the diagnostic delay.

All the 70 persons (including 26 women) diagnosed at Danja Health Center faced different types of stigma (enacted, self, perceived and stigma from other actors). As a result, they chose after their treatment completion to live in 3 villages surrounding the Danja Health Center. The interview was carried out from the period of April to August 2018.

All the 70 persons got the disease between the ages of 6 and 35 years old. 30% of them faced various types of reactions before, during and after their treatment completion. 100% received wounds/ulcer care, physical rehabilitation and socioeconomic support from the Center.

Lots of awareness-raising through radio jungle and the mobile clinic helped the communities to have certain knowledge about the disease however the fear of contamination still persists. The practice of self-care associated with the development of self-reliance among the people affected by leprosy contributed to their social integration. Moreover, the vocational training and the formal education of their children helped to secure jobs, promote the living conditions of their families and reduced self-stigma.

Conclusion: The Danja Leprosarium founded by Soudan Interior Mission that later became a Health Center is recognized and fully interacts with the Government system of Leprosy Control. This Center played and continues to play a significant role to defeat leprosy, to promote the inner wellbeing of those affected and to restore their dignity. The strategies developed by people affected by leprosy and their family members help them to be well accepted into their communities and have contributed to reduce stigma.

P-408

ASSOCIATION BETWEEN PSCHOLOGICAL HEALTH AND QUALITY OF LIFE IN PERSONS AFFECTED BY LEPROSY IN A COMMUNITY IN GUANGDONG PROVINCE, CHINA: A CROSS-SECTIONAL STUDY

Presenter: Mingzhou Xiong

Mingzhou Xiong, Xiaohua Wang, Ting Su, Bin Yang, Ming Li, Daocheng Zheng

Leprosy Control Department, Dermatology Hospital of Southern Medical University, Guangzhou, China.

Objectives: Our goal was to assess and identify interrelationships between the psychological health and quality of life (QOL) of people affected by leprosy (PAL) living in a community.

Methods: A population-based cross-sectional survey was conducted from April to October 2016 in Guangdong province, China. The 12-item general health questionnaire (GHQ12) and World Health Organization Quality of life-BREF (WHOQOL-BREF) were used to evaluate the psychological health and QOL of the participants. PAL who were recruited for this study were (1) registered in LEPMIS by the end of 2015 and living in a community, (2) alive and successfully contacted by investigators, and (3) willing to take part in the investigation and provide informed written consent. Proportions, medians, and ratios were used to describe the demographics of the participants and $\chi 2$ and Kruskal-Wallis tests were used to identify statistically significant differences among different psychological status groups. Pearson's correlation coefficient and logistic regression analyses were used to assess the relationship between GHQ12 and QOL score.

Results: A total of 7,230 PAL (5,527 males and 1,701 females, average age of 67.3±13.1 years) living in a community participated and completed the questionnaires. The participants averaged 1.7±2.7 points on the GHQ12, where 23.5% had a mental disorder (≥3 points). The scores for the dimensions of QOL of physical, psychological, social relationships, and environment were 17.2±2.4, 20.6±2.7, 9.7±1.7, and 24.6±4.0, respectively. Gender, age, employment, profession, and the four dimensions of QOL were independent factors of the psychological health of PAL.

Conclusion: A poor psychological health and a close interrelationship between psychological health and QOL in PAL living in communities were found in this study. Despite the current physical and psychological rehabilitation interventions, the secondary prevention measure aims to detect leprosy earlier, such as leprosy syndromic surveillance program, was needed to create and implement, and thus, to improve psychological health and QOL of PAL.

ILC-2: SOCIAL SCIENCE:

2.3 Social Aspects

P-031

BARRIERS TO COMPLETING MULTIDRUG THERAPY AMONG LEPROSY AFFECTED PEOPLE IN DHANUSHA DISTRICT OF NEPAL

Presenter: Lalita Labh

Lalita Labh, Ramesh Kumar Chaudhary, Kiran Jha
Nepal Leprosy Trust (NLT)- Lalgadh Leprosy Hospital &Services Centre (LLHSC)

Objectives:
• To identify the barriers to Multidrug Therapy (MDT) completion
• To assess the level of Knowledge about leprosy among leprosy-affected people and their families
• To assess the level of stigma prevailing in the community
• To find out effects of LLHSC in the community regarding leprosy awareness, stigma reduction, and SER

Methods: The study will be conducted in the Dhanusha district, one of the Terai district of Nepal. The study considers defaulter cases that had failed to complete a full course of MDT within a prescribed period of time. The secondary data has already been collected from the District Health Post, Janakpur, which identified 47 MDT defaulter cases between 2016 to 2018. A semi-structured interview design will be used by developing a questionnaire to get information related to socio-economic characteristics, knowledge of leprosy, barriers to MDT completion, stigma due to leprosy. Pre-test of the questionnaire will be performed on the patients.

Results: The results of the study will be available after the completion of the study and will be shared in the International Leprosy Congress, Manila.

The results will demonstrate factors associated with interruption of MDT, factors associated with defaulting from MDT and the impact of LLHSC programmes in Dhanusha district.

Conclusion: The findings of the study will explore personal, family, social, community, attitudinal, practical, geographical, cultural and traditional factors which may influence completing MDT treatment. It is hoped that the research will be immensely useful for all those part of our globe where such defaulter cases are prevalent.

P-044

PATIENT DELAYS IN POST-ELIMINATION NEPAL

Presenter: Ulla-Britt Sigrid Engelbrektsson

U-B. Engelbrektsson
University of Gothenburg, Sweden, International Nepal Fellowship, Nepal

Objectives: In late 2009, Nepal reached the leprosy elimination goal. However, the prevalence ratio has subsequently not declined. Most patients present voluntarily. Long delays increase the risk for transmissions and “lengthy patient delays” are commonly blamed for the prevalence ratio not going down. From 2015 onwards, the

International Nepal Fellowship (INF) has carried out a research project on leprosy delays within its working area, the West and Mid-West Development Regions of Nepal. This presentation focuses upon one part of the delays: 'the patient delays'.

Methods: The methodological approach was qualitative as well as quantitative. 'Delay' was defined as "the time span between the patient becoming aware of a leprosy related symptom and the diagnosis/start of MDT" and 'patient delay' as the time period prior to health-seeking outside the home.

The project has been taken forward by INF leprosy staff with some external back-up. After informed consent, patients on MDT have been interviewed at their place of regular treatment/living (Initiative 1); place of inpatient care (Initiative 2); or place of diagnosis (Initiative 3), a total of 400 patients in three cohorts, convenient samples. The main instruments have been initiative-specific interview-guides with a common core with supplementary data obtained from observations, contact talks, patient files, leprosy registers, and other sources.

Results: The mean delays in the three cohorts were found to be 25 months, 30 months, and 28 months, respectively, with the mean patient delays ranging from somewhat less than a quarter to a maximum half of the mean delays. The early symptoms were not bothersome and commonly not seen as indicators of something being seriously wrong, and life went on as before, sometimes supplemented by home-treatments. And, in most cases, only in connection with further developments of the disease did the process of help-seeking outside the home start. Meanwhile, in the great majority of cases, the patients and their families did not harbor the thought of it possibly being leprosy and this in spite of leprosy having been around for centuries. The ethnographic data obtained provide some of the answers as to why.

Conclusion: The patient delays were found to be only part of the reason for the documented long delays, even so they are not short (cohort means: 10 months; 7 months; 14 months). If the battle against leprosy is to be won, added efforts are clearly needed with some of them tailor-made to address the patient delays.

P-045

FACTORS ASSOCIATED WITH SEEKING OF ADMISSION BY STUDENTS IN THE LEPROSY MISSION VOCATIONAL TRAINING CENTER

Presenter: Shyla Francis

Shyla Francis[1], Tina Mendis[2]

[1]Vocational training Centre, The Leprosy mission Trust India, Nashik, Maharashtra [2]The Leprosy Mission Trust India, Belgaum, Karnataka, India

Objectives: To understand the factors affecting the admission of females to the leprosy mission vocational training centre, Nashik. The secondary objective is to identify new initiatives in order to attract women to the Leprosy Mission's Vocational Training Centre (TLMVTC.)

Methods: A participatory cross-sectional study method was used in this study. Young women from leprosy background, persons with other disabilities and other marginalized were interviewed using structured questionnaire which consists of Family background, Family income, Disease condition and their Interest compared to the trades available in the VTCs.

An initial desk review was done to compare the profile of male and female students who have been trained in the VTC in the last 2 years to identify the disparity in the admission in VTCs between them.

Results: The women graduates seeking admission for training at the VTC has declined over the years. The

students seeking admission are from rural background and only 10% of the women trained so far, are from Nashik. Students are trained in Computer Operator and Programming Assistant (COPA) and most of them go back to the community they come from and earn salaries less than 5000/month. Their parents are not willing to send them so far for training as the salary they receive is not very lucrative. The women in Nashik are interested in Nursing, Fashion Designing and management courses. Almost all the girls interviewed are not interested in the trades offered at the VTC.There is a demand for paramedical courses like Bed Side Assistant, Pharmacy Assistant, Nursing Assistant, Pathology Laboratory Technician Assistant among the rural population. Some of the people are not aware of the Vocational Training Centre and the training provided.

Conclusion: The conclusions we can draw from the study are that the intake of leprosy and disability affected girls can be increased with good liaison with Primary Health Centres, Leprosy hospitals, national rural and urban health mission, NGOs, Leprosy Colonies, and women self-help groups, so that admission to VTC is made easy for women. New trades in accordance to the market demand will help in securing lucrative jobs. Medical based trades and management courses attract women from Urban background. Liaison with other institutes to mainstream training so that training can be provided in trades in demand without actually investing into starting many new trades.

P-046

IMPACT OF PSYCHOLOGICAL SUPPORT ON SOCIAL REHABILITATION OF PERSONS AFFECTED WITH LEPROSY

Presenter: Naveen Kumar Satle

Naveen Satle LEPRA Society, Madhya Pradesh Avinash and Richard Bariya

St. Joseph's leprosy centre, Madhya Pradesh, India

Objectives: To assess the menatla health aspects of persons affected with leprosy

Methods: Line listing of all cases that underwent reconstructive surgery or having disability either G1 or G2 and registered in St Joseph leprosy centre done. Hired two counsellors (a male and a Female) having background of psycho-social work experience and trained them for assessment of psychological disorders –depression and anxiety. Designed psychological assessment form for depression, anxiety and social fear. Both the counsellor have done counselling for 527 (Male- 347 and Female- 180) persons affected with leprosy during April-Dec 2018 at home, OPD and in-patients of St Joseph Leprosy Centre Sanawad District Khargone Madhya Pradesh.

Results: Based on Psychological assessment out of 527 persons affected with leprosy 180 (34.2 %) persons reported irregular anxiety attack and 191 (36.2%) persons reported frequent Anxiety problem in their lives. Similarly 81 (15.4%) persons showing depression symptoms and 5 (0.8%) persons found to be under severe depression needing psychological intervention. In social fear scale 127 (24%) persons reported fear in social appearance where 46 (8.7%) persons reported very high social fear due to disfigurement.

Conclusion: There are possibility to family rejection and discrimination due to fear, prejudice and stigma towards leprosy making persons affected by leprosy more prone to acquire mental health issues commonly depression and anxiety. Psychological support may help persons affected with leprosy and their family to develop better insight and increase the acceptance.

P-047

PERCEPTION OF THARU COMMUNITY MEMBERS TOWARDS PEOPLE AFFECTED BY LEPROSY IN KAILALI DISTRICT OF NEPAL

Presenter: Chiranjivi Sharma

C. Sharma[1], P. Rijal[1], S. Kandel[1], D. Shrestha[1], S.B. Sunuwar[1], R.K. Tharu[1], K.Chaudhary[1], D.B.J. Rana[1]

[1]The Leprosy Mission Nepal

Objectives: To study the perception of Tharu community people towards leprosy affected members of their own community.

Methods: A cross sectional study done using Social Distance Scale (SDS) and Knowledge Attitude Practice (KAP) questionnaire. Closed ended questions were included in both questionnaire which were administered to 200 people of Kailali district among Tharu community (indigenous people living in western southern plain of Nepal) comprising 100 respondents in each two groups named Community Members and Non Leprosy Self Help Group.

Results: Out of total 200 participants (100 community members, 100 non-leprosy affected Self Help Group (SHG) surveyed - 18% of community members are illiterate, 19% of Non-Leprosy SHG members are illiterate respectively. 57% of community members and 65% Non-Leprosy SHG members expressed that they don't know the actual cause of transmission of leprosy disease. Further, 87% of community members and 78% Non-Leprosy SHG members are unaware of the fact that leprosy bacteria do not transmit after starting Multi-Drug Therapy (MDT). The mean SDS score for Community Members is 8.8 (S.D.-1.604) and for Non Leprosy SHG is 9.26(S.D.-1.555). There is no significant difference in the mean SDS score of community member and Non Leprosy SHG group with Pvalue 0.090423483. There is no significant difference between the average SDS score of male (8.52) against female (9.35) at the Pvalue 0.9172. However, there is mild correlation (.399) between SDS score and the age of the participants, which is significant at Pvalue 0.01.

Conclusion: Although SHG members were trained for leprosy disease and its transmission, the research gave a concise view of participants having a lack of knowledge about leprosy disease and its transmission. SDS survey conducted among community member and non-leprosy SHG members showed that the average social distance score between community members and leprosy affected is considerably lower than the average social distance score between non-leprosy SHG members and leprosy affected SHG members though the difference is not significant. Maximum community members scored 7 while maximum non-leprosy SHG members who are believed to have frequent interaction with leprosy-affected people in SHG have scored 10. This clearly implies that those who frequently interact with people affected by leprosy may not necessarily have lower social distance score.

P-049

STRATEGIES TO IMPROVE COMPLIANCE OF LEPROSY AFFECTED PATIENTS VISITING A TERTIARY LEPROSY HOSPITAL

Presenter: Dharman Sridhar

Sridhar[1], Raghu[1], Priyanka[1], Sathish Kumar Paul[1]
Schieffelin Institute of Health Research & Leprosy Centre, Karigiri, India

Objective: To improve the MDT compliance of leprosy affected patients visiting the hospital

Materials & Methods: The MDT compliance of those diagnosed with Leprosy is usually about 60% in many Leprosy programmes. Active follow up of these patients is needed to ensure higher compliance. 200 consecutive

patients who defaulted for more than 2 months during MDT were selected for the study. Their phone numbers were collated and reminders were sent to them the week before their medicines ran out.

Results: 183 patients responded to the calls, though 17 patients had provided wrong numbers and were lost to the follow up. Of the 183 patients who were followed up through phone, 164 patients were regular in treatment till completion of treatment, which is 89.6% of those who were followed up through phone calls. This is a significant increase in the completion rate.

Conclusion: The follow up of patients through phone is a very effective method of improving compliance to MDT. Instead of following up only those who are defaulting on MDT, it could be a regular method that is used to improve compliance. Other than the regular methods like home visits by a social worker to identify causes of defaulting, Leprosy programmes can appoint more social workers for follow up through phone that will improve the compliance drastically.

P-096

"IMPACT OF CHANGES ON SOCIAL AND PHYSICAL ENVIRONMENTAL STRUCTURES, PROCESSES AND SERVICES IN THE 2 SANITARIA IN THE VISAYAS TO PERSONS AFFECTED WITH AND BY HANSEN'S DISEASE"

Presenter: Nancy Roma-Sabuero

Nancy R. Roma-Sabuero, RSW, CGM
Medical Social Work Department, Eversley Childs Sanitarium Mandaue City, Cebu, Philippines

Objectives:

1. To determine the impact of changes in social structures, physical environmental changes and in the processes and services to persons affected with and by Leprosy
2. To determine appropriate measures to improve or enhance processes and services in the 2 sanitaria in the Visayas

Methods: A selection of 50% from among the admitted persons affected with and by leprosy in Eversley Childs Sanitarium in Mandaue City, Cebu and the Western Visayas Sanitarium in Sta. Barbara, Iloilo City was randomly selected as respondents. A questionnaire was developed for the purpose; this same questionnaire was pre-tested in Eversley Childs Sanitarium to 20 custodial care patients and to 5 health workers to determine its efficiency and completeness. With the distance of Iloilo City from Cebu, the cooperation of the Medical Social Worker in Western Visayas Sanitarium was obtained. She distributed and collected the filled up questionnaires and sent them back through courier. Communication were done through e-mails and SMS.

Results: Respondents were 50 from Eversley Childs Sanitarium and 50 from Western Visayas Sanitarium:

A. Physical environmental structural changes were seen as enhancement to services most especially by the disease on custodial or residential cares. Awed by high structures and designs, some of the elderlies and those with physical challenges shunned the structures as expressing barriers to accessibility.; Social Environment – some felt threatened to the increasing population and decreasing space to move. Most considered the sanitarium as their home

B. Changes on Processes – Both Sanitaria were ISO certified. Changes to work flows and processes were done to conform to standards. Residents expressed difficulty in accepting changes, a few consider changes positively.

C. Services –the same services were received; the changes in Eversley was the provision of cash ration which they most prefer to receive.

Conclusion: Changes to physical structures in both sanitaria were welcome by the residents. Respondents were divided in their responses as to purpose of changes especially in the flow of services. There is still the feeling of insecurities and belongingness to the sanitaria while some are hopeful that patients will be taken good care of especially those with physical challenges and the elderlies

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P-097

GREATER VULNERABILITY OF WOMEN AFFECTED BY LEPROSY IN OUTCOMES OF HEALTH

Presenter: Sarah Nikita

N. Sarah[1], S. Baquer[2]
[1]Head, Advocacy and Communication, TLMTI, [2] Consultant, Advocacy, TLMTI

Objectives: To understand how the layers of vulnerability caused due to gender impact the health-seeking behaviour and regular decision-making processes for women affected by leprosy.

The global trends in health show a 2:1 ratio in the diagnosis of leprosy on basis of gender. A study conducted in India and Pakistan also substantiates this by identifying reasons, such as cultural barriers to examination of females, especially unmarried females, and the risk of stigma, especially where primary healthcare is provided by village housewives amongst others for poor health seeking behaviour amongst women. Further, the time required for long-term health needs and self-care requirements in leprosy are also gender-related challenges for women, given its direct impact on their time and fulfilment of gendered roles. All these factors are also impeded by the lack of agency for decision-making for women in seeking healthcare.

Methods: A literature review of the inter-connection between gender and leprosy was undertaken for the purposes of a paper from 20 published papers in the world, including India. The result of the review showed a clear inter-connection between leprosy and gender. To understand this in greater detail, a sample study is proposed to be undertaken.

The survey shall be undertaken based on a questionnaire from a sample of women affected by leprosy from Delhi, equally divided between those currently undertaking treatment for leprosy and those who have been cured in the past, for mapping agency and health seeking practices of women affected by leprosy.

Results: Driven by the understandings built from the literature review on the subject, the proposed study is expected to bring a greater clarity and understanding of the factors that have been and are currently prevalent in our social order that govern the health seeking behaviour and choices of women affected by leprosy.

Conclusion: Keeping in mind there is a focus on the issues of women with disabilities, new programmes and schemes are to be developed, specifically keeping women with disabilities in mind. It would be valuable to add to the literature and understanding of the issues specific to women affected by leprosy.

P-114

LEPROSY IS AN IMPORTANT PUBLIC HEALTH CHALLENGE IN INDONESIA: HOW TO CORRELATE FAMILY KNOWLEDGE AND ATTITUDE TO REDUCE THE LEPROSY PATIENTS DISABILITY LEVEL

Presenter: Dhelya Widasmara

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Objective: Family could provide a care to the sick member of the family and support them in reducing the level of disability of leprosy patient. Families who have a good knowledge and good attitude towards leprosy could reduce the level of disability of the leprosy patients. The number of leprosy patients in Malang is the highest among cities in Indonesia. Malang is the highest contributor of eprosy patients in East Java.

Methods: The purpose of this research is to determine the relationship between the family's knowledge and attitude with the level of leprosy patients at Dr. Saiful Anwar hospital in Malang during May until July 2017. The disability rates is measured using WHO criteria; grade 0, grade 1, and grade 2. Meanwhile, the family's knowledge and attitude are measured using questionnaire and given with the disability level observation simultaneously. The research held in Dr. Saiful Anwar Hospital using cross sectional research method. The number of research subject is 19 people using total sampling technique. Then, the analysis data in this research is using chi-square analysis data.

Results: The result of these two variables is showing ificant result in family's knowledge (p=0,010 OR 8,1) and attitude (p-0,017OR-7,3) with the disability level of leprosy patients in RSSA Malang.

Conclusion: Based on the research, we can conclude that there is a meaningful relationship between the knowledge and attitude of the family with the disability level of leprosy patients at Saiful Anwar Hospital in Malang

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P-116

PURSUED SOCIAL WELFARE ACTIVITIES OF LEPROSY PATIENTS WELFARE SOCIETY (LPWS) FOR HELPING SOCIO-ECONOMIC REHABILITATION TO DESTITUTE AND DISABLED LEPROSY PATIENTS FOR A PERIOD OF 42 YEARS

Presenter: V.P. Bharadwaj

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Objectives: The Social Welfare and Rehabilitation Work was undertaken by the LPWS since 1977, when MDT was not practiced for the treatment of Leprosy, which resulted in having large number of disabled and destitute leprosy patients. The magnitude of the problem was great and it was during that period, when LPWS undertook the challenging task to help the sufferers of the Leprosy.

Main Objectives of LPWS (working for the last more than four decades) :

- To help the leprosy patients in the treatment of disease using MDT.
- To fulfill the needs of the destitute leprosy patients by providing them free boarding, lodging and other facilities.
- To provide vocational rehabilitation training to the leprosy patients, so that their respectable social and economic rehabilitation could be possible.
- To provide free and relevant counseling to the family members of leprosy patients and community leaders, so that leprosy patients could be accepted by the family members and the society.

- To organize meetings for creating Mass Awareness and giving Health Education regarding leprosy to the persons from different walks of life including young school children to eradicate stigma against leprosy.

Methods: The main important features to fulfill the objectives of our society (LPWS) are :

- To impart basic, relevant scientific informations, which have helped to remove superstitions, fear and stigma against leprosy.
- The ongoing studies have resulted in educating the people having early signs of leprosy and advantages of early treatment to prevent deformities and disabilities.
- The intensified Mass Awareness Programme has resulted in developing confidence among the people affected by Pauci or Multi-Bacillary Leprosy that they are fully curable by using Multi Drug Therapy (MDT).

Results: During the last more than four decades (since 1977), LPWS has significantly contributed to provide respectable social and economic rehabilitation of more than sixty thousand (62,000) destitute leprosy patients, which has resulted in keeping them away from the ugly problem of begging.

Conclusion: The detailed studies undertaken by LPWS will be presented and discussed during 20th International Leprosy Congress, Manila, Philippines, 10-13 September, 2019.

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HOW MY PERSONAL EXPERIENCE WITH PEOPLE AFFECTED BY LEPROSY TRANSFORMED ME INTO A HEALTH WORKER WITH A PURPOSE AND COMPASSION

Presenter: Marie Antoniette Taborada

M.A. Taborada
Leonard Wood Memorial Center for Leprosy Research in Cebu, Philippines

Objectives: This paper was written to inspire leprosy health workers by sharing my personal experience of transformation as a result of hands-on experience with persons affected by leprosy through many years of dedicated service to the program.

Methods: This is a narrative of my personal experience as a laboratory worker involved in leprosy research for the past 20 years. My career started as a laboratory staff at the Leonard Wood Memorial Center for Leprosy Research in Cebu, Philippines where I was assigned at the laboratory and carried-out highly-skilled procedural aspects of research. In the laboratory, I handled blood samples with no names; only study codes and sample collection dates. Back then, I only had data collection and research deadlines in mind. Because I never met the patients donating the blood samples, there was no emotion involved.

Things changed when I was assigned to do fieldwork and handle patients. Finally, I was able to put a face to study codes I wrote. Day by day, I experienced attending to patients' needs and did countless patient interviews. During these times, I had the chance to meet persons affected by leprosy (PALs) and learned the stories behind their illness. Patients started building their trust in me. I became an ear to their stories pouring out their dismay, frustrations and sadness on how leprosy has affected their personal and family life. Gradually, emotions were built over patient stories of failure and success.

Results: I have realized that whereas data collection is vital in research work, so is our emotional understanding about the person behind the illness we research about. This experience made me realize that leprosy work is not just about blood works and study codes. Most importantly, it is also about the importance of lending an ear and a compassionate heart to speed up the healing process. It made me realize how our commitment and dedication as health workers could make a huge difference in each patient's journey towards healing, both physically and

emotionally. Because of the experience, I have gradually transformed into a person that I am today… a leprosy health worker of purpose and compassion.

Conclusion: A hands-on dedicated service in leprosy work can transform a health worker into a person of purpose and compassion. Beyond science, emotion and compassion are integral parts of the work that makes a huge difference in the life of a person affected by leprosy. Although drugs may cure the physical illness, a simple gesture of compassion such as a pat in the back is more than enough to ease-out the emotional pain that comes along with the disease.

P-157

MEDICAL AND SOCIAL REHABILITATION OF LEPROSY PATIENTS

Presenter: Victor Duiko

Duiko V.V., Levicheva Yu., Yu., Andreeva M.A., Astafurova A.P.
Leprosy Research Institute, Russia

Objectives: Rehabilitation of patients, their effective and high-quality treatment and dispensary observation, with the aim of improving the quality of life, are the main priorities in the control of leprosy in Russia.

Methods: Sanitary and statistical, clinical.

Results: 53 leprosy patients were examined in the clinic of Leprosy Research Institute. Patients are hospitalized in the hospital for a time and only in the active stage of the disease to confirm the diagnosis, correct treatment regimens, prevent disability, detect concomitant diseases or administer course of anti-relapse treatment. Out of 53 patients - 25 were men, 28 – women. All of them were elderly and senile: at the age of 61-70 years –17 patients (22.6%); 71-80 years old - 23 (43.4%); 81-90 years old - 15. (28.3%), a total of 94.3% were over 60 years old. The basic disease in all patients is in the stage of regression, however, there is a chronic specific polyneuropathy, various trophic disorders and concomitant diseases.

A thorough examination revealed for the first time some associated diseases: coronary artery disease in patient L., born in 1949; type II diabetes mellitus of mean severity in patient H. born in 1939; prostate adenoma in patient K., born in 1935; the initial cataract of both eyes was diagnosed in 4 cases for the first time. All patients received appropriate treatment and recommendations. Follow-up is carried out on an outpatient basis.

To prevent further development of neuropathies and disabling consequences, complex therapy was carried out, including vitamins and metabolic agents and physiotherapeutic treatment: magnetic and laser therapy, scanar therapy, CMT therapy. The new technology "Alloplant" was used for the treatment of trophic ulcers and burns, which significantly increases the regenerative activity of tissues, improves microcirculation, promotes the rapid healing of ulcers and, increases the effectiveness of rehabilitation in the end.

Conclusion: All leprosy patients, are under regular medical check-up, periodically hospitalized for medical and social rehabilitation. Moreover, rehabilitation is carried out jointly with the doctors of the general medical network and specialists of social services.

Leprosy patients are in full state support, and the anti-leprosy service has government funding. From the first days of the diagnose and hospitalization of the patient it is carried out his medical and social rehabilitation, aimed at achieving a level of health that will allow you to lead an active lifestyle and will contribute to full social rehabilitation and improve the quality of life.

P-175

SCREENING FOR MENTAL HEALTH IN PATIENTS WITH NEGLECTED TROPICAL DISEASES INCLUDING LEPROSY – USE OF A MODIFIED WHO WELL-BEING INDEX FOR USE IN A LOW LITERACY POPULATION AND ASSESSING ITS INTERNAL CONSISTENCY AND VALIDITY.

Presenter: Ira Packyanathan

Ira P[1], Ilavarasi K[1], , Karthikeyan G[2], Joy Deepa D[2]

[1]The Leprosy Mission Hospital Vadathorasalur, Tamil Nadu, India [2] The Leprosy Mission Trust India, Research Domain, New Delhi, India

Objectives: The aim of the study is to assess the use of a modified WHO Well-being index in a low level literacy population and to assess its internal consistency and validity. The study also aims to assess social and environmental factors contributing to the mental health.

Methods: Fifty subjects affected with leprosy and screened between the period of Jan 2019 and March 2019 will be included in the study. The subjects attended TLM Hospital at Vadathorasalur. The WHO Well-being index, translated into the local language, Tamil, was chosen for this study. As most of the subjects had low literacy levels, pictorial representations of the answers were placed before the subject and they were asked to point to the face that best describes the six responses to the 5 evaluative questions of the questionnaire. The responses were compared against a diagnostic structured interview (CIDI) conducted by a clinical psychologist. Fifty control subjects also will be assessed attending the OPD and also insist that WHO-5 questionnaire is a valid tool to assess depression among leprosy patients. Internal consistency was measured using Cronbach's alpha. Validity was assessed using Receiver Operating Curves. (ROCs). The study was approved by the Research and Ethics Committee.

Results: The Data collection is in process and the findings will be presented during the conference

Conclusions: This modified WHO well being index is a valid tool to assess the mental well being in low literacy population.

P-179

GENDER OF FIELD STAFF IN RELATION TO LEPROSY CONTROL AND ZERO DISABILITY

Presenter: Alex Frank Raulim

Jiptha Boiragee[1], Jeorge Biswas[1], Alex Frank Raulim[1], Md. Khalequzzaman [1]

[1]Institutional Affiliation of J. Boiragee, J. Biswas, A.F. Raulim and Md. Khalequzzaman: The Leprosy Mission Bangladesh

Objectives: Understanding the role of male and female staff in relation to new case detection, disability and stigma reduction.

The Leprosy Mission Bangladesh has been implementing the Integrated Leprosy Service for Strengthening Health Systems (ILSH) project since 2016 in Dhaka City and 7 districts across Bangladesh. The ultimate aim of the project is health system strengthening; strong, resilient health system that provides timely, accessible, and affordable care for neglected diseases.

Methods: We have analyzed verified data of all leprosy patients detected/registered at the service points and performance of staffs working under ILSH project for 3 years (January 2016 to December 2018) at the 8 districts for this study.

Results: Data of 1649 patients (42.09% female and 57.91% male) and 18 staffs' (4 female and 14 male) performance were analyzed for this study. The study revealed that female staff can detect 2.46 times more cases a year compared to a male staff. Female staff cover only 19% of total project working area and detect 41.30% of total cases.

We also found that female staff detect 4% more early cases (PB) than male staff whereas male staff detect 1.5% more child cases than female staff. Grade 2 disability detected among total new cases by female staff is 1% less than male staff detected cases.

62.62% new cases are male among total new cases detected by female staff and 45.14% new case are female among total new cases detected by male staff compared to national data of average yearly 59.08% male and 40.92% female by National Leprosy Program (NLP).

Conclusion: New case detection is always challenging for both male and female staff and it varies depending on the context e.g. urban, rural, remoteness, conservativeness of community etc. Results show that female staffs are detecting more male cases and male staffs are detecting a significant number of female cases considering the societal context of Bangladesh. Good combination of male and female staff in a team could increase number of new case detection and reduce disability which will contribute to zero transmission, zero disability, zero stigma and discrimination.

P-182

ASSESSMEMT OF PHYSICAL AND SOCIO-ECONOMIC NEEDS OF PEOPLE AFFECTED BY LEPROSY IN KANCHANABURI PROVINCE

Presenter: Pojana Thanyakittikul

Pojana Thanyakittikul M.A[1] , Nopporn Srikhumbor B.N.S[1], Somchintana Khunsatthee B.N.S[1] , Kittima Sawasdee B.N.S[1] , Neranchara Saykan B.N.S[1]

[1]Raj Pracha Samasai Institute, Thailand

Objectives: This qualitative research was conducted to investigate the problems and needs of people affected by leprosy in terms of physical and socio-economic aspects.

Methods: The studied subjects were 1) 25 people affected by leprosy who had activity limitation, social participation and perceived stigma 2) key informants including the relatives of people affected by leprosy and health workers of the sub-district health promotion hospital. Data collection and analysis were performed by in-depth interview and content analysis respectively. Personal information of the studied subjects were presented in the form of percentage and absolute number.

Results: Overall results revealed that there were 3 different groups of people affected by leprosy namely 1) the first group of 11 people whose needs have to be satisfied by urgent care 2) the second group of 8 people whose needs could be satisfied by normal care system 3) the third group of 6 people who did not have any needs. The groups with urgent needs had severe problems in terms of eye, hand and foot impairments. Some cases were suffering from smelly chronic ulcers with cancer prone. Most of them were depressed because they could not economically contribute to their families.

Conclusion: The common problems among people affected by leprosy involved physical and mental health, and socio-economic aspects. The most crucial needs were physical rehabilitation followed by mental and occupational rehabilitation. However; in the perception of people affected by leprosy, their most important needs is income generation. Even though Thailand already formulated a policy to support people with disability but people with

leprosy-related disability are less likely to access rehabilitation service. Any sectors involving in providing care to people affected by leprosy, therefore , should, transfer the policy into practice by conducting assessing surveys of disability, socio-economic and needs of people affected in order to provide more effecting rehabilitation service accordingly. Counseling should be also provided to those who are under depression. Disseminating leprosy knowledge to community and health workers in endemic area is also required in order to reduce leprosy- related stigma.

P-185

SOCIAL ENTITLEMENTS ACCESSED BY PERSON AFFECTED BY LEPROSY IN INDIA

Presenter: Mathanraj David

M. MATHANRAJ DAVID[1], M.S. RAJU[2]

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Objectives: To study the level of access and differences between states to specific entitlements for persons affected by leprosy in UP, CG, AP and TN states of India.

Methods: This was a Cross sectional descriptive study carried out in four states, to obtain information about their access to all the schemes and entitlements applicable for the leprosy affected. A total sample size of 379 included 100 from Uttar Pradesh (UP), 100 from Chhattisgarh(CG) , 101 from Andhra Pradesh(AP) and 78 from Tamil Nadu(TN) , This study was an outcome of baseline survey carried out during Dec 2016 to Sept 2017 for the CREATE (CSOs for Resource mobilization, Empowerment, Advocacy, Training & Employment) Project.

Results: In the present study 198 (52.2%) were male and 181 (47.8%) were females. The age ranges from 20 to 65 years. 57.5% were uneducated, 57.5% were living in general community, Majority of their occupation 34% were Housewife and dependents. 82.1% belong to Grade II disability. Disability certificate was the most accessed scheme 79.9% followed by Disability pension by 65.2%, MCR footwear by 50.7% and Bus pass by 40.9%. The rest of the schemes were least accessed.

Conclusion: The study concluded that a varied difference exists among the four states from maximum to minimum in order of AP, TN, UP and CG determined by the influence of local demographic and culture on the accessibility.

P-186

IMPACT OF MICRO CREDIT SYSTEM ON QUALITY OF LIFE OF PEOPLE AFFECTED BY LEPROSY IN MAHARASHTRA, INDIA

Presenter: Shirish Shegaonkar

Shirish Shegaonkar
The Leprosy Mission Trust India

Objectives: The overarching objective of this study is to assess impact of micro-credit system on Socio-economic Development and Quality of life of Leprosy affected people and to understand the Quality of Life and level of participation of the respondents.

Methods: Interview schedule was formulated for data collection to obtain relevant information relating to the problems of the affected people under the study

Results: 92 respondents' have started their own business with the help of SHG. in which 36% are earning below Rs.5000, 18% respondents monthly income is between Rs 5000 to Rs 10000, 7% respondents are having monthly income between Rs.10000- Rs.15000. Whereas 3% respondents are earning good income i.e. above Rs.15000. This states that respondent's monthly income has increased in small business category due to SHG, as they have opted the loan from SHG & started their own Micro finance business to increase financial status as well as to improve the income condition. The motivation for joining SHG, among the targeted group shows 39% have joined SHG by their own, 28% have joined due to family members' motivation, and 18% cases were motivated by NGO workers to join the SHG, whereas 15% cases joined due to motivation of their Friends. Regarding Quality of Life, 64% respondents perceive their QoL as good, 3% feel it as neither poor nor good and 16% feels it is poor and 36% perceive that the quality of their life is very poor.

Conclusion: The study shows that SHG had very good impact on the mobility of the respondents. This shows that SHG can bring a change in the community & person affected with leprosy or other stigmatized patients can be move in the society freely. The study shows also that micro finance or enterprises has helped the respondents to strengthen their financial conditions due to which access to credit sources has reduced, SHG can make the participants more stable financially & increase his social status

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P-197

INCLUSION IN CSO LEADING TO IMPROVEMENT IN ACCESS TO RIGHTS AND ENTITLEMENTS

Presenter: James George

James George, Tina Mendis and Harsha B G
The Leprosy Mission Trust India

Objectives: To determine the Impact of capacity building training of CSO of Person affected by leprosy and disability in accessing the rights and entitlements.

Methods: Study design and site: This is an impact assessment study conducted in Allahabad and Raebareli districts of Uttar Pradesh

Study population and participants: The CSO members affected by leprosy from Allahabad and Raebareli district who participated in capacity building training of the CREATE Project. The respondents are of both rural and urban areas and are adults of age group (≤18).

Data collection: A Structured questionnaire will be used to collect data; including demographic details, disease related information and list of rights and entitlements availed before and after training using baseline and end line data of the CREATE Project.

Data analysis: The data collection will be paper based. All collected data will be entered and analysed using Microsoft Excel database. Cross tabs will be used to study before and after results.

Results: The result will be presented during conference. The result will show the entitlement accessed by the person affected by leprosy after becoming a member of a CSO and participating in capacity building training.

Conclusion: The study will conclude on the importance of inclusion of the person affected by leprosy in CSOs to challenge the violation of rights.

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SOCIOMEDICAL PERSPECTIVES ON LEPROSY IN INDIAN RELIGIONS

Presenter: M S Raju

Raju MS
Social Scientist, The leprosy Mission Trust India, Research office TLM Community Hospital

Objectives: Concept of hygiene and healthy practices which result in disease or health are embedded in religious proscriptions. Behavior of the individuals is molded to a great extent by their religion, which refers to both the personal practices related to communal faith and to group rituals and communication stemming from shared conviction. Therefore, socio-religious text impact the way people think, especially in the rural context where the leprosy is more prevalent and it is necessary to understand its contents as to prevent possible negative impacts on leprosy affected persons. It is felt necessary to intensively screen the religious scriptures and perceptions of religious leaders, a study was carried out with the following specific objectives viz.

- To identify religious precept and proscription, if any, underlying leprosy stigma
- To document specific reasons why leprosy affected persons face participation restrictions in religious ceremonies, and the extent of their restriction
- To determine strategies to overcome leprosy stigma due to religious beliefs or superstitions.

Methods: Apart from secondary data collected from the scriptures of the following religions, primary data were collected from a total of 118 in-depth interviews of the given below number from the leaders of each major religions in India viz. Hinduism(20), Islam(20), Christianity(20), Sikhism(20), Buddhism(18) and Jainism(20).

Findings:

1. Leprosy is perhaps the most primitive disease as it has been a matter of discussion and the cause and treatment of leprosy has been associated with supernatural forces in all the religions.
2. There is an evidence of implementing leprosy stigma in the scriptures of all the religions in India, which is well known to the religious leaders
3. The religious scriptures being the primitive most documents, could stand as the originating sources of leprosy stigma.

Conclusion: Leprosy stigma, being part of religion, is propagated through religious preaching by the religious preachers. It is very essential to incorporate stigma reduction activities in religious preaching especially in the religions where health management systems are the components of religious practices.

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A COMPARATIVE STUDY OF THE QUALITY OF LIFE OF LEPROSY PATIENTS VS PATIENTS WITH OTHER DERMATOSES IN JRRMMC USING THE WHOQOL-BREF

Presenter: Marivic Bumalay

Abelaine Venida-Tablizo[1], Ma. Luisa Abad-Venida[1], Marivic O Bumalay[1]
[1] Jose R. Reyes Memorial Medical Center, Manila, Philippines

Background: Leprosy is a chronic infectious illness caused by Mycobacterium leprae through close personal contact that mainly affects the skin and nerves. The stigma attached to this disease leads to progressive physical, psychological and social disabilities and debilitation impacting the quality of life of the patients.

Aims and Objectives: This study aimed to determine the quality of life of leprosy patients seen at the Department of Dermatology of the Jose R. Reyes Memorial Medical Center using the World Health Organization Quality Assessment BREF (WHOQOL-BREF) questionnaire.

Specific objectives were: to compare the quality of life of leprosy patients with patients having other dermatoses; to evaluate socio-economic characteristics and perceived stigma that contribute to quality of life; to identify which of the subgroups of leprosy patients have the most impact on their quality of life; to establish the current perception of patients about their disease now that leprosy can be cured; and to identify the most affected domain/s in the quality of life of leprosy patients.

Methods: This is a 1 year cross-sectional study among leprosy patients and randomly sampled 75 patients with other dermatoses. WHOQOL-BREF was used, which is an international measure of the quality of life exploring the physical health, psychological, social relationship and environment of the patients. Data analysis was done using SPSS; Independent T-test and One-Way Anova to determine the significant difference of quality of life between the groups.

Results: Leprosy patients revealed significantly poorer overall quality of life and domain mean scores compared to control ($p<0.05$). Within the leprosy group, the demographic status (age, gender, marital status, educational attainment) of the patients did not significantly affect their overall quality of life. The QOL was significantly lower in single patients with respect to social domain ($p=0.046$); and in elementary and highschool graduates with respect to environment domain ($p=0.018$). Patients belonging to the tuberculoid pole and lepromatous pole had the same impact on their QOL. Patients with Lepra reaction had poorer physical health ($p=0.03$), social relationships ($p=0.019$), environment ($p=0.028$) and overall domain ($p=0.015$); especially those with Erythema Nodosum Leprosum (ENL) had severely affected quality of life affecting their overall mean scores ($p=0.02$), and physical health ($p=0.01$) and environment domain scores ($p=0.04$).

Conclusion: The result of this study, the first done in a dermatologic government institution in the Philippines proved the detrimental effect on the quality of life of leprosy patients, especially those with Lepra reaction, affecting signifantly those with ENL; single patients on social relationships and elementary and highschool graduates on environment domain. Comprehensive care must be provided for Leprosy patients to reduce the stigma attached to Leprosy.

P-208

THE EXTRAORDINARY CHANGE AS A SOCIAL MAJORITY IN KOREA

Presenter: Kil Yong Lee

K.Y.Lee[1]

[1] President, The Korean Federation of Hansen Associations (KFHA), Seoul, Korea. Republic Of

Objectives: Those affected by HD (HD people) as known as leprosy, who were socially segregated in Korea, hammered away at imminent issues by themselves and have legislated the Hansen-related law by suggesting to the government together with the National Assembly. Making a role model for this fruitful movement, it is important to learn about the paragon of messages for many HD prevalent countries in the world so that they can carve out for their challenges positively as HD people have been strived in Korea.

Methods: For the first time, HD people had initiated a livestock-raising business in the resettlement villages with financial assistance from government, Christian communities and foreign charitable organizations. With this seed money, we incredibly achieved the self-support as spiritual and socio-economic rehabilitation. HD people never do

anything to accomplish if we could not be united together. Based on this grit, our solidarity facilitates to make our voice heard to the Korean government and society.

Results: 1.Recuperation of the social status of HD people through various activities
2. Enhancing integration into the general public and improving the welfare system tailored to HD people
3. Participation in the policy-making program and revising the law
4. Promotion of HD People's human rights and welfare around the world

Conclusion: Focusing on the shaping for a better future, KFHA is the driving force to struggle to protect human rights and promote the quality of life. On the basis of valuable motivation, we understand that our unified big voice bring about better than expected. Accordingly, it is most important to acknowledge that we should work out our own hardship. When we enthusiastically tackle the HD issues, we are able to integrate into the general public and have become key members who can make a strong voice to society. Further, I think these advanced experiences in Korea should become an ideal pattern for other countries.

P-209

DETERMINANTS OF YOUTH EMPLOYMENT IN LEPROSY COLONIES OF DELHI

Presenter: Phoebe Manova

M. Phoebe[1], M.S. Raju[2], Santosh[1], Anjum[1] and Sarah Rao[1]

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Introduction: Community Intervention Unit (CIU) is a Project of The Leprosy Mission Community Hospital, New Delhi. It is working with 29 leprosy colonies of Tahirpur in Delhi covering North East Districts of Shahdara. The project conducted a baseline survey on youth unemployment. The findings showed that there is an increase in the drop out rates among youth, unemployment rate was high in the age group of 18 to 30 years. The youth were addicted to smoking & alcohol and involved in criminal practices. Most of the youth are from dysfunctional families which resulted in a low self-esteem. A Research has been designed with the following objectives;

Objectives: To study the youth attitudes towards education, skill employment & Job placements

Methods: The sample size will include 200 youths between the age group of 18 to 35 years from 29 colonies of Tahirpur leprosy colonies. Focussed Group Discussion and Descriptive In-depth interviews will be conducted with the youth and their families along with community leaders of the leprosy colonies. A structured set of questionnaires will be developed to understand the Knowledge, Attitudes and Perspectives of the youth and the communities on youth employment.

Results: The comparative study of boys and girls of leprosy colonies of Delhi would bring out the responsible factor of unemployment among the youth and also this knowledge would help us to plan an effective intervention in the leprosy colonies to address the gender disparities.

Conclusion: This intervention will help us to understand the communities, like-minded organizations and the Governments initiatives towards youth unemployment.

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LONG TERM FOLLOW UP OF SOCIO ECONOMIC INTERVENTIONS IN A TERTIARY LEPROSY HOSPITAL

Presenter: M. Sathish Kumar Paul

M. Sathish Kumar Paul[1], R. Santhosham[1], P. Samuel[1], J.D. Raja Samuel Bushanam[1], Jerry Joshua[1]

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Objectives: To determine the impact of socio economic interventions and in leprosy affected patients

Methods: A survey was conducted in 2008 in the area served by the Community Health department covering 6960 persons with any disability and also all persons with leprosy. Empowerments of these patients were done through socio economic interventions in patients identified through the survey. A resurvey was conducted to identify the impact the interventions covering the same population in 2018.

Results: There was a significant improvement in the participation of patients as elicited by the Participation (P). Scale scores. Improvement was also seen in the Screening of Activity Limitation and Safety Awareness (SALSA) Score. This improvement in score was seen in both the leprosy affected as well as differently abled individuals.

Conclusion: The long term follow up of the patients after a gap of 10 years, showed improvement in both the participation of affected individuals and safety awareness. This shows that similar model can be replicated in other areas. Long term tangible benefits to the individuals and society is possible by empowerment of the leprosy affected and differently abled through socio economic interventions.

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STIGMA AND SOCIAL DISTANCE OF PEOPLE TOWARDS PEOPLE AFFECTED BY LEPROSY IN A COMMUNITY

Presenter: Siramas Rodchan

Siramas Rodchan[1], Silatham Sermrittirong[1] ,Pojana Thanyakittikul[1] ,Shutiwan Poladech[1]

[1] Raj PrachaSamasai Institute, Department of Disease Control

Objectives: This research was conducted to study stigma and social distance of community members towards people affected by leprosy in 5 regions of Thailand namely central, eastern, northern, north-eastern, and southern.

Methods: Explanatory Model Interview Catalogue (EMIC) and Social Distance Scales were used to collect quantitative data in 675 calculated subjects which were selected by simple random sampling. Descriptive Statistics such as frequency and means; and Inferential Statistics such as Chi-square and Logistic Regression Analysis were used to analyze the data.

Results: It was found that there was a social distance at moderate level (Minimum-Maximum and median were 0, 21 and 11 respectively). According to Logistic Regression Analysis; predictive factors of a social distance of community members which were knowing leprosy through another people (Adjusted OR = 2.3 p=.013) and knowing leprosy through media (Adjusted OR = 2.8 p=.032) contributed to the chance of community members to have social distance 2.3 and 2.8 times. Perceiving that leprosy caused by hereditary and germs (Adjusted OR = 2.3 p=.012) contributed to the chance of community members to have social distance 0.3 times. Perceiving that leprosy was incurable contributed to a chance of community members to have social distance 2.3 times.

Regarding stigma study, it was found that there was stigmatization at moderate level (Minimum-Maximum and medians were 0, 30 and 14 respectively). According to Logistic Regression; predictive factors of community members' stigma, people with age below or equal to 50 (Adjusted OR = 0.2 p=.007) and age 51-60 (Adjusted OR

= 0.2 p = .009), had a chance to have stigma 0.2 times. Not having leprosy relatives (Adjusted OR = 0.4 p=.013) and not having leprosy community members (Adjusted OR = 0.4 p <0.001) contributed to stigma against leprosy 0.4 times. Perceiving that leprosy caused by breathing the same air as people with untreated leprosy (Adjusted OR = 1.8 p=.043) and perceiving that leprosy caused by sharing the same meal as people with leprosy (Adjusted OR = 2.7, p=.001) had a chance to have stigma 1.8 and 2.7 times. Perceiving that leprosy was incurable (Adjusted OR = 0.5 p=.018) had a chance to have stigma 0.5 times.

Conclusion: In conclusion, misperception that leprosy is incurable (some of them perceived that having disabilities means incurable) are key factors contributing to social distance and stigma against people affected by leprosy. Related project should be implemented to establish community members' right perception about leprosy.

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COMMUNITY BASED INCLUSIVE DEVELOPMENTAL MODELS IN 3 BLOCKS OF CUDDALORE

Presenter: Manivannan Govindarajlu

G. Manivannan [1], Tina Mendis [1]
[1] The Leprosy Mission Trust India

Objectives: To develop community based inclusive development models in Cuddalore district to promote social inclusion of people affected by leprosy

Methods: Community based inclusive development models were developed in Cuddalore district in Tamil Nadu, The Leprosy Mission Trust India's community project called Partnership Advocacy Research and Training towards Inclusion (PARTI) project had been initiated in 3 blocks of Cuddalore. These models primarily focused on Community based Disability Management, Inclusive Education, and Social Inclusion and Disabled friendly environments for people affected by leprosy and other disabilities.

Results: Through the models implemented, several good and effective practices were developed. They were (a) Early intervention for management of children with disabilities (b) Children's Parliament for inclusion of marginalized into communities (c) Accessible environments (toilets, schools, Government buildings) for increased participation and dignity of people affected by leprosy and disabilities in mainstream society and (d) inclusive sports and festivals for social inclusion of people affected by leprosy and disabilities in their communities.

Conclusion: These innovative models can be replicated to promote social inclusion and to increase participation and dignity of the marginalized groups like people affected by leprosy and people with disabilities, children and women. Also these models can be used as evidence based advocacy tool to promote inclusion of people with leprosy and other disabilities. Such models, where society itself takes responsibility to initiate change, prove to be sustainable even beyond the study period.

P-261

KNOWLEDGE ABOUT LEPROSY OF PATIENTS TREATED AT A REFERENCE CENTER IN RIO DE JANEIRO BRASIL

Presenter: Ximena Illarramendi

X Illarramendi[1], L.P.R. Do Nascimento[2], A.M Sales[2],
[1] Center for Technological Development in Health (CDTS), Oswaldo Cruz Foundation (Fiocruz), Rio de Janeiro, Brazil; [2] Oswaldo Cruz Institute, Fiocruz, Rio de Janeiro, Brazil

Objectives: To evaluate the knowledge about leprosy in a group of patients attended at a reference center in Rio de Janeiro.

Methods: Observational cross-sectional study with adult patients affected by leprosy, at different stages, followed at the Souza Araújo Outpatient Clinic (SAOC), Oswaldo Cruz Institute, Rio de Janeiro. The SAOC is a reference centre for leprosy that attends patients from Rio de Janeiro and neighbouring cities. It has a multidisciplinary team of dermatologists, neurologists, nurses, physiotherapists, pathologists, immunologists and social workers. As a routine, every patient receiving treatment at the Clinic has an education session on leprosy with the social worker and receives health education during clinical appointments. After voluntary and informed consent, the patients were interviewed with an adapted validated questionnaire.

Results: A total of 195 patients, 67.7% male, mean age 49.2 (±15.2) were interviewed. Most of the patients were born in the State of Rio de Janeiro (64.1%), 45.1% were employed and 49.2% had incomplete primary schooling (less than 9 years of study). Most patients (63.6%) had looked for information about leprosy but only 40.5% referred to know about the cause of the disease. Out of the 79 patients that referred knowing the cause, 88.6% told the correct cause: bacteria, bacilli or microorganism. Asked about how they get the disease, 62.1% said they knew, but in fact only 4.9% knew the correct form of transmission. For 68% of the cases, transmission was via the air or wind. Most patients knew several signs and symptoms of the disease (83%), mainly skin patches (38%), numbness (33.2%) and pain (24.6%). A few (2%) mentioned sadness and frustration as part of the symptoms of the disease.

Conclusion: In spite of continuous health education, there is an apparent lack of knowledge about their disease by leprosy patients. The main education session is at the beginning of treatment when the patient is usually disrupted by the diagnosis, which prevents him/her from understanding. The patients should be multipliers of information to their family, colleagues and friends because they are the source of contacts that need to be surveilled in order to control leprosy. Therefore, more accessible and adequate means of health education are needed.

P-285

MDT CONSUMPTION AND PATIENTS PERCEPTIONS BOTH PHYSICAL AND PSYCHO-SOCIAL IMPACTS IT CAUSES IN THEM

Presenter: Preethi Suresh

Preethi Suresh[1], Suresh Herbert[2]

[1] Senior physiotherapist TLM Hospital Dayapuram; [2] Deputy Superintenedent TLM Hospital Dayapuram.

Objectives: To find out what are the patients experiences while consuming MDT the physical and psycho -social effects they face with.

Methods:
Study design: A quantitative type
Target group: New Leprosy affected patients both PB &MB who come to TLM and who are consuming MDT from the 3rd dose observation will be from period of January to June.
Data collection tools: questionnaire &focus group discussion
Study population: New leprosy cases on MDT who come to Tlm.
Inclusion criteria: Age 10 to 65 male, for children their parents or guardian will be explained females, PB/MB, participant will be studied from the 3rd month to 24 month .
Exclusion criteria: above 70 years patients.
Study will be at TLM Hospital India
Interview piloted checklist
Cross tabulation between levels of experiences in mental health status and physical health status the co – relation will be observed.

An informed consent will be obtained from the participant in his /her local language stating the purpose and a full explanation about study. Signed participant consent will be obtained, participant who refuse to participate without reasons will be respected.
For illiterate participants, Thumb impression will be obtained as signature.

Results: During the study it was observed that through out the course the patients were mentally upset and showed depression.The darken Skin, ichysiosis,red urine,blakish stools were all a significant change they noticed and were scared and ashamed -off Such reasons made patients avoid going for jobs,inability to go for work caused severe economic plunge. Some went for jobs but had to change their work condition do lighter jobs as they became tired,exposure to sunlight further darkening skin giddeness,increased thirst,frequent urination all was a hindrance.Dapsone syndrome or Rifampicin allergy patients had partners who avoided sexual activity.

Conclusion: Patients undergo changes while on MDT there is a silent voiceless cry they bear with as there is no other choice to make in treatment this effects their lives and they get dislocated from the community, these changes effect them physically, mentally psychologically. It is sad that though they try to hide their disease the effects during treatment makes them exposed in public considering all these in mind the health care sector needs to over look their problem be more understanding and address them compassionately.

P-299

CONCEPT OF CURE IN LEPROSY

Presenter: G. Vijayasekar

G. Vijayasekar
POID coordinator and Physiotherapist, The Leprosy Mission Trust India.

Objectives:
General: To understand the concept of cure in terms of understanding, belief and expectation in Leprosy.

Specific: To compare the concept of cure in leprosy according to patients and community with scientific concept of treatment providers.

Methods: This study deals with the objective to understand the concept of cure in leprosy according to the patients who receive treatment, treatment providers, the patient's family members and community. The proposed cross-sectional study will be conducted in TLM Purulia. A sample no: of 60 cases will be studied through Interview method. A designed questionnaire will be used for data collection. The collected data will be prepared in cross tables from various concepts against the background of the respondents.

Results:
- This study attempts to deliver the local concepts of cure in leprosy among patients, care providers and family of the patients.
- Increase the faith and clear the uncertainty of treatment for leprosy by the treatment takers.
- Help in Modifying/Update the intervention provided
- Reduce the stigma regarding leprosy.

Conclusion: Even though the person had been medically cured. Unless the society clarifies the uncertainty about treatment and accepts them as a cured person, provided treatment as cure, it won't help the completion of theme Leprosy is curable.so this study will help the service providers to update on the understanding and expectation of treatment available for leprosy cure by the clients. Based on that intervention to be provided can be modified /updated.

P-308

PSYCHIATRIC MORBIDITY AMONG LEPROSY AND NON-LEPROSY PEOPLE IN A THARU COMMUNITY: A COMPARATIVE SOCIAL STUDY IN NEPAL

Presenter: Ganesh Maya Shrestha

G.M. Shrestha[1*], C. Sharma[1], S. B. Sunuwar[1], S. Kandel[1]

[1] The Leprosy Mission Nepal, Satdobato, Lalitpur, Nepal

Objectives: People affected by leprosy have severely been discriminated and restricted for socio-economic and cultural activities in the rural settings. Thus suffering from leprosy can bring stigma within the People affected by leprosy and cause psychological morbidity. The study aimed to better understanding psychological morbidity in people affected by leprosy and people not affected by leprosy.

Methods: The study was carried in Self-Help Group (SHG) and as relative control non-SHG members during October-December 2018 in a Tharu community of Kailali district in Far-Western Nepal.Psychological morbidity of the SHG members was assessed using the General Health Questionnaires-12 (GHQ12). GHQ12 is a questionaries' with 4 items scored as a scale of 0, 1, 2 and 3 and represents higher the score more is the morbidity. The range of possible scores is 0-36. The score ≥ 13 is regarded as psychological morbidity. SHG members had already been trained and oriented with effective measures and facts that leprosy is treatable and for the prevention of stigma against leprosy in community.

Results: Total (n=52) People affected by leprosy (mean age=43.7±14.2 years; median=42.5 years; R=15-74 years; male=29; female=23) and 100 non-People affected by leprosy (mean age=41.2±9.5 years; median=40.5 years; R=19-65 years; male=18) from SHGs and 100 community members (mean age: 32.5±10 years, median=32 years; R=15-50 years; male=49; female=51) were enrolled. Kruskal-Wallis test revealed that there was significant difference between mean scores of People affected by leprosy (mean=14.4) with both non-PAL SHG members (mean=10.7, $p<0.01$) and community members (mean=9.4, $p<0.001$) in Tharu inhabitants. Regarding total score ≥ 13 as measure for psychological morbidity, the proportion of psychological morbidity was 57.7% in People affected by leprosy, 26% in non-People affected by leprosy ($p<0.001$ compared to People affected by leprosy) and 20% ($p<0.001$ with respect to People affected by leprosy) in the community members. Age was found the positive correlation to psychological morbidity however gender had negative correlation. For all participants, Spearman correlation coefficient between age and GHQ12 score demonstrated moderate correlation of 0.38 ($p<0.001$) with increase in 1.7 score for every 10 years increase in age, means increase in age led to increase in morbidity.

Conclusion: The psychological morbidity was similar in people affected not affected by leprosy SHG members and community members in Tharu rural settings. However, it is significantly higher in People affected by leprosy. The higher psychological morbidity is positively correlated with age.

P-309

BARRIERS TO SCHOOL EDUCATION FOR SCHOOL STUDENTS AFFECTED BY LEPROSY AND DEPENDENTS OF PEOPLE AFFECTED BY LEPROSY

Presenter: Pradipa Sharma

P. Sharma[1], R. Thapa[1], C. Sharma[1], R. Rawal[2]

[1]The Leprosy Mission Nepal; [2]Association for IDEA Nepal

Objective: To identify the barriers of the person affected by leprosy and the students with disability to attain education in schools of Nepal.

Methodology: Randomized sampling method was used which included survey questionnaires to 160 school students supported by The Leprosy Mission Nepal. Survey questions included accessibility, participation, distance to school, disclosure of diseased status of self or parents, distance to schools, treatment of teachers etc.

Result: 160 were surveyed students (43 % male and 57 % female) were enrolled in the study of which 87 % were students affected by leprosy and rest(23%) of the students living with disabilities. Break in Education: There is 12 % drop out rate of students affected by leprosy which is higher in males (16.39 % than in (8.97%) females. Poor economic condition was the reason as responded by the participants. Self-stigma pertains to the fear of stigmatizing once disease condition of self or the parents is disclosed. 94.67 % of (out of 139) the students have not disclosed either they or their parents have leprosy. The average travelling time for students affected by leprosy was 29 minutes and that living with disabilities is 23 minutes. Approximately 21 percent of the leprosy affected students did not feel that their education was relevant to their skills required for their job in future. 11 % of the students also experienced some kind of bullying in the schools they attend.

Conclusion: Education is integral part of personal development which starts from home, school which provides life skills to find employment and personal satisfaction in life. There are several reasons all the young people do not have equal opportunities to gain quality education that can help them to steer through life and students affected by leprosy and the children of people affected by leprosy find several challenged for several reasons to adjust themselves in present Nepali education system. Developing guidelines and protocols and implementing those for the inclusion of children affected by leprosy and disabilities could help those seeking to learn and gain better education.

P-322

OUTCOME ASSESSMENT OF EDUCATION PROGRAM OF DISABLED FRIENDLY SCHOOL ENVIRONMENT

Presenter: Dalwor Hossain

Dalwor Hossain
Community programs, DBLM hospital, Notkhana, Nilphamari 5300, Bangladesh

Objectives: To assess the outcome of education program of disabled friendly school environment in 4 districts of North West Bangladesh.

Methods: 2875 schools have been surveyed to assess outcome of education program of disabled friendly school environment in 4 districts of North West Bangladesh. 5 interviewers have been selected from each Sub-district who is disabled by leprosy and other than leprosy. The interviewers have been trained about questionnaire to fill up and ideal disabled friendly education environment. Permission for outcome survey has been obtained from Government officials. The interviewer visited the schools that have been discussed one year ago and they asked teachers on the issues of questionnaire to know the outcome of each area and recorded.

Results: Out of 2875 schools 1126 (39%) teachers have told that their knowledge on teaching disabled student and allowing them in playing has been increased. Teachers of 1424 (50%) schools have agreed that their knowledge on Ramp, wider door, enough light and proper sound in favor of disabled student have been increased after our discussion. Teachers of 1515 (53%) schools have told that their knowledge on importance of extra care and peer education for disabled student has been increased. Teachers of 1398 (49%) schools also told that their knowledge on importance of involving disabled student in playing with other student have been increased. 971 (34%) teachers also told that they came to learn about the allowances facilities from Government for disabled student.

Conclusion: Education and training are very important for Inclusive education in Bangladesh. Present Government is very positive for the people with disability and their development. Training on disabled friendly education environment for inclusive education among teachers and education department staff is very essential in Bangladesh. This training on disabled friendly education environment can give much better impact on disabled student on their learning and development.

P-326

GENDER AS AN INFLUENTIAL VARIABLE IN LEPROSY: A MIXED METHOD STUDY IN LEPROSY CARE SERVICES IN NEPAL

Presenter: Jeni Maharjan

Hannah Gardiner[1], Jeni Maharjan[2*], Indra B. Napit[3], Deanna A. Hagge[2], Anja Krumeich[1]

[1] Maastricht University, Faculty of Health, Medicine and Life Sciences; Department of Health, Ethics and Society; Maastricht, The Netherlands; [2] Mycobacterial Research Laboratory, The Leprosy Mission Nepal, Lalitpur, Nepal 3 Anandaban Hospital, The Leprosy Mission Nepal, Lalitpur, Nepal

Objective: With males representing approximately two thirds of annual new cases, gender is an influential component of leprosy in Nepal. This study aims to assess the effect of gender on clinical outcomes, delay in diagnosis, and economic impact, in addition to the role of stigma and discrimination in medical misconceptions and facilities.

Methods: This study was conducted at Anandaban Hospital, a central leprosy referral hospital in Nepal. This is a mixed method study of concurrent triangulated design, where qualitative and quantitative studies were carried out separately, with results later integrated. For quantitative study, medical charts for inpatients were reviewed from July 2016 to December 2017. From the medical charts: demographic factors, Bacterial Index (BI), World Health Organisation (WHO) and Ridley Jopling classification were analysed. For qualitative study, 20 (10 each for male and female) individual face-to-face interviewed with semi-structured questionnaires.

Results: For the quantitative analyses, a total of 875 inpatient charts were reviewed with a male: female ratio of 2.9:1. BI, WHO and Ridley-Jopling classification trends were similar between genders, overall: roughly 40% BI+ with average BI 3.3; 93% MB; Borderline Tuberculoid (BT) (47%, 387/820), Lepromatous Leprosy (LL) (22.6%, 186/820), and Borderline Lepromatous leprosy (BL) (16.9%, 139/820). For qualitative assessments, females (age average 31.9, range 19-40 years) and males (age average 33.3, range 24-45 years) were interviewed (total group average 33 years). Roughly half of each gender (11 total) reported a delay in diagnosis >6 months, with 6 years being highest. For most (50%) leprosy was unknown prior to diagnosis; but if known, only males knew. Both genders reported similar difficulty in working due to swelling of extremities (8 male: 6 female); while 5 male and 2 females reported income loss. Confidentiality issues with health workers regarding fears of disclosure within their community were mentioned by 13 (7 male: 6 female). None mentioned stigma among family members, although 2 dropped out of school after diagnosis. Ten patients (4 male: 6 female) mentioned encountering misconceptions and inadequate knowledge about leprosy among health professionals.

Conclusion: Gender differences across the globe are not only influenced by social status or economic factors but also in health seeking behaviour by both genders in different cultural settings. Gender differences were not observed in clinical trends; whereas gender-related socioeconomic and cultural factors were observed. Qualitative analyses highlighted detrimental delays in diagnosis and the need for improved awareness programs. Training health professionals in confidentiality and better counselling could aid in reducing social stigma.

P-328

LEPROSY PERCEPTIONS AND PRACTICES IN THE COMOROS AND MADAGASCAR: PRELIMINARY FINDINGS FROM THE PEOPLE-TRIAL

Presenter: Maya Ronse

M. Ronse[1], D. Ahmed[2], S. Grillone[2], A. Bako[2], A. Younoussa[2], B. Cauchoix[3], B. de Jong[1], E. Hasker[1], K. Peeters Grietens[1]

[1] Institute of Tropical Medicine, Antwerp, [2] Action Damien, Comoros, [3] Fondation Raoul Follereau

Objectives: In its 2016 -2020 global leprosy strategy, WHO advocates for more research into optimal implementation modalities of post-exposure prophylaxis (PEP), to curb transmission. The PEOPLE clinical trial ("Post ExpOsure Profylaxis for Leprosy on the Comoros and Madagascar") aims at researching the optimal PEP implementation modalities in the Comoros (Anjouan and Mohéli islands) and in Madagascar (district of Miandrivazo). Interestingly, in contrast with intensively researched areas like India, Indonesia, Nepal and Brazil, no literature has been published in the PEOPLE study areas on local perceptions of leprosy, practices related to the disease and on the dimension of stigma which is very often associated to the condition in the literature. In this presentation we aim to provide a closer understanding of some of these local perceptions and practices in the intervention areas of the trial, in order to assess the context in which such a clinical trial enfolds.

Methods: Ethnographic research was conducted, using data collection techniques such as interviewing and participant observation. Informants were sampled following multiple purposive sampling techniques. Analysis was retroductive.

Results: Preliminary results will be presented from fieldwork carried out end of 2018/2019 in the Comoros and Madagascar. Local perceptions and practices concerning leprosy, its etiology and health seeking behavior will be described as well as general implications in everyday life like social integration and stigma of affected people and/amongst their relatives. Some elements of comparison will be presented between the different geographical and cultural contexts and how these might be relevant to the implementation of the PEOPLE trial.

Conclusion: We will formulate conclusions and recommendations for future interventions targeting leprosy elimination based on the results from ongoing fieldwork.

P-340

ASSESSMENT OF QUALITY OF LIFE AMONG LEPROSY PATIENTS WITH GRADE-2 DEFORMITIES IN A RURAL AREA IN WEST BENGAL (INDIA)

Presenter: Rani Chatterjee

Rani Chatterjee[1], Baniprasad Chattopadhyay[2]

[1] N.R.S. Medical College, Kolkata, WB,India, [2] B.S.Medical College, Bankura WB India

Objectives:
i. To determine the pattern of deformities of the patients with G2 D
ii.To determine predictive factors for G2D
iii.To find out effective treatment modality to prevent G2D
iv.To assess the effect of stigma on the socioeconomic life of person affected
v. To find out the quality of life (QOL) among the study population

Methods;

- ***Study type*** – It is a community based descriptive study
- ***Study design*** – Cross sectional design

- ***Study population*** **–** Leprosy patients of both genders living at Kalyanpur and Mangalchandi leprosy colony with Grade II Deformities irrespective of their social and treatment status . These are rehabilitation colonies adjacent to Gouripur Leprosy Hospital , Bankura,west Bengal ,India (Asia's largest leprosy hospital)
- ***Sample size*** **–** Sample Size (SS) of the proposed study will be calculated based on the formula used for incidence study and then applying correction factor for finite population.
- ***Sampling*** **-** *Simple* random sampling; List of patients having G2D will be obtained which will provide the sample frame. 65 patients will be selected randomly using computerised random number table.
- ***Study tools –***

  a. Predesigned and pretested semi-structured schedule containing baseline information and data during follow up on deformity pattern and socio economic status, social acceptance, treatment etc.

  b. WHOQOL-BREF 2 general questions and remaining 24 questions divided at four domains physical, psychological, social relation and environmental. Domain scores will be calculated and higher score will indicate a better quality of life

Result: Detail analysis will be presented at congress

Conclusion/s: Introduction of MDT has decreased the cases of Grade II Disability, but due to multifactorial reasons deformities still persist, leading to social stigmas and rejection from family/society thereby leading a poor quality of life. The study to be conducted shall give a better idea about the causes, progression of Grade 2 Deformities, their relation with the MDT, self care and other therapeutic as well as POD (prevention of disability) management. Also, further works can thus be carried out regarding the role of community participation to overcome social stigma which will increase patient's compliance to treatment and thus improving the quality of life. Periodic assessment of quality of life of leprosy patients with G2D will help the strategy making agencies to decide future planning to overcome discrimination and to develop self respect in patients with G2D

P-350

INTERFAITH TEAMS FOR LEPROSY CONTROL: REACHING THE UNREACHED

Presenter: Cletus Praveen Gomez

C.P. Gomez[1], M.S.D Wijesinghe[2], M. de Silva[2], M. Perera[1], J.A. Williams[1], R. Ravindran[1]

[1] Alliance Development Trust, [2] Anti-Leprosy Campaign, Ministry of Health, Sri Lanka

Objectives: Stigma and discrimination due to leprosy are still prevalent in Sri Lanka leading to delay in diagnosis, defaulting and impeded contact screening. The type of stigmatisation and discrimination varies among different communities and religious groups posing a challenge in addressing them simultaneously. Regular access to some rural communities by a member of health staff is also found to be difficult due to remoteness. The objective of this abstract is to present the findings of the implementation of the multi-district interfaith teams used to reduce stigma and discrimination, and leprosy control activities in the country.

Methods: By conducting a desk review and a multi-stakeholder meeting all the necessary partners and their activities were identified. Using a modified-Delphi technique, the activities were prioritised to be implemented in each district. A national interfaith forum was held and each district Leprosy Control Public Health Inspector was given the responsibility of developing a yearly action plan with the district interfaith team. The composition of each interfaith team consisted of a Buddhist priest, a Catholic or Christian priest, a Hindu priest and a Muslim Maulana. Based on the yearly action plan separate activities were decided for each district to be evaluated after one year.

Results: Twenty-five district teams were implemented, and all districts participated in the activity (n=25, 100%). Following first-year evaluation the overall success of the proposed activities was 56%, (n=14). The activities that had the highest performance was community awareness and awareness at religious institutions. The highest number of activities and participation was reported from Monaraga and Kandy districts (6 programmes, n=2255 and 7 programmes, n=1499). The contact tracing percentage of the districts with interfaith activities was high, and it varied from 85%-100% compared to districts that have not implemented them which varied from 73%-85%. The community participation of the activities in the second year exceeded the first year (n=5386 vs n=4060).

Conclusion: The interfaith team model is a successful sustainable concept that can be used to reduce stigma and discrimination due to leprosy in communities. It is also useful in a remote rural area where regular access is limited to health staff to increase the contact tracing activities in districts.

P-364

PREVALENCE AND DETERMINANTS OF MENTAL WELLBEING AMONG THE PEOPLE AFFECTED BY LEPROSY

Presenter: Immanuel Jacob

Immanuel Jacob[1], Kartikeyan[2]G, MS Raju[3], Joydeepa Darlong[4]

[1]Counsellor, The Leprosy Mission Hospital , Vadathorasalur; [2] Research coordinator, The Leprosy Mission Trust India; [3]Social Scientist , The Leprosy Mission Trust India; [4]Head – knowledge Management, The Leprosy Mission Trust India

Objectives:
- To identify the Prevalence of Mental Well Being Issues faced by People affected by Leprosy
- To list the Factors associated with Mental Well Being problems and
- needs analysis of the affected community.

Methods: A multi-centric cross sectional study will be carried out in 6 leprosy endemic states of India viz. Bihar, Maharashtra, West Bengal, Uttar Pradesh, Delhi and Tamil Nadu.

This study will identify the various Determinants of Mental Health Issues among the leprosy affected people. The PHQ9 questionnaire will be used to screen prevalence of Anxiety and Depression among the cases. Disease profile like leprosy classification, deformity grade, number of patches and site of the patches and socio-economic status will also be collected. Analysis of the data will be done by EPIinfo by standard statistical methods

Results: The results are expected to be presented at the Conference.

Conclusion: The findings of the research will provide evidence to explain the prevalence and the determinants of mental health problems faced by the target groups which is essential to decide the need and type of mental health care services.

P-385

APPELLATIONS NOSOLOGIQUES DE LA LEPRE ET LEURS IMPACTS EN TERMES DE STIGMATISATION AU BENIN

Presenter: Ronald Setondji Grimavo

R. S. Gnimavo[1], G. E. Sopoh [2], A. Amoussouhoui[3], J-G. Houezo[3], P. Djossou[4], Y. Barogui[3], J. R. Johnson[4].

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Objectifs: Cette étude avait pour objectif d'évaluer le niveau de connaissance des communautés béninoises sur la lèpre, de décrire les appellations nosologiques de la lèpre et leurs impacts en termes de stigmatisations.

Méthodes: Il s'agissait d'une étude transversale qualitative menée du 1er Février au 31 mars 2018 dans les différents départements du Bénin. Nous avions utilisé une méthode non probabiliste avec la technique de choix par commodité pour administrer un questionnaire aux individus vivants dans les communautés des personnes affectées par la lèpre. Les données qualitatives recueillies ont fait l'objet d'un traitement manuel.

Résultats: Au total 60 participants ont été inclus. Leur âge moyen était de 33,7±8,57 ans avec une prédominance féminine (sexe ratio = 0,54). Pour 85% des enquêtées, la lèpre se manifestait précocement par des infirmités. L'envoutement était la cause de la lèpre dans 90% des cas. La lèpre est nommée selon les groupes socio-ethniques par des appellations illustrant une punition divine, la peur ou le rejet, à l'instar des Yindé chez lesquels la lèpre est nommée « OUWENENTO », ce qui veut dire la flamme de Dieu qui brûle et consume le malade. La présentation physique et la peur de la contamination étaient majoritairement la cause du rejet du malade de la lèpre.

Conclusion: Cette étude révèle la nécessité de sensibiliser la population sur les signes précoces de la lèpre mais aussi sur l'urgence de promouvoir des interventions pour bannir les discriminations à l'endroit des personnes affectées par la lèpre.

P-388

ASSESSMENT OF KNOWLEDGE, ATTITUDE & PRACTICES OF NEWLY DIAGNOSED LEPROSY PATIENTS AND THEIR CONTACTS AT LALGADH LEPROSY HOSPITAL & SERVICES CENTRE, LALGADH DHANUSHA, NEPAL

Presenter: Arbind Sah

A.Sah, B. Shrestha, B. Sah, G. Mahra

Nepal Leprosy Trust, Lalgadh Leprosy Hospital & Services Centre, Lalgadh, Dhanusha, Nepal

Objectives: The objective of study is to:

1. Determine the level of knowledge, attitude & practice about leprosy among new patients and their contacts.
2. Explore appropriate methods for an effective IEC campaign.
3. Determine the level of awareness and need of IEC campaign for them.

Method: This is a cross sectional study intended to be conducted on newly diagnosed leprosy patients and their contacts/attendant/family members at the outpatient department of Lalgadh Leprosy Hospital and Services Centre (LLHSC), Nepal. It is based on explorative research design in which Convenience Sampling technique will be applied. All new adult leprosy patients diagnosed during the period from January to May 2019 at outpatient department of LLHSC and their contacts will have equal opportunity to participate in the study. Details of these patients and their contacts will be recruited by the investigators on same day of diagnosis. The participants will be interviewed by a pre-tested structured questionnaire. Responses on knowledge, attitude and practices about leprosy will be recorded for both the newly diagnosed leprosy patients and their contacts/family members. Both patients and contacts/family members will be interviewed by administering the questionnaire personally at the hospital premises. Each respondent will be briefed about the purpose, importance and usefulness of this study in assessing their understanding about its socio-cultural and medical implications. An informed consent will be obtained from those who will be willing to participate in the study before enrollment. The participants will have freedom to quit the study anytime during the study period.

Result: The collected data will be entered into either a database designed in EPI-Info or Ms. Excel and analysis will be performed. Basic demographic and morbidity details of the respondents such as age, sex, literacy, occupation, disease status, knowledge attitude and practices pertaining to the disease etc will be ascertained. Further analysis will be performed with appropriate descriptive statistics. The results will be available after the completion of the study and will be presented at the International Leprosy Congress in Manila.

Conclusion: Conclusions generated from study will form a strong basis for planning, service provision, and implementation of existing or new IEC activities.

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PARTICIPATORY CAMPAIGN IN MOZAMBIQUE TO FOSTER UNDERSTANDING OF HUMAN RIGHTS AND INCLUSION AMONG PEOPLE WHO HAVE EXPERIENCED LEPROSY

Presenter: Paulo Hansine

P. E. Hansine[1], J. A. José[2]

[1]AIFO Mozambique, [2]IDEA Mozambique

Objectives:

- To use a participatory campaign to increase people's understanding of their human rights
- To capitalize on a regularly scheduled activity to introduce the advocacy and promotion of the social, economic and cultural rights of people affected by leprosy

Methods: Participatory video-recording techniques; video-recording testimonies; discussions

Results: Workshops were conducted in six districts--three in Nampula Province, the most leprosy endemic province in Mozambique, and three in Manica Province. They were included as part of the self care groups' monthly meeting. (Nampula is the only province with self care groups.) During the workshops people were trained on video-recording and used their new skill to collect testimonies from each other. Information was provided on the UN rights of people affected by leprosy. The workshops were facilitated by the IDEA Mozambique Coordinator and AIFO Mozambique Coordinator, who were trained in Niger as part of an LRI tri-country project. Below is information on the participants.

- Nampula Province: Mogovolas (43 people-33 men and 10 women); Rapale (39 people-27 men and 12 women); Murrupula (49 people-36 men and 13 women). Out of the total 131 participants, 30 were family members and 55 were less than 40 years old. An additional 21 individuals who were diagnosed on the day of the workshop also attended. (NOTE: Members of self-care groups are trained to recognize symptoms of leprosy and bring people they have identified as having symptoms to the meeting.)

- Manica Province: Agostinho Neto (11 people-5 men and 6 women); Tambara (10 people-6 men and 4 women); Cruzamento de Tete (11 people-2 men and 9 women); Dombe (40 people-19 men and 21 women). Out of the 73 total participants, 8 were less than 40 years old and 9 were family members. Participants from these provinces speak different languages, come from diverse ethnic groups with varied cultural backgrounds, and hold various beliefs about leprosy

Conclusion: Workshops can be tailored to successfully discuss information in a natural setting and cost- effective way during other routine gatherings, such as self-care groups. People introduced to the IDEA network who saw first-hand the value of advocacy and support, discussed formalizing an IDEA network at the provincial levels. Participatory video was successful across language, ethnicity and culture.

P-395

KNOWLEDGE, ATTITUDES AND PRACTICES OF BARANGAY HEALTH WORKERS IN MARAWI CITY REGARDING HANSEN'S DISEASE

Presenter: Aznaida Pandapatan

A.T. Pandapatan[1], B.L. Dofitas[2], J.K. Gatmaitan-Dumlao[2], M.K. Gervasio[2]

[1]Section of Dermatology, Department of Medicine, University of the Philippines-Philippine General Hospital; and Amai Pakpak Medical Center; [2]Section of Dermatology, Department of Medicine, University of the Philippines-Philippine General Hospital

Objective: To describe the knowledge, attitudes, and practices of Barangay Health Workers in Marawi City regarding Hansen's Disease.

Method: A cross-sectional study was conducted with two phases. Phase 1 is the Questionnaire Development Phase where the KAP questionnaire was formulated and administered to 6 Barangay Health Workers (BHWs). Phase 2 is the survey and focus group discussion where the final survey was done with 49 participants by convenience sampling and a Focus Group Discussion was done with 6 BHWs.

Results: Six BHW's answered the Phase 1 validation of the questionnaire, all scoring >75%. A total of 49 BHW's underwent the Phase 2 survey and 6 BHWs joined the FGD. The knowledge of BHWs were inadequate, only 6 (12%) passed with the score of >75%. Those with no first-hand experience in diagnosing leprosy tend to have lower attitude scores with odds ratio 16.5 and a p-value of 0.001. Those with higher educational attainment tend to have better scores in Practices with odds ratio of 0.229 and a p-value of 0.048. Those with less years of experience as BHW tend to have lower scores in practices with odds ratio of 4.017 and a p-value of 0.032. In the FGD, the BHW's expressed lack of training and the need for refresher courses on leprosy.

Conclusions: Knowledge about leprosy is low among Marawi BHWs due to their inadequate training. Their practices and attitudes are influenced by their insufficiency of knowledge on Hansen's Disease. Of greater concern is the social stigma and prejudices present even among BHWs as this serves as a barrier for its eradication.

P-399

CHANGES IN SOCIO ECONOMIC STATUS OF PERSONS WITH LEPROSY AND GENERAL DISABILITY PERSONS IN VELLORE DIST OVER A PERIOD OF 10 YEARS (ONE DECADE)

Presenter: Muriraj G

Muniraj G[1], Santhosham R[1], Samuel P[1],Samuel R[1]

[1:] Schieffelin Institute of Health Research & Leprosy Centre (SIH R & LC), Karigiri, Vellore, Tamil Nadu 632106; India

Objectives:

Compare the socio economic status of the persons with leprosy and general disability persons over a period of one decade in Katpadi and Gudiyattam blocks

Compare the Socio Economic status of persons with leprosy and general disability persons who received incentives with non receivers.

Methods: In 2008 a survey was conducted on persons with leprosy in 4 blocks of Vellore district as part of the "Empowerment project" undertaken by the Community Health Department of SIHR&LC Karigiri. A similar survey has been initiated in 2018 to compare the changes in the socio economic status of the same population group. As of date the survey has been completed in three panchayats namely Brammapuram. Arimuthumottur and Chittaparai.

From the total number of 413 persons with leprosy and disability in 2008 interviewed, only 238 persons were found to be surviving. All the 238 persons were interviewed to determine their present Socio Economic status.

Results: A comparison of the data between 2008 and 2018 showed a significant increase in the socio economic status of the persons with leprosy and disability. Of the 238 respondent 128 persons had received some kind of financial assistance (incentives) from Government and NGOs for activities to enhance their family income during this period. A comparison of persons who received incentives with those who did not, also showed a significant improvement in the socio economic status of those who received incentives.

Conclusion: This study goes to prove that incentives provided with proper supervision can contribute to improve the socio economic status of the given community.

P-406

FROM PERSONAL TRAUMA TO SHARED HISTORY: LITERARY MEMORIES OF HANSEN'S DISEASE IN AN (SWEET BEAN PASTE) AND MUGI BAA NO SHIMA (GRANDMA MUGI'S ISLAND)

Presenter: Kathryn Tanaka

K.M. Tanaka[1]

[1]Otemae University

Objectives: In 2001, a group of Hansen's disease survivors won a lawsuit against the Japanese government that argued their human rights were violated. This was the culmination of decades of social and political activism on the part of survivors. After this victory, there is a sense that Hansen's disease is no longer a problem in Japan. This is compounded by the fact that the average age of survivors is now 86. Yet, as recent lawsuits by relatives of survivors demonstrate, there are continuing traumas caused by Japanese policies. Families and communities are struggling to understand the multiple ways Hansen's disease affected them. The trauma of Hansen's disease is not only personal, but communal and historical. The process of cultural memory making and reconciliation of the multiple ways Hansen's disease affected individuals, community, and the nation is ongoing, and literature is an integral but overlooked part of this process.

Methods: As the age of survivors increases, the testimony and the stories they have worked hard to preserve have become the subject of popular narratives by authors who did not experience the illness or quarantine. Such works are sometimes criticized for appropriation of survivor experience for sensational ends, but this dismissal overlooks questions of how stories are borrowed, retold, and integrated into a broader, national discourse. This presentation takes two examples of fictionalized accounts of Hansen's disease: a four-volume manga, Magi baa no shim (Grandma Mugi's Island, 2017), and Dorian Sukegawa's acclaimed novel An (Sweet Bean Paste, 2015 & English, 2017). This presentation reads these two novels to understand the ways in which the legacy of Hansen's disease passes from individual experience into a local or national history.

Results: Both of these tales of survivor experience are structured around the figure of a female survivor relating her story to two other people. Furthermore, the narration takes place within a pseudofamily structure, where the survivor tells her story to an adopted family, a family who is bound by circumstances rather than blood. Based on years of visits by the authors to different institutions in Japan, these narratives demonstrate the ways in which Hansen's disease can meaningfully become part of popular culture and public discourse.

Conclusion: These narratives reveal the way survivors' stories becomes public memory. They further reveal these narratives as acts of negotiation of collective identity meant to reconcile personal trauma with national identity, arguing that such narratives are an important part of social reintegration.

P-409

INCLUSION OF PEOPLE AFFECTED BY LEPROSY AND LYMPHATIC FILARIASIS IN COMMUNITY DEVELOPMENT

Presenter: Carolyne Maholo

Maholo Carolyne Sserunkuma, Kawikizi Moses, Barbara Batesaki Ssembatya
German Leprosy and TB Relief Association (GLRA), Kyambogo University, Uganda National Alliance against Leprosy –UNALEP

Objectives:

1. Identify the existing community development programs
2. Establish the level and nature of participation of people affected by leprosy and LF in community development.
3. Identify enablers and barriers to their participation
4. Identify the challenges they experienced
5. Identify appropriate strategies and priorities in enhancing their participation and inclusion

Methods: The study adopted a descriptive research design utilizing both qualitative and quantitative data.

The core data of the study was obtained from people diagnosed with Leprosy, people affected by LF and persons with different disabilities (PWDs). Complementary data was obtained from district TB/leprosy supervisors, district vector control officers, community development officers, disability councillors and district disability unions

Data was collected using the participation scale originally developed by the Participation development team (n=1016), interviews (n=38), focus group discussions (n=18) and observation.

Results: The exiting government community development programs are; Community Demand Driven, Northern Uganda Social Action Fund, National Agricultural Advisory Services, Functional Adult Literacy, Youth Livelihood Program, Women Enterprise Program, Disability/special Grant, Senior Citizens' Grant for Economic Empowerment, Operation Wealth Creation, Vulnerable Household Grant, Poverty Reduction Development Program and Northern Uganda Rehabilitation Program.

The higher percentage of people affected by LF experience no participation restriction while people affected by leprosy and PWDs expereince participation restriction.

Majority of people affected by leprosy have accessed medical support from health facilities and realized improvement in health however, people affected by leprosy, LF and PWDs do not benefit from most mainstream community development programs only a few PWDs have benefited from the disability fund. Participation in community development improves food security and earning for them to join village saving groups and self help groups for income generation.

Knowledge and information of existing services (52.7%) service providers being near (16.7%), affordability of services and friendliness of service (15.5%) are enablers of participation

Limited knowledge and skills (56.7%), lack of information on the existing services, distance (37.6%), long process involved (bureaucracy), 16.5% and negative attitude from service providers (15.2%) hinder participation. Limited funds to afford (51.8%), negative attitude (50.2%) and distance of service facilities (38.3%) are the main challenges experienced.

Conclusion: On the whole, people affected by leprosy and LFexperience participation restriction at individual and community level due to lack of knowledge and skills. However, people affected by leprosy experience more restriction due to lack of skills and exclusion due to negative attitude and lack of knowledge and information.

P-410

ENABLERS AND BARRIERS TO TREATMENT ADHERENCE AMONG LEPROSY PATIENTS AS PERCEIVED BY HEALTHCARE PROFESSIONALS IN SELECTED HOSPITALS IN METRO MANILA, PHILIPPINES: A QUALITATIVE STUDY

Presenter: Arianna Maever Amit

V.C.F. Pepito[1], A.M.L. Amit[1], R.E.D. Samontina[1], S.J.A. Abdon[1], D.N.L. Fuentes[1], and O.P. Saniel[1]

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Objectives: We aimed to describe the perceptions of health professionals regarding factors that enable or prevent patients from adhering to the multi-drug therapy (MDT) for leprosy patients.

Methods: We conducted one focus group discussion (FGD) in each of the three hospitals. Our participants were health professionals from these sites with at least one year of experience in seeing multibacillary leprosy patients. The focus group discussions were audio-recorded and analyzed thematically.

Results: Twenty-three health professionals from the three hospitals participated. The following factors were perceived to encourage treatment adherence: innate desire to be cured from the disease; fears of infecting family and friends; fear of disability; knowledge about the disease; need for medical clearance to prove that they are fit to work; experiencing leprosy reactions; free treatment; immediate and sufficient counselling; flexibility in treatment regimen; follow-up and motivation of health workers; and Hansen's Clubs and support groups. On the other hand, perceived barriers to treatment adherence included: distance to health facility; financial and opportunity costs; adverse drug reactions; misconceptions about being cured; disabilities and/or presence of leprosy reactions; stubbornness and/or laziness; undergoing clinical depression; poor availability of MDT, transfer to other leprosy treatment facilities without informing current treatment, and stigma are thought to adversely affect treatment adherence.

Conclusion: Our findings suggest that several factors at the level of the patient, community, and the health system, interact to influence treatment adherence among leprosy patients. Awareness and appreciation of these factors are vital in educating and motivating treatment adherence among leprosy patients.

ILC-2: SOCIAL SCIENCE:

2.4 Participation

P-050

ROLE OF CHILDREN'S PARLIAMENT FOR LEPROSY AWARNESS AND STIGMA REDUCTION IN TRIBAL BELT OF MAHARASHTRA

Presenter: Suresh Dhondge

Suresh Dhondge, Karthikeyan Govindasamy, Tina Mendis
Kothara Hospital of The Leprosy Mission Trust India

Objectives: Inclusive Holistic Development of Individuals with Disabilities (IHDID) Project at Kothara Hospital of The Leprosy Mission Trust India, conducted a baseline survey in 75 villages in Amravati District, which is an endemic district in Maharashtra in western India. The project core activity includes an Inclusive Children Parliament as change makers for leprosy and other village related issues. A study has been designed with the following objective;

To study the role of children parliament for leprosy awareness and stigma reduction among Tribal population

Methods: The study will cover 25 Children parliament having 30 children in each parliament in the Tribal villages. All participants involved in the process i.e. children, parents and community leaders will be the sample size. There will be face to face interview with Children Parliament ministers as well as community stakeholders. The response received will be documented.

Results: This study will highlight the contribution of children parliament for leprosy eradication as well as stigma reduction in Tribal belt of Amravati District in Maharashtra State, India

Conclusion: An Inclusive Children Parliament will play a vital role for village development and there is a need to find out how these children parliament are key influencers for Leprosy awareness and stigma reduction

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P-051

KNOWLEDGE OF COMMUNITY HEALTH AGENTS (ACS) ON LEPROSY BRAZIL

Presenter: Magda Levantezi

M. Levantezi [1,2,3;] L. Lima [1]; C. R. F. Coriolano[1], R.S.S.V Reis[1,3;] L.B. Costa [4]. R.B Costa. [4], F. F. Pinto [4]; V.L.G Andrade [5]

[1] Secretary of Health Surveillance / General Coordination of Leprosy and Diseases in Elimination / Ministry of Health of Brazil ; [2] Centro Universitário de Brasilia ; [3] Universidade de Brasilia ; [4] Movement of Reintegration of People affected by hansen s disease ; [5] Organização Pan Americana de Saude

Objectives: To identify if community health agents have knowledge about Hansen's Disease to be able to act as transforming agents by promoting empowerment and coping with discrimination and stigma.

Methods: We applied questionnaires with 10 questions concerning the signs and symptoms, treatment, rights of people affected by the disease and the discriminatory practices that involve the disease. The questionnaires were

applied for a week in Parnaíba-PI and Paulista-PE. Those municipalities were formers colonies and are part of the activities from the Innovative Approaches Project to intensify efforts for a Leprosy-free Brazil - Bangkok Declaration Special Fund Projects (BDSF) coordinated by Brazil's Ministry of Health in partnership with Pan American Health Organization (PAHO)

Results: In Parnaíba-PI of 235 agents registered, 215 answered the questionnaires, corresponding to 91.4% adherence. In Paulista-PE of the 434 agents only 53 signaled that they would participate and only 22 effectively participated in the activity, corresponding to 5.06% adherence. We identified that the agents from both cities presented a yield of higher than 70% hitting at least 8 questions. Two issues were frequently in the answers: the care during the treatment and the transmission mode of the disease. The second issue emphasizes the situation a discriminatory practice due to the lack of knowledge of the mode of transmission and the natural history of the disease.

Conclusion: It is concluded that some of the community health agents are unaware of the signs of leprosy, especially the mode of transmission, which reinforces a discriminatory attitude. It is recommended that managers be regularly assessed by the knowledge level of the CHAs as well as the adoption of continuing education activities at least 2 to 3 times a year to ensure that information about the disease is being disseminated correctly by the team of professionals who directly with the population.

P-052

MOBILE FOOT CARE UNIT – AN INNOVATIVE APPROACH BY LEPRA IN BIHAR, INDIA

Presenter: Rajni Singh

*Rajni Kant Singh, **Santosh Kumar, ***Dilip Kumar Singh

*LEPRA Society, Bihar India, ** LEPRA Society, Jharkhand, India,***LEPRA Society, Bihar India

Objectives: To improve the quality of life for people disabled due to leprosy through the provision of quality personalised footwear, improving mobility and reducing risk of amputation.

Methods: LEPRA Society has launched the Mobile foot Care unit to reach out to 1500 disabled people due to leprosy in the 63 colony. This unit have all necessary equipment's with Shoes technician, Driver and Outreach worker. Also, it fitted with LCD, VCD to perform the awareness programme. It covers 63 leprosy colonies in six months and again rotate 2nd round in six months. This unit is monitored by Samutthan (State forum of disabled person due to leprosy), State leprosy officer and LEPRA Society. Monthly report is generating and send all the stakeholder.

Results: In the year 2015, 2016, 2017 and 2018 this mobile unit has manufactured and delivered the 2565, 2867, 2954, 2657 of protective footwear. This unit has also trained 820 people (Male 1585, Female 1235) in self-care technique. They have also carried IEC activities and 17000 people have aware about leprosy Sign & Symptoms and 54 have confirmed as case.

Conclusion: This is the first Mobile Foot Care unit in Leprosy programme in India. Affected people is receiving the protective footwear at their doorstep. The Mobile Footwear Van has received many appreciations by person affected with leprosy and local NGOs/CBOs.

P-112

EMPOWERMENT OF LEPROSY DISABLED BY ADULT LITERACY

Presenter: Dalwor Hossain

Mr. Dalwor Hossain
Community programs, DBLM hospital, Notkhana, Nilphamari 5300, Bangladesh

Objectives: To assess acceptance, numeracy and reading skill of people with leprosy disability by Adult literacy in 4 districts of North West Bangladesh.

Methods: 150 People have selected for adult literacy training by 15 different groups & with 15 different teachers. Out of 150 clients 146 have completed 1 year course successfully. Out of 146 clients 31% leprosy disabled, 27% general disabled and 44% general people. The participants were invited to be interviewed about their social accessibility, acceptance, reading & writing skills and livelihood at the start and end of the course. A questionnaire was used to get information at start and end of the training.

Results: 146 clients have completed 1 year adult literacy training. Out of 146 clients 71% have problem in acceptance before adult literacy, after completion of 1 year training 75% told that their acceptance has been increased. In Numeracy skill 98% clients told that they are not able to use mobile phone calculate daily income and perform Self-Help Help Group calculations but after completion of 1 year adult literacy course 71% told that they are able to use mobile phone, calculate daily income and perform SHG calculations. Considering reading skill 98% told that they are not able to read sign board/banner, name of necessary product or medicine, SHG records, newspaper/books and not able to help children for education. After completion of 1 year training of adult literacy 65% of them able to read sign board/banner, able to read name of necessary product or medicine, able to read SHG records, able to read newspaper/books and able to help children for education. The assessors have performed practical examination of reading name of medicine, newspaper, dial mobile phone and performed simple math in front of them.

Conclusion: Adult literacy gave them better life of people with disability including leprosy. Better improvement seen on acceptance in family and society and huge improvement found on using mobile phone. This adult literacy help them in reading and writing the task of daily life such as receiving information, reading book and newspaper for agriculture and business. They also supporting child education and performing in Self-Help Group calculation. They told us that now they see their world differently by reading signboard, billboard beside the road and market.

P-124

SOCIAL MOVEMENT EXPERIENCE A SELF-DESCRIPTION OF HISTORY: CASE OF ANTI-DEMOLITION STRUGGLE IN CHINA TAIWAN

Presenter: Masato Soda

Masato SODA[1]

[1] Ph.D. candidate, Graduate Institute of Building and Planning, National Taiwan University, China Taiwan

Objectives: This study describes memory sharing and historical awareness of the people affected by Hansen's disease (PAHD, mainly sanatorium residents) in Taiwan, specifically focuses on the participation in the anti-demolition movement of the sanatorium.

Methods: The author can point out particular processes of historical awareness and self-representation using sociological and anthological research methods, especially participant observations as organizers of this movement. The field of this study, Lo-sheng sanatorium, was established under the colonial rule, reflected Hansen's

disease force segregation policy by the Empire of Japan. KMT government succeeded in this policy after WWII. The residents compelled to live there for their lifetimes even after their disease cured because of deep-rooted discrimination in Taiwan society. The author observed the phenomena of qualitative changing process of recovering their self-esteem.

Results: At the begging, they made efforts to let civil society know the historical particularity of this site, however, through the interaction with outside supporters, the residents rediscovered that historical value existed on the site but residents themselves, they empower themselves in parallel. In 1994 Taiwanese government decided to expropriate the land of the sanatorium for Metro depot construction without any consent with ex-patients. When demolition started in 2003, the crisis occasioned psychological change between residents. After some student activists and cultural workers intervened in this issue in 2004, the residents also stood up for the preservation of the site. They finally organized the self-help group against demolition in 2005. In 2007, the government decided to preserve a partial area of the sanatorium, after strenuous protests. Although this result was less-than-ideal, the atmosphere in this site was getting opener through struggle period.

Conclusion: When residents have been aware of human rights abuse in the past and current residency rights abuse, they no longer merely were victims of segregation policy, became tellers of their own history. They described their collective memory of life experiences and attracted broad sympathy from civil society in Taiwan. They finally overcame stigmas obtaining historical identities of their resistance against discrimination. Residents believe someone should hand down their history to further generations even after the residents passed away.

P-142

ASSESSMENT OF ANANDABAN HOSPITAL SERVICES THROUGH LEPROSY PATIENTS' SATISFACTION SURVEY

Presenter: Pratigya Rijal

R. Pratigya[1], M. Rakchhya[2]
The Leprosy Mission Nepal (TLMN)

Objectives: To assess the quality of leprosy treatment provided at TLMN's Anandaban Leprosy Hospital from the patients' perspective and to formulate recommendations for improved services.

Methods: A survey comprising of closed and open-ended questions using Likert rating scale were administered to 295 leprosy patients at the time of release from treatment through purposive sampling from January to December 2018. Survey touch points were Anandaban Leprosy Hospital and urban leprosy clinic. 6 quality aspects of hospital services were evaluated-quality of treatment, quality of products, accessibility, staff attitude and behavior, impact of intervention and timeliness. Detailed orientation was provided to support staff involved. Collection of disaggregated data (age, sex, disability) was done to expose underlying trends and issues. Data was collected monthly and analysis was done on a quarterly basis.

Results: Out of 295 leprosy patients (190 males and 105 females) surveyed- 50% received ulcer care treatment, 15% reaction treatment, 9% septic surgery and remaining physiotherapy. 33% had leprosy disability. Overall quality of treatment at Anandaban was rated excellent by 33% and good by 42%. 45% participants rated product quality (such as medicines and assistive devices) was excellent, 31% good and 16% okay. For staff attitude and behaviour, 51% patients responded excellent, 35% good. 33% said access to the hospital was difficult, 66% responded it was okay. 95% of patients surveyed responded they received timely leprosy treatment.
66 patients claimed referral from other governmental and non-governmental health centres which highlighted collaborative efforts in providing ideal leprosy treatment but also the lack of capacity in those centres. 44 attended

Anandaban through self-investigation and 40 were referred by other leprosy patients which emphasize their role as leprosy champions.

Conclusion: The research increased involvement and input of leprosy patients treated at Anandaban, like never before, in quality assurance of our work. Realistic recommendations were identified to be adapted by Anandaban and other similar organizations to provide the best quality leprosy services with a clear understanding of the various variables that may affect health seeking behavior. Additional expectations of patients were reviewed and put forward to hospital leadership. It is essential to continue assessing patient satisfaction through surveys such as these to inform and improve the quality of Anandaban Hospital's work. But a more robust and refined survey needs to be designed and integrated as part of service provision through use of technology and lean data approach.

P-150

EXPERIMENTAL STUDY ON COMPOUND TRIPTERYGIUM DECOCTION ON HEART TOXIN SYNERGISM IN NEPHRITIC RATS

Presenter: Li Bo

LIBo[1Δ] , SONGShen-peng[1] , WU Mei-lan[2]

[1] ·Dermatosis hospital in Dalian, Dalian116021,Liaoning, China; [2·]Dalian City Hospital of Traditional Chinese Medicine,Dalian116013,Liaoning, China

Objectives: Study on the Attenuation and Synergism Effect of Compound Leigongteng Decoction and Its Decomposed Formula on Heart of Rats with Nephropathy.

Methods: In terms of synergy, 24-hour urine protein, total protein (TP), albumin (ALB), cholesterol (chol), and triglyceride (TG) were used as indicators; nephrokinase (CK) was attenuated to the heart. Creatine kinase isoenzyme (CK-MB() was used as an indicator. The effects of different compatibility on kidney and heart tissue morphology and ultrastructure were investigated. The rat tail vein was injected with doxorubicin to replicate the minimal change nephrotic syndrome model. Biochemical and histopathological indicators were measured.

Results: Compared with the model Gongtang group, the whole group, Leiqi group and Leigan group reduced 24-hour urinary protein; total group total protein (TP), ALB (albumin albumin), thunderbolt group TP, ALB, The TP and ALB in the LeiGan group were all elevated. Comparing with the cholesterol cholesterol and TG (Triglycerides) in the model group, the total group, the Leiqi group and the Leigan group were all reduced in cho, TG; Compared with the ketamine CK (Creatine kinase creatine kinase) and CK-MB (Creatine kinase isoenzyme creatine kinase isoenzyme), the whole group, the Leihe group, the Thunder group, the Leigan group, the Leijin group, and the Lei Both CK and CK-MB were reduced in the group; the difference was significant (all $P<0.05$). Tripterygium wilfordii in different combinations in the kidney tissue morphology, ultrastructure to varying degrees to reduce. The morphological and ultrastructural pathological lesions of cardiac tissues in all groups were relieved to varying degrees.

Conclusion: The entire group, the Thunder group and the Leigan group played a synergistic role. Tripterygium wilfordii can reduce the toxicity of Tripterygium wilfordii in the different compatibility groups. The whole group, Leihe group, thunderbolt group and Leigan group are more effective than Leigui group and Leijin group.

P-181

DOMESTIC VIOLENCE IN LEPROSY AFFECTED WOMEN AND IT'S IMPACT ON MENTAL WELL BEING

Presenter: Valsa Augustine

Mrs.Valsa Augustine[1], J.Richard[1], Jerry Joshua[1]
[1]Schieffelin Institute of Health Research & Leprosy Centre

Objectives: Domestic violence, a global problem, is a significant public health concern in India. Studies from India have documented high rates of such violence.
Domestic violence has a significant impact on mental well being particularly in leprosy affected woman who are already burdened by a stigmatizing disease such as Leprosy.
This study attempts to investigate the prevalence of abuse in leprosy affected women, causes and its effect on their mental wellbeing.

Methods: Domestic violence, a global problem, is a significant public health concern in India. Studies from India have documented high rates of such violence.
Domestic violence has a significant impact on mental well being particularly in leprosy affected woman who are already burdened by a stigmatizing disease such as Leprosy.
This study attempts to investigate the prevalence of abuse in leprosy affected women, causes and its effect on their mental wellbeing.

Results: Of the 179 women assessed so far, 89 (49.7%) had faced domestic violence both physical and emotional/verbal and a few with sexual abuse. The study also showed that having Leprosy itself being one of the causes for abuse. Domestic violence either began or escalated after the family knew about diagnosis of leprosy. Domestic violence was mostly carried out by husbands and in a few cases by sons, daughters in law and mother in law

The results also indicate the strong correlation between domestic violence and mental well being. Study shows that most of the women suffered silently with depression and anxiety. They have been counselled and have learnt to cope with the challenges in more constructive ways. Some of them required both counselling and medication for their depression. Where violence was the result of alcohol, spouses and sons were counselled for de addiction therapy.

Conclusion: As the leprosy affected women are also the silent sufferers of domestic violence, importance of family counselling while treating leprosy affected women should be given due recognition. Moreover, in order to improve their mental well being, assertive skills training for affected women should be imparted to them.
Screening for domestic violence and interventions should be part of all Leprosy programs. Programs should also employ public health approaches to change its patriarchal culture.

P-265

BUILDING A PROTOCOL FOR THE ANALYSIS OF THE IMPACT AND MANAGEMENT OF LEPROSY REACTIONS IN THE LIFE EXPERIENCE OF PEOPLE AFFECTED IN ENDEMIC LEPROSY COUNTRIES.

Presenter: Annisa Ika Putri

Annisa Ika Putri[1,2], Kevin de Sabbata [2], Medhi Denisa Alinda[1], Regitta Indira Agusni[1], Bagus H. Kusumaputra[1], M. Yulianto Listiawan[1], Cita R.S. Prakoeswa[1], Barbara de Barros[3], Stephen L. Walker[3], Ruth M.H. Peters[2]

[1] Department of Dermatology and Venereology, Dr. Soetomo General Hospital; [2] Athena Institute, Vrije Universiteit Amsterdam; [3] Department of Clinical Research, Faculty of Infectious and Tropical Diseases, London School of Hygiene and Tropical Medicine

Objectives: To develop a research protocol for a study exploring the experiences of individuals with leprosy reactions and the barriers they face in the care and management of their condition. This study will look explicitly

into the 360-degree view of the people affected which is paramount for the policy makers, academicians, health workers, and community leaders.

Methods: A scoping review of existing research on leprosy reactions was conducted on PubMed (Medline) and JSTOR with the aim of gathering the main issues, such as misdiagnoses, late-care seeking, and drug side effects. Then we conducted a second review of studies reporting experiential accounts of disabled people to getting insights into the employed methodologies. In light of collected material five dialogues have been held among the researchers in the field of leprosy and disability research. The ideas and questions sets previously developed have been discussed with people with leprosy reactions through a participatory workshop and two one-to-one conversations.

Results: The exploration resulted to approaches such as participatory and exploratory research, storytelling, observations, and comparative analysis. Analysis methods used by reviewed articles comprised grounded theory, cognitive mapping, ethnography, content and discourse analysis. The selected approach allows to account for the complexities and multifaceted nature of the issues involving people with leprosy reactions and to collect their first-hand perspectives. In addition, it responds to the request of stakeholders to be involved in shaping the results of the research and in guaranteeing that the findings are used for their benefit. This study will bridge a gap in literature, being one of the first qualitative studies in this area putting at the centre the view of people with leprosy reactions.

Conclusion: In light of literature findings and the input, we have opted for a multidimensional, participatory comparative approach, complemented with capacity building initiatives such as involving the people with leprosy reactions as research assistants. As a collection method we have chosen interviews, focus groups and participatory workshops with individuals with leprosy reactions and healthcare professionals, while the data will be analyzed using content analysis and discourse analysis. The protocol will allow to gain a detailed insight into the life and care experiences of the people affected. However, as it relies on the testimony of stakeholders, it may lead to results partially influenced by the subjectivity of closely involved individuals. Moreover, the combination of analysis methods may be effective in conveying the overarching dimension of the issues involved compared to other techniques.

P-277

IMPROVE QUALITY OF LIFE OF PEOPLE WHO AFFECTED BY LEPROSY IN UNDERDEVELOPED REGION IN PEOPLE'S REPUBLIC OF CHINA

Presenter: Jinlan Li

Jinlan Li[1], Lili yang[1]

[1] Guizhou Provincial Center for Disease Control and Prevention

Objective: To understand effects of co-operation program from 2012 to 2015 among different government departments to improve quality life of people affected by leprosy through completely to perform their duties in Guizhou,China.

Methods: A survey was carried out in 88 counties by public health workers in county level CDCs in order to understand registered people affected by leprosy which included registered case's sociodemographic, disability, labor capability, social-economic situation, and Social security system issue. Then different government departments actively serviced and solved difficult and involvements of registered alive cases to improve their living condition and quality step by step according to the survey results.

Results: 13911 cases affected by leprosy on registration list in 88 counties were investigated in 2012 in Guizhou. The survey results showed 9643(69.3%) alive cases, 432(3.1%) outward migration casess, 1763(12.7%) losing cases and 2073(14.9%) death cases. 8825(91.5%) case lived in normal communities and 818(8.5%) cases lived in

leprosy villages. The proportion of people with WHO 2 Grade 2 disability (WHO DG2) among alive cases was 33.7% (3250). Personal annual average income of people affected by leprosy was 3614RMB which was lower than annual average income (4200RMB) of agricultural resident in Guizhou. 3681 (38%) cases had been included into basic living subsistence allowance for rural residents in 2012. Then 4194 cases who reached guarantee standard were covered into it from 2013 to 2015 by department of Human Resources and Social Security. The coverage including in new rural cooperative medical care system from 86.2% in 2012 raised to 99.1% in 2015 by department of Health and Family Planning Commission. 2315 cases obtained disability grade certificate by Disabled Persons' Federation. Department of Public Security helped 1518 cases to get an identity cards. 1000 case's families received financial supports by department of Housing and Urban-Rural Development to renew their dilapidated rural houses. Department of Water Resource solved drinking water difficulties for 1127 case's families. Department of Education helped children from 299 poor case's families go to school freely. Living condition of alive people who affected by leprosy had been obliviously improved in Guizhou through different department efforts in recent 4 years.

Conclusions: Co-operations among different government departments earnestly fulfilled their duties were vital essentials to implement preferential policies for people affected by leprosy. The health department played an important role to promote their implement progresses. The government supervision and annual evaluation could ensure to complete the mission successfully.

P-278

PARTICIPATORY ACTION RESEARCH ON MODEL DEVELOPMENT FOR TRACING HOUSEHOLD CONTACTS OF LEPROSY IN LOWER SOUTH OF THAILAND

Presenter: Thanittha Ditsuwan

Thanittha Ditsuwan[1], Vallop Ditsuwan[2], Pimwalan Khunmuak[1], Sumat Loimak[1], Dasseema Muwannasung[1], Tipsuda Nuannim[1]

[1] The Office of Disease Prevention and Control, 12 Songkhla; [2] Research and Development Institute, Thaksin University

Objectives: To study on process of participatory action for model establishment for tracing household contacts of leprosy case (HCoLCs) in lower South of Thailand.

Methods: The study design is participatory action research that was conducted in 2017. The study area is Raman district, leprosy epidemiology risk area in Yala province (lower South of Thailand). Sixteen focus group discussions were contributed, using structure questionnaire. 170-key stakeholders (KKs), {1) household contacts, 2) previous or leprosy case, 3) head of public health, 4) health care officer, 5) Raj Pracha Samasai volunteer, 6) health village volunteer, 7) community leader or religion leader, and 8) teacher} were selected. Descriptive statistics was used for data analysis. Content analysis and triangular were used for analysis quantitative data and leprosy tracing model establishment.

Results: The results demonstrated that 144 KKs were fulltime participation during model formation processed. We found that 66.47% had seen or known leprosy disease. 65.88% of KKs acquired massages related leprosy from health care personal. There were 3 main-stages for tracing household contacts of leprosy cases model. The effective HCoLC tracing model consisted of three stages. First, stakeholders must involve in 1) brainstorming, 2) team- area- and device preparations, 3) revised stakeholder recruitment and do meeting arrangement, 4) study social and community's context, and 5) do leprosy data analysis. Second, stakeholders must involve in tracing HCoLCs model design and organization using genuine community participation. Last, stakeholders must involve in 1) model appraisal, 2) proving feedback information, and access feasibility of model implementation.

Conclusion: Model formation for tracing HCoLCs must carefully focus on and aware of stakeholders' social stigma, culture and community's context, norm, and way of life, and social structure in each community.

P-286

KNOWLEDGE AND PERCEPTION ABOUT LEPROSY AMONG PERSON AFFECTED BY LEPROSY

Presenter: James George

James George[1], Harsha B G[1], Tina Mendis[1], Pankaj Srivastava[1]

[1]The Leprosy Mission Trust India

Objectives: The objective of the study is to assess the current knowledge and perception regarding leprosy among person affected by leprosy. The sub objective is to formulate recommendation to improve the health education for people affected by leprosy.

Methods: This study is a cross sectional study carried out in Allahabad district of Uttar Pradesh in the period March 2018 to November 2018. The study populations is the people affected by leprosy, residing in Allahabad district of Uttar Pradesh. The sample size for the study was 100 people affected by leprosy (64 Male and 36 female). People were interviewed using the structured questionnaire in local language and in their home by the investigator. All collected data were entered and analyzed using Microsoft Excel database.

Results: Almost all the respondents had heard about leprosy, but their level of knowledge about signs and symptoms varied.

The findings indicate that all the patients know that a discolored skin patch can be a sign of leprosy while 96% people know that skin patches with loss of sensation are a sign of leprosy. 60% of the respondents say that deformity of hands, foot and eyes are symptoms of leprosy. More than 90% of patients did not mention neuritis pain, facial change and thickened nerve as a possible sign for leprosy. There is no much difference in the knowledge among the male and female. 55 to 70 people say bad water and sitting close to the affected person as a reason to spread leprosy. Only 10 of them replied because of prolonged contacts with the affected persons.

The result indicates that perceptions was in general quite positive. More than 90 respondents disagree or strongly disagree with the statement that people affected by leprosy cannot travel while 65 felt that persons affected by leprosy do not have the same rights as other human being enjoy. 55% disagree that children affected by leprosy should not play with general children and 74 believes that person affected by leprosy can participate in religious ceremonies.

Conclusion: This study shows that knowledge and perceptions of the people affected by leprosy has improved from earlier. Their self-stigma, perceptions and misconceptions has been reduced and can be engaged in creating awareness about leprosy.

P-288

AN ASSESSMENT OF WOMEN'S EMPOWERMENT IN MIXED SELF HELP GROUPS IN DHANUSHA DISTRICT OF NEPAL

Presenter: Kiran Jha

Kiran Jha[1], Mamesh Shrestha[1], Arbind Sah[1]

[1]Nepal Leprosy Trust (NLT)- Lalgadh Leprosy Hospital &Services Centre (LLHSC), Nepal

Objectives: This research project is an assessment of self-help groups established by Nepal Leprosy Trust in Dhanusha district of Nepal which is endemic for leprosy and has a high number of people disabled due to leprosy.

The specific objectives of the project are:
1. To assess the participation of women in mixed SHGs
2. To assess the barriers to women's empowerment in mixed SHGs
3. To compare self-efficacy of women participants of SHGs and women who are not participants of SHGs
4. To assess the impact of female leadership in mixed –gender SHGs

Methods: Dhanusha district has been selected purposively for this study as it has the highest (39) number of SHGs. Both qualitative and quantitative methods will be adopted to explore the women's empowerment in mixed SHGs, comparing both members and non-members of SHGs.. The study will be conducted using Focus Group Discussions (FGDs), Key informant interviews and General Self-Efficacy Scale- Hindi Version (GSE-H) developed by S.Sud, R. Schwarzer and M. Jerusalem

Results: The results of the study will be available after the completion of the study and will be shared in the International Leprosy Congress, Manila.

The results will demonstrate the difference, if any between the women who are members of SHGs and women who are not, in terms of feeling freedom, strength, self-identity and increased levels of confidence and self-esteem. The study will also explore the impact of women's leadership in SHGs, and women's under representation in SHG leadership roles.

Conclusion: The results of the study will contribute towards a better understanding of women's participation and women's issues in mixed SHGs and it will help LLHSC and others involved in similar activities to focus on the highlighted issues and develop new strategies to eliminate barriers in women's empowerment and to promote women's rights.

P-310

COMMUNITY ENGAGEMENT IN LEPROSY CASE FINDING ACTIVITIES AND THEIR PARTICIPATION IN REFERRAL MECHANISM WITH HEALTH FACILITIES AND IN ADDRESSING THE COMPLEX LEPROSY ISSUES EFFECTIVELY

Presenter: Sathiraju Marella

M Sathiraju[1], D Ramanuja Chary[2],
[1]State Coordinator, LEPRA Society NDTRU Telangana, [2] Project Officer, NDTRU Adilabad

Objectives:
1. To know the success of community engagement in case detection campaigns, treatment and address the issues in chronic diseases (the leading causes of disability).
2. To recognize the importance of community capacity building in leprosy and promote community health care.

Methods: The leprosy search campaigns implemented in villages of project with community engagement in participation and mobilization. Project enlisted the community leaders/volunteers and trained them on early leprosy case identification in the villages. Convened the meeting and explained the current problem of leprosy, importance of treatment, stigma and discrimination and need of inter-sectoral convergence at district.

The project identified 60 volunteers in the difficulty to reach 188 villages and provided one day training programme at block. The training covered the information on leprosy signs and symptoms and the methodology of case detection and their role in the survey. After the completion of training each volunteer received necessary material for the survey. All the trainees are completed the survey in 3 days period and the suspects list has to submit the project staff for confirmation. The staff confirmed 37 cases and initiated treatment and registered. The volunteers engaged in treatment follow-up and linked with health facilities.

Results:

- 181 villages covered;
- 21188 houses covered
- 111944 population examined
- 1262 suspects
- 35 cases (23 mb)
- List of names given to local PHC MO for treatment registration and follow-up. Most of the cases are early

Conclusion: Community engagement in public health supports the Community Participation as a way to Illustrate a range of approaches that can be used to engage communities around both traditional and emerging public health issues. “As health programme people, we need to always remember that we are guests in the community. In leprosy programme the community engagement in case detection campaigns are more supportive in eliminating the disease.

P-323

CHILDREN’S PARLIAMENT: MEANS OF DEVELOPING CHANGE MAKERS IN LEPROSY COLONY

Presenter: Nitha Philip

Nitha Philip[1] ,Tina Mendis, M. S. Raju, Sanjay Panzade
[1]The Leprosy Mission Trust India, Belgaum, Karnataka, India

Introduction: Formation of Children’s Parliament as change makers has been proved to be successful in many instances. One such example is ‘Role of children parliament in tiruvannamalai district - a descriptive study by A. Gandhi Mary, and Dr. B. Arunkumar’. To bring about a change in the Leprosy colonies, effectiveness of providing a participatory forum for children to express and influence needs to be explored. Children Unite for Action (CUFA) Project is working towards providing this platform to the Children. A study has been designed with the following objectives;

Objectives:

➢ To understand how a Children’s Parliament can contribute to achieve SDGs- Sanitation & Clean Water, Gender Equality, Good Health & Well being

➢ To create a model which can be replicated in similar situations

Methods: The research will be Qualitative where the process of Children’s parliament will be documented, and the changes will be measured. A case study on Children’s Parliament will be conducted in 2 Leprosy Colonies in Chhattisgarh from different backgrounds of which one will be rural and other will be urban. All participants involved in the process i.e. children, parents and community leaders will be the sample size. A checklist will be developed to measure the change before and after intervention. The process will be continuously documented. Children of the children’s Parliament between the age of 12 to 18 years will be involved in the study. Crosstabs will be used to analyse the data and for comparisons.

Results: Three priorities of Sustainable development goals which are Sanitation & Clean Water, Gender Equality, Good Health & Well being will be measured to assess the role of Children’s Parliament. Changes in perception, attitude and practices of the children, parents and community leaders will be measured.

Conclusion: The study will document the process of the change brought about by a Children’s parliament. It will conclude on the role of Children’s Parliament as changemakers to achieve the Sustainable Development Goals (SDGs) in the Leprosy Colonies

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P-377

ROLE OF EDUCATORS IN RAISING AWARENESS AND REDUCING STIGMA AGAINST LEPROSY AND PROMOTE INCLUSION

Presenter: Amar Bahadur Timalsina

A.B. Timalsina[1], J. Yadav[1], P. Mahat[1]

[1] Association for IDEA Nepal

Leprosy, also known as Hansen's disease, is a chronic infectious disease caused by *Mycobacterium leprae*. The disease mainly affects the skin, the peripheral nerves, mucosal surfaces of the upper respiratory tract and the eyes. Leprosy is known to occur at all ages ranging from early infancy to very old age. Leprosy is curable and early treatment averts most disabilities. However, due to lack of awareness and misconception about leprosy, it is being treated as more of a curse than a disease in developing countries like Nepal and has created a discrimination among people affected by leprosy and people without leprosy. An effective means of awareness program can help in minimizing such discriminations by promoting inclusion and reducing stigma. This paper offers an insight into the role of educators in promoting inclusion by raising awareness and reducing stigma against leprosy. IDEA Nepal developed an intervention program to orient educators and raise awareness on leprosy. IDEA Nepal held different meetings with board members of Curriculum Development Centre, teachers and principals of government, community and private schools, and orient them on leprosy so that they can share awareness on leprosy to their students. The reason for selecting educators for orientation and to raise awareness was that the educators are the key persons who can reach to large mass and spread positive news regarding leprosy to reduce stigma and discrimination towards the affected. The orientation program included interaction, expert sharing, storytelling and feedback from the participants. The orientation program made educators to realize that they have an important role in educating children on issues like leprosy and stigma, who in turn share this message to their family members. After the orientation program the participants/educators raise awareness on leprosy in their respective schools. The methodology used for data collection was pre-test and post-test questionnaire. The pre-test and post-test questionnaire was collected in the awareness program conducted by educators and others. The collected data is then analyzed and then compared, to find the effectiveness of incorporating educators in raising awareness on leprosy. The study found that the awareness through educators is more effective in raising awareness in students on leprosy, and to eliminate stigma and promote inclusion. The awareness through educators help students to learn better about leprosy and minimize the stigma and discrimination so the education on leprosy should be incorporated in school syllabus to promote inclusiveness.

Objective: To find the effectiveness of educators in raising awareness among students on leprosy to reduce stigma, discrimination and promote inclusion.

Methods: The educators were provided with orientation on leprosy, then the educators raise awareness on leprosy to students. The study was based on data collected before and after the awareness program by educators and others. The collected data was then compared to find the effectiveness of educators involvement in raising awareness and reducing stigma and discrimination.

Results: It is found that the awareness by educators is more effective and efficient to students than the awareness program conducted by others.

Conclusion: The education on leprosy should be incorporated in school syllabus to eliminate the stigma, discrimination related to leprosy and to promote inclusiveness.

P-393

FACTORS INFLUENCING PARTICIPATION RESTRICTIONS AMONG PERSONS AFFECTED BY LEPROSY

Presenter: Mathanraj David

M. Mathanraj David[1], MS Raju[2]

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Objective: To assess the factors associated with the participation Restriction of person affected by leprosy in all the four states viz. Uttar Pradesh (UP), Chhattisgarh (CG), Andhra Pradesh (AP) and Tamil Nadu (TN) during the period from 2016 to 2017.

Method: Cross sectional study Design was incorporated in this study using the standardized Participation scale, along with socio-demographic variables were analyzed for a total of 379 persons affected by leprosy.

Result: Out of the total 379 persons affected by leprosy participated in the study 198 (52.2%) were males and 181(47.8%) were females. The level of participation was divided into two categories viz, No significant participation restrictions (NSPR) and Participation Restrictions (PR), and was cross tabulated with socio-demographic factors and disease features of each respondent. The findings from each state are compared with other states. The participation scale suggests the higher level of Participation restriction is seen in 84% in UP and 81% in CG.

Conclusion: The study concludes that Participation restrictions are highly influenced by Education and type of occupation in most of the states. The Variables such as Gender, age, Locality and Disability are moderately affecting the participation restrictions in some states. Income groups and Type of membership are less affecting the participation restrictions in some states. The variables such as marital status, Religion and caste has no specific influence on participation restriction. Hence, the need for independent strategies for each state to address the underlying issues or challenges.

P-398

ACCEPTABILITY OF A SIMPLE LESION ASSESSMENT SCORING SYSTEM AS A SELF-HELP MONITORING TOOL TO DETECT EARLY SIGNS OF NERVE ABNORMALITIES AMONG PEOPLE AFFECTED BY LEPROSY (PALs)

Presenter: Riza Sanchez

R.R. Sanchez[1], A.A. Maghanoy[1], M.A. Taborada[1], J.F. Abellana[1], F.O. Roferos[1], M.F. Balagon[1]

[1]Leonard Wood Memorial Center for Leprosy Research, Cebu, Philippines

Objective: This study was aimed to determine the acceptability of utilizing a simplified lesion scoring system as a self- help monitoring tool to detect early signs of nerve abnormalities among persons affected by leprosy (PALs).

Methods: The study was conducted in 2017- 2018 at the Leonard Wood Memorial Center for Leprosy Research in Cebu, Philippines. Newly diagnosed cases of leprosy were enrolled in a study using a simple lesion scoring system wherein patients were asked to score the status of their inflamed vs non-inflamed skin lesions based on size, color, swelling, tenderness and presence/ absence of fissures or ulcers. Lesion scores obtained by the patients were compared with lesion scores obtained by a clinical leprologist. Moreover, lesion scores were correlated with nerve scores obtained by a third assessor. Lesion and nerve scores were compared to determine any association between lesion and nerve findings suggestive of early nerve abnormalities. Then after, subjects were interviewed as to ease of applicability and perceived importance of the tool; preferred frequency of monitoring; and willingness to assist health workers in monitoring their illness through the self-help lesion scoring system.

Results: There were a total of 180 subjects enrolled in the study. Cohort responses were as follows:

1. Acceptability- Most or 92% of subjects considered the tool highly acceptable, 6.3% moderately acceptable and 1.7% slightly acceptable.
2. Frequency of monitoring - Majority or 61.6% preferred monthly monitoring, 10.7% weekly and 8.5% daily monitoring; while 19.2% preferred it done only when necessary.
3. Willingness to assist in monitoring their illness - All respondents expressed willingness to assist health staff in monitoring their illness using the self-help lesion assessment tool.
4. Perceived importance and benefits - 99.4 % considered the tool very important and beneficial; while 0.6% did not find it useful and important.
5. Easy to use - 93.8% find the tool “user-friendly” in terms of ease in use and understanding its guidelines while 6.2% find it slightly to moderately difficult to use and understand.

Conclusion: The use of a simplified Lesion Assessment Scoring System is widely acceptable among PALs who considered it a very important, easy to use self-help monitoring tool to detect early signs of nerve abnormalities in leprosy. All of them expressed willingness to assist health workers in monitoring their illness using the “user-friendly” lesion scoring system.

ILC-3: BASIC SCIENCE:

3.1 Immunology and Vaccines

P-032

LEPROSY IN PREGNANCY: AN ALTERED IMMUNE RESPONSE

Presenter: Michaela Tabalon

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Objectives: Leprosy, a chronic infectious disease, is considered a public health problem. A preponderance of affected males over females is described. Reports in developing countries have attributed this gender difference to women's decreased awareness on leprosy, and less access to health care. In the Philippines, the proportion of females with leprosy among the newly detected cases ranged from 12% to 32% in the year 2010. This population may naturally undergo pregnancy. Since the signs and symptoms of leprosy rely mostly on the interplay of the host's immunity, and hormonal changes due to pregnancy alters the immune status, this greatly affects both the course of disease and gestation. This case report aims to highlight the challenge of pregnancy as a unique immunologic condition that poses greater risk to pregnant patients with leprosy.

Methods: We report a case of a 20-year old primigravid on her 20th week age of gestation who presented with erythematous plaques over the extremities and sudden appearance of multiple erythematous tender nodules over the face and extremities. This was associated with intermittent undocumented fever and arthralgia. Skin punch biopsy revealed superficial and deep collections of inflammatory infiltrates extending to the subcutis composed of lymphocytes, histiocytes, foamy macrophages, and rare neutrophils, with presence of acid-fast bacilli. A diagnosis of Hansen's Disease, LL, in type 2 reaction was made. Patient was initiated on multidrug treatment (MDT) and prednisone.

Results: The lesions flattened and lightened in color. Fever and arthralgia resolved. Patient was monitored closely with antenatal blood work-up and ultrasound. At 40 weeks, she underwent normal vaginal spontaneous delivery to a live, term, baby boy, appropriate for gestational age. MDT and prednisone were continued postpartum.

Conclusion: Changes resulting from the interaction of pregnancy and leprosy produces significant risks and complications in both conditions. Tolerance to paternally derived fetal antigens must be achieved in order not to reject the growing fetus by suppressing the cell mediated immunity. This state poses its own set of difficulties, furthermore, its occurrence in combination with leprosy alters susceptibility to the disease and predisposes to first appearance, reactivation, relapse, and reactional states. Patients should be made aware of the risks and encouraged to plan their pregnancies only to take place when their leprosy is fully controlled by chemotherapy. Proper education must be provided to patients and families with strict compliance to treatment under careful medical supervision during and after pregnancy to reduce the consequences of leprosy complications associated with pregnancy.

P-069

MYCOBACTERIUM.LEPROSY ANTIGEN-SPECIFIC INDUCED HOST IMMUNE RESPONSES IN OVER NIGHT WHOLE BLOOD ASSAY CORRELATE WITH DIAGNOSIS AND DISCRIMINATION OF PAUCIBACILLARY PATIENTS OF LEPROSY DISEASE IN CHINA

Presenter: Xiaochua Chen

Xiao-hua Chen[1,2], Yuan-Gang You[1,2], You-Hua Yuan[3], Lian-Chao Yuan[1,2], Yan Wen[1,2]

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Objectives: Leprosy, caused by Mycobacterium leprae, infect over 200,000 people worldwide yearly, and still endemic in the pockets of endemicity in the ethnically diverse, mountainous and underdeveloped southwest provinces in China. Delayed diagnosis of leprosy persist in China, and even with disability as high as 20%, further knowledge of the early diagnosis, especially early diagnosis of PB patients through M.leprae antigen-specific induced host immune responses is needed. The current study was aimed at comparing M.leprae specific antigens stimulated supernatant of over night whole blood assay(WBA) in leprosy patients and controls in southwest China, in order to evaluate whether M.leprae specific antigens induced host markers improve the diagnosis or discriminate of PB patients in leprosy disease.

Methods: The leprosy(13 MB, 7 PB) patients, and non-leprosy controls(21 HHC, 20 EC and 19 TB) were enrolled in the study. The supernatant levels of ten host markers stimulated by M.leprae specific antigens were evaluated by over night WBA and Luminex multiplex assays. The diagnosis value of PB from EC, and discriminate value of PB from HHC, or TB were evaluated by ROC analysis, respectively.

Results: ML2044-stimulated CXCL8/IL-8 reached to the highest sensitivity of 100%, with specificity of 73.68% for PB diagnosis. A 3-marker combination model including ML2044-induced CXCL8/IL-8, CCL4/MIP-1 beta, and IL-6 improved diagnostic specificity of PB to 94.7% in comparison to those of the single marker. ML2044-stimulated IL-4 and CXCL8/IL-8 reached to the highest sensitivity (85.71%, and 100%, respectively), and the highest specificity (95.24%, and 84.21%, respectively) for discriminating PB patients from HHC and TB.

Conclusion: Our findings suggest that the M.leprae specific antigens induced production of host markers by overnight WBA increases diagnostic and discriminate value of PB patients of leprosy disease, with a particular strong association with interleukin-8.

P-071

THE SAFETY OF INFLUENZA VACCINE IN CLINICALLY CURED LEPROSY PATIENTS IN CHINA

Presenter: Yi Zheng

Yi Zheng[1], Li Chen[2], Quan Hu[1]

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Background: Leprosy is an infectious disease caused by the bacterium Mycobacterium leprae. Influenza vaccine is an important influenza prevention strategy and the preparations used display good safety and tolerability profiles. But the safety of applying influenza vaccine on the clinical cured leprosy patients is unclear.

Methods: We conducted an observational clinical study, in Wuhan between November 15, 2016 and March 1, 2017.Two groups of participants ≥50 years of agereceived a 0.5ml dose of the inactivated split-virion trivalentinfluenza vaccineand a follow-up 28 days observation of any solicited and unsolicited adverse events.

Results: A total of 134 subjects were included in the study. The total rate of reactogenicity was 5.41% [2/37] in leprosy group and 15.46% [15/ 97] in control group, the difference of reactogenicity between two groups not significant (p=0.1522). For solicited injection-sites adverse events (AEs), 12.37% [12/ 97]participants in the control group reported of itching, pain, erythema, swelling or in duration, and no participants in leprosy group reported of any solicited injection-sites AEs. For solicited systemic AEs, 7.21% [7 / 97] participants in the control group reported of fever,malaise or headache, and 2.70%[1 / 37] participants in the leprosy group reported of fever, statistic result showed that the difference was not significant (p=0.4438).Unsolicited AEs was reported by one male aged 76,4 hours after vaccination administration, his plantar ulcer area began bleeding. All AEs were grade 1 or grade 2, and no recurrence of lepra reaction, AEs leading to early withdrawal from the study,or deaths were reported in this study.

Conclusions: To our knowledge, the present study is the first clinical study to evaluate the safety of influenza vaccine in clinically cured leprosy patients. We concluded that clinically cured leprosy patients are relatively safe for influenza vaccine. More importantly, our study make a positive and scientific efforts to eradicate discrimination on leprosy. In our study, we described a patient with plantar ulcer undergoing bleeding for 4 hours after vaccine administration. Based on evidence we have, we interpret that this adverse event may probably associated with vaccine, and patients with ulcer and leprosy need intensive attention after vaccines administration.

P-072

STUDY ON THE SERODIAGNOSIS OF LEPROSY BY ELISA OF MMPⅡ AND ND-O-BSA

Presenter: Jin Yali

Jinyali Xueguang Ivchengzhi Qugang
Dalian Dermatosis Hospital

Objectives: To evaluate the sensitivity and specificy of ND-O-BSA-ELISA and MMPⅡ-ELISA， and to find out their cutcoff value， and to monitor antibody titers in leprosy household contacters .

Methods: We measured anti-MMP-II IgG antibodies and anti- ND-O-BSA IgM antibodies with the method ELISA. The data were analyzed using a statistical software package (SPSS 20.00) and ROC curve .

Results:
1. For M1 group ,the anti-MMP-II IgG antibody levels (Mean O.D. ± S.D.) for MB leprosy, PB leprosy, and healthy individuals were 0.3±0.26, 0.13±0.08 and 0.09±0.08. The cut-off value of O.D. 0.14 and 0.09 was defined using a ROC curve,while the sensitivity of the test was 94% and 84%, specificity was 94% and 84%. For M2 group ,the anti-MMP-II IgG antibody levels (Mean O.D. ± S.D.) for MB leprosy, PB leprosy, and healthy individuals were 0.23±0.22, 0.09±0.06 and 0.06±0.04. The cut-off value of O.D. was 0.09 and 0.06, where the sensitivity of the test was 94% and 84%, specificity was 100% and 58%. Positive rate of tuberculosis for M1was 59% and for M2 is 49%.Positive rate of home contacters for M1 was 59% and for M2 was 49%.
2. For N1 group ,the anti- ND-O-BSA- IgM antibody levels (Mean O.D. ± S.D.) of MB leprosy, PB leprosy, and healthy individuals were 0.76±0.86, 0.1±0.06 and 0.06±0.06. The cut-off value of O.D. was 0.13 and 0.08, while the sensitivity of the test was 100% and 92%, specificity was 100% and 72.3%. For N2 group ,the anti-MMP-II IgG antibody levels (Mean O.D. ± S.D.) for MB leprosy, PB leprosy, and healthy individuals were 0.51±0.65, 0.05±0.04 and 0.03±0.04. The cut-off value of O.D. 0.1 and 0.04, where the sensitivity of the test was 100% and 72%, specificity was 72% and 72.3%. Positive rate of tuberculosis for N1was 79% and for N2 is 72%.Positive rate of home contacters for N1 was 67% and for N2 was 72%.

Conclusion: 1.The sensitivity and specificity of N1 group and M2 group were higher than that of N2 group and M1 group. 2 ND-O-BSA-IgM-ELISA is more sensitive and more specific than MMP Ⅱ-IgG- ELISA. Higher anti- ND-O-BSA anti-MMP-II antibodies were detected in the serum of household contacts , although they had no clinical signs of leprosy.

Table1 Result for MMPII-IgG ELISA

	n	M1				M2			
		OD	cutoff	sensitivity	specificity	OD	cutoff	sensitivity	specificity
MB	33	0.3±0.26	0.14	94%	87%	0.23±0.22	0.09	94%	100%
PB	25	0.13±0.08	0.09	84%	56%	0.09±0.06	0.06	84%	58%
N	119	0.09±0.08				0.06±0.04			

MB=multibacillary PB=paucibacillary N=normal control

Table2 Result for ND-O-BSA-IgM-ELISA

	n		N1				N2		
		OD	cutoff	sensitivity	specificity	OD	cutoff	sensitivity	specificity
MB	33	0.76±0.86	0.13	100%	100%	0.51±0.65	0.1	100%	92%
PB	25	0.1±0.06	0.08	92%	72.30%	0.05±0.04	0.04	72%	72.3%
N	119	0.06±0.06				0.03±0.04			

Fig. 1

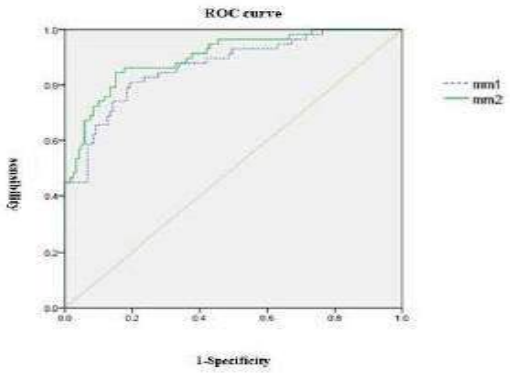
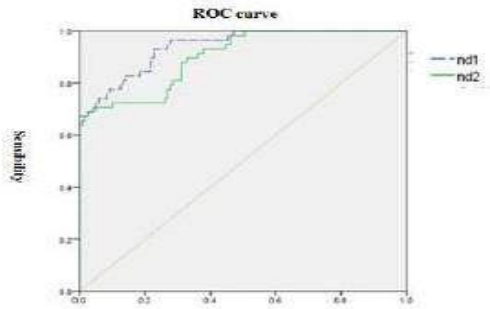


Fig.2



P-073

DETECTION OF SERUM ANTIBODIES AGAINST NT-P-BSA IN LEPROSY PATIENTS

Presenter: Jin Yali

Jinyali Xueguang Ivchengzhi Qugang
Dalian Dermatosis Hospital

Objectives: To evaluate the sensitivity and specificy of the NT-P-BSA-IgM-ELISA and NT-P-BSA-IgG-ELISA

Methods: Serum antibodies IgG and IgM against NT-P-BSA were detected in 80 lepers, 80 normal persons,and the pregnancy individuals, the connective tissue disease, the psoriasis, the pulmonary tuberculosis patients 30 cases for each.

Results:

1. The IgM is more than IgG in serum of lepers, and the two antibodys in multibacillary leprosy patients are all more than them in paucibacillary ones.Also the serum level of the antibodies detected is apparently higher in the serums of pregnancy individuals and the psoriasis, the pulmonary tuberculosis patients than it in the normal people.

Table 1 Results for NT-P-BSA-IgM-ELISA and NT-P-BSA-IgG-ELISA(Serum concention 1:200 and 1:100)

Antibody	Serum concention	Patient mean OD	Normalmean OD	P/N
IgM	1:100	0.52	0.21	2.48
	1:200	0.49	0.11	4.45
IgG	1:100	0.41	0.14	2.92
	1:200	0.39	0.12	3.25

Note: P/N= Patient mean OD / Normal mean OD

The P/N values of the two ELISAs are better when serum concention was 1:200.

Table 2

Serum antibodies of the mormal,the leprosy, the pregnancy,the psoriasis,the tuberculosis,the connective tissue diseases patients detected with NT-P-BSA-IgM –ELISA and NT-P-BSA-IgG –ELISA ($\bar{x}$ ±SD)

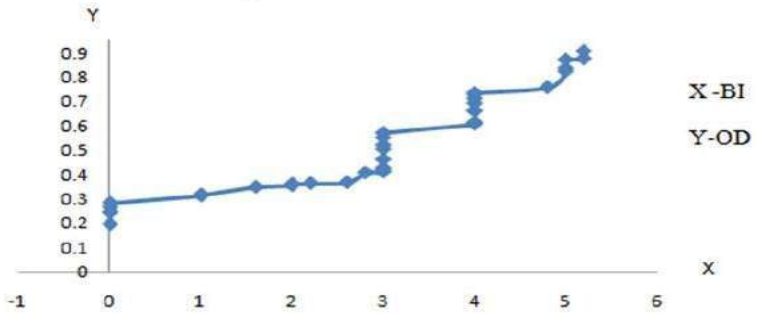
Groups	No	NT-P-BSA-IgM		NT-P-BSA-IgG	
		$\bar{x}$ ±SD	positive rate	$\bar{x}$ ±SD	Positive rate
PB	30	0.34±0.21	18（60%）	0.38±0.16	18（60%）
MB	50	0.58±0.18	50（100%）	0.4±0.18	46（92%）
Total No	80	0.49±0.23	68（85%）	0.39±0.17	64（80%）

Normal	80	0.11±0.03	4（5%）	0.12±0.04	3(3.75%)
pregnancy	30	0.26±0.09	16（53.3%）	0.15±0.03	6（20%）
psoriasis	30	0.23±0.07	13（43.3%）	0.14±0.05	7（23.3%）
tuberculosis	30	0.26±0.12	15（50%）	0.15±0.05	7（23.3%）
connective tissue	30	0.1±0.04	3(10%)	0.11±0.05	3（10%）

PB= pancibacillary，MB=Multibacillary，No=Number，NT-P-BSA-IgM-ELISA(t=7.98，P<0.05)，NT-P-BSA-IgG –ELISA(t=7.56，P<0.05)

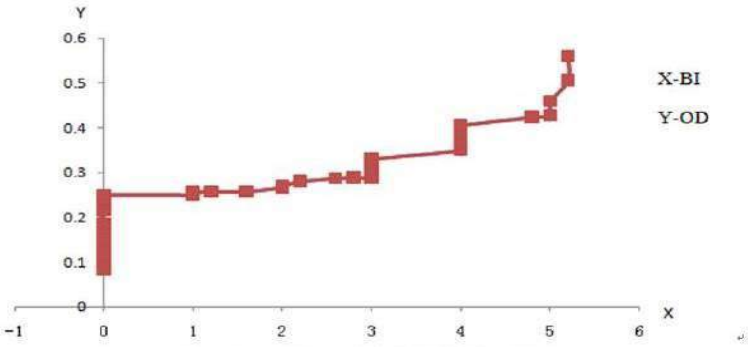
2.Comparision between ELISA and bacterial index(BI)

Fig.1



Relationship between BI and OD of NT-P-BSA-ELISA

Fig.2



Relationship between BI and OD of NT-P-BSA-ELISA

Note:With the increase of bacterial index, the OD value of serological examination also increased.2 When the bacterial index was 0, the serum OD value was between 0.08 and 0.26.3. With the increase of bacterial index, the BI value of different patients was the same, but the OD value of serum had changed.

Conclusion: There are IgM and IgG antibodies in leprosy patients against NT-P-BSA,and the levels of them are high in multibacillary leprosy patients and low in paucibacillary ones.Cross reactions exist between the leprosy patients and the pregnancy individuals , the psoriasis, the pulmonary tuberculosis patients.ELISA is more sensitive than Leprosy detection method.

P-085

DIFFERENTIAL GENE EXPRESSIONS OF T CELL ACTIVATION AND B CELL PROLIFERATION PATHWAYS IN LEPROSY PATIENTS WITH TYPE 1 REACTION

Presenter: Vinay Kumar Pathak

V.K. Pathak[1], I. Singh[1], G. Siddqui[2], R.P. Turankar[1], M. Lavania[1], M. Ahuja[1], V. Singh[1], R.J. Nathan[3], U. Sengupta[1]

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Objectives: The immunological dynamics in Type 1 Reaction (T1R) may be reflected by changes in the levels of certain circulatory molecules like cytokines and chemokines, by functional differences in various T cell subsets which plays a crucial role in peripheral inflammations, and further by differences in the expression levels of various cytokine mRNAs. Present study was aimed to understand the association of genes of T cell and B cell activation pathways with the occurrence of T1R in the leprosy patients.

Methods: A total of 8 patients were recruited after taking informed consent, categorised into two groups namely, a control group which included non-reactional leprosy (NR) patients (n = 4) and group 1 which included T1R patients (n = 4). A 5-mm punch biopsy from margin of the patch was collected from each patient. Further the samples were processed for RNA isolation; thereafter cDNA was prepared by using RT[2]First Strand Kit.

Further PCR array was performed according to manufacturer's instructions using RT[2]Profiler PCR Array (Human T cell and B cell activation), Qiagen. This array included genes involved in B-cell and T-cells activation, proliferation and differentiation along with genes regulating Th1 and Th2 development, T-cell polarization, activation of macrophages, neutrophils, and natural killer cells were also included. Thereafter qPCR was performed to analyze expression of a focused panel of genes (96 genes). CT values were then uploaded on to the data analysis web portal. The p-value statistical test and the fold regulation change were combined using volcano plot.

Results: We observed with the help of scatter plot that total 65 genes were up-regulated and 9 genes were down-regulated in T1R group when compared with NR group. With the help of volcano plot, gene *FASLG* was found to be significantly (p = 0.034) up-regulated in T1R group when compared with NR group (Fold regulation 13.61).

Conclusion: In previous studies up-regulation of genes for cytokines like IFNγ, IP10, TNFα, IL 2 and that for transcription factors like TBX21, COX2 have been reported in leprosy patients with T1R. We also found up-regulation of these genes in T1R group. In addition, *FASLG* gene was significantly up-regulated. This gene *FASLG* is a member of the tumor necrosis factor super family. The primary function of the encoded trans-membrane protein is the induction of apoptosis triggered by binding to FAS. It might be concluded that, the gene might be involved in apoptotic cell death in T1R leprosy patients.

P-103

PROGRESS IN IMMUNODIAGNOSIS AND MOLECULAR BIOLOGICAL DIAGNOSIS OF LEPROSY

Presenter: Yang Zhang

Yang Zhang [1,] Hui Zhou[1],Xiao-jun Chen [1] , Lian-hua Zhang[2]

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Abstract: Leprosy is a chronic infectious disease caused by damage to the skin and the peripheral nervous system from the bacteria Mycobacterium leprae. Early leprosy shows few symptoms and signs until bacteria Mycobacterium leprae proliferate to a certain number, so development of leprosy diagnosis is important for

treatment and control. This paper summarized development and application of diagnostic techniques in leprosy laboratories in recent years to review progress in this field. (Review)

P-126

CYTOKINE PROFILE OF A PATIENT WITH RELAPSED PAUCIBACILLARY (PB) LEPROSY IN COMPARISON WITH THOSE OF INDIVIDUALS WITH CURED PB LEPROSY

Presenter: Tomoyuki Sameshima

Tomoyuki Sameshima[1], Yumi Maeda[2], Tetsu Mukai[2], Masamichi Goto[1]

[1]National Sanatorium Hoshizuka Keiaien; [2]Leprosy Research Center, National Institute of Infectious Diseases

Objectives: In Japan, new leprosy cases have become rare; however, relapses should be monitored carefully. With respect to paucibacillary (PB) leprosy, it might sometimes be difficult to make a definite diagnosis of relapse, because the bacillary index is often negative. To evaluate the usefulness of cytokine profiling in a patient with relapsed PB leprosy, who tested negative for anti-phenolic glycolipid-I antibodies, we compared cytokine expression in the patient's peripheral blood mononuclear cells with those in cured PB leprosy individuals.

Methods: An 89-year-old male relapsed PB patient, who was first treated for leprosy over 50 years ago, was examined. He had three skin lesions, annular erythemas, with loss of sensation in the thighs. Slit skin smears tested negative and skin biopsies revealed a pathology of I to BT leprosy. He received 600 mg rifampicin once a month and 75 mg dapsone daily for 12 months. Before treatment, and 6 and 12 months after starting treatment, the Th1/Th2 cytokine profiles (IFN-γ, TNF, IL-2, IL-4, IL-6, and IL-10) were examined in the supernatant of mononuclear cells from the patient after 96 h of culture, using the Cytometric Bead Array (CBA) Flex Set system. Some mononuclear cells were stimulated with 8 μg/mL of *Mycobacterium leprae* cytosolic protein (MLC), and phytohemagglutinin was used as the standard stimulant. The acquired data were compared with the profiles of cured PB leprosy cases (n = 6). The CBA Enhanced Sensitivity Flex Set system was applied to detect small amounts of cytokines (IFN-γ, TNF, IL-6, IL-8, IL-10, and IL-17A) in the serum, just before treatment and a year before the relapse.

Results: The erythemas disappeared approximately one month after starting treatment. In the culture supernatant just before treatment, increases in IFN-γ and TNF levels and the IFN-γ/IL-10 ratio, and a decreased IL-6 level were observed without stimulation, compared with those found after starting treatment. Upon stimulation by MLC just before treatment, both the IFN-γ and TNF levels were increased markedly. Twelve months after starting treatment, the IFN-γ and TNF levels were decreased to levels similar to those in cured PB leprosy cases. In the serum just before treatment, increases in IFN-γ and TNF levels and the IFN-γ/IL-10 ratio were evident compared with those measured a year before the relapse.

Conclusion: Cytokine profiling using culture supernatants and serum samples may be useful for the diagnosis of relapsed PB leprosy.

P-131

EVALUATING THE PRESENCE OF ANTI-LID-1 AND ANTI-NDO-LID ANTIBODIES AS RISK MARKERS AMONG HOUSEHOLD CONTACTS OF LEPROSY PATIENTS

Presenter: Nanny Herwanto

N. Herwanto[1], Iswahyudi[2], C.R.S. Prakoeswa[1], I. Agusni[1], S. Izumi[2], M.S. Duthie[3].

[1]Department of Dermatology-Venereology, Faculty of Medicine, Universitas Airlangga, Dr. Soetomo Teaching Hospital, Surabaya, Indonesia. [2]Institute of Tropical Disease, Universitas Airlangga, Surabaya, Indonesia. [3] Infectious Disease Research Institute, Seattle, USA.

Objectives: Although the number of leprosy new cases reported annually by WHO have been dramatically reduced since the introduction of multidrug therapy, endemic pockets still linger in Indonesia. Although serological tests are frequently negative in individuals with low levels of *Mycobacterium leprae* infection response, positive responses in novel serodiagnostic tests are indicative of early infection and could potentially be used to direct strategies aimed at breaking the chain of *M. leprae* transmission. We conducted screening among household contacts (HHC) of leprosy patients using the LID-1 and NDO-LID antigens to detect specific antibody responses.

Methods: Serum samples were collected from HHC of known leprosy patients then evaluated by ELISA to detect and measure anti-LID-1 and anti-NDO-LID antibody titers. The rate of seropositivity responses and correlation between the antigens were then determined.

Results: Seventeen individuals were evaluated and 8 (47%) were assessed to have circulating anti-LID-1 antibodies and 9 (52%) were assessed as having anti-NDO-LID antibodies. Unsurprisingly, a strong correlation (r=0.84) was found between LID-1 and NDO-LID antibodies.

Conclusion: Our data indicate that serological evaluation of contacts can be considered an effective strategy for screening and identifying individuals at the highest risk of developing leprosy. The unexpectedly high seropositivity rates among these Indonesian HHC indicates ongoing community-based transmission of *M. leprae* and high rates of subclinical infections. We suggest that individuals with strong antibody responses against either the LID-1 or NDO-LID antigens should receive additional scrunity during their regular follow up examinations. These objective measurements augment the clinical evidence that *M. leprae* infection and leprosy remains a major public health problem especially in highly endemic countries.

P-160

IDENTIFICATION OF IMMUNOLOGICAL, NUTRITIONAL, PARASITOLOGICAL/SEROLOGICAL PARAMETERS IN A CASE-CONTROL STUDY ASSOCIATED WITH LEPROSY

Presenter: Lucia Fraga

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Objectives: Our study is part of a larger project entitled "Leprosy, parasitosis and micronutrient deficiency: new paradigms to combat an ancient disease" involving national and international collaborations. Within this approach we propose to identify immunological, nutritional, parasitological/serological parameters in a case-control study associated with leprosy. In 2017, the overall prevalence of *Mycobacterium leprae* infection was 192.713. Brazil is the second country with the highest number of new cases. The epidemiological actions of control are based on the diagnosis and treatment, moreover, on the surveillance of the household contacts. This disease requires more

innovative approaches to its control. It has been reported that infections caused by parasites as well as micronutrient deficiencies can coexist with leprosy in many endemic areas in Brazil. Chronic helminth infections and malnutrition appear to be associated with suppression of the immune response. Thus, this study proposes to investigate the association of these factors in the development of leprosy in patients and their respective household contacts attended at the basic health units in Governador Valadares and Limeira de Mantena, MG. Brazil

Methods: Blood collection was obtained from all participants (70 PB and MB patients, 70 household contacts and 70 negative controls) to evaluate the production of cytokines, chemokines, micronutrients and serological reactivity. Parasitological feces examination was done by KK and HPJ.

Results: Preliminary results showed a higher production of Th1-type cytokines (IFN-γ, IL-2 and TNF-α) in paucibacillary (PB) group in PBMC stimulated cultures by PHA and ML. Evaluating IgG4 anti-SWAP levels, there was a significant difference between multibacillary (MB) and contacts (p= 0.046). The vitamin D tests showed a deficiency between contacts when compared to controls (*p*= 0.021), as well as between contacts and MB patients (*p*= 0.019). A difference was observed in the number of red blood cells between control and MB patients (*p*= 0.038). In addition, a difference in hemoglobin (*p*= 0.012) and hematocrit values (*p*= 0.016) between contacts and controls and also between controls and MB patients (*p*= 0.03). The number of platelets between PB and MB was different (*p*= 0.0069).

Conclusion: Given the scarcity of these interactions, it is relevant a study addressing co-infection and micronutrient deficiencies that can generate important information for the implementation of strategies that can efficiently control the transmission of leprosy. All household contacts that showed parameters that indicate risk of subclinical infection will be followed by public health care services. Acknowledgements: FAPEMIG, PMBqBM, CAPES, EMORY UNIVERSITY. Key words: leprosy, case-control, biomarkers.

P-161

IL-17 PRODUCING GAMMA DELTA T CELLS ASSOCIATED WITH INFLAMMATION AND IMMUNO-PATHOLOGY OF LEPROSY REACTIONS.

Presenter: Chaman Saini

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[1]Department of Biochemistry and Department of [2]Dermatology and Venereology, All India Institute of Medical Sciences, Ansari Nagar, Department of [3]Dermatology and Venereology SJH,New Delhi-110029, India

Objectives: Leprosy reactions appears episodically in a proportion of leprosy patients and lead to high inflammation, morbidity and peripheral nerve damage that require immediate medical attention.γδ+IL-17 T cells are involved in inflammation and FOXP3$^+$ T cells are involved in maintaining homeostasis in infectious and autoimmune diseases. To investigate the role of IL-17 producing different phenotypes of γδ T cells in leprosy reactions.

Methods: A total of 40newly diagnosed and untreated stable leprosy and reactions patients were recruited. Real Time PCR was used for gene expression of IL-17 and IFN-γ. Different phenotypes of Gamma delta T cells were studied by Flowcytometry and culture supernatant was estimated by sandwich ELISA assays.

Results: In this study, leprosy reactions showed CD4$^+$ γδ T cells highly express IL-17 and IFN-γ in both reactions RR and ENL. Furthermore, high intracellular IL-17 and IFN-γ significantly express in CD4$^+$TCRγδ$^+$ FOXP3$^+$ T cells in both reactions. Moreover, high IL-17 and low TGF-β in TCR-γδ cells were associated with phosphorylation of STAT3 and STAT5A respectively.

Conclusion: IL-17 and IFN-γ constitution of a local immune response with low production of TGF-β and transient expression of FOXP3 could be important in leprosy reactions and may cause of emergency in leprosy reactions. It may be helpful to understand the T cell pathology involves in leprosy reaction.

P-177

THE TRANSCRIPTIONAL PROFILE OF MACROPHAGE IN RESPONSE TO MYCOBACTERIUM LEPRAE SONICATE STIMULATION

Presenter: Zihao Mi

Furen Zhang[1]

[1]Shandong Provincial Hospital for Skin Diseases, Shandong University, Jinan, China

Objectives: To investigated the immune response of THP-1 derived macrophage stimulated with Mycobacterium leprae sonicate (MLS) to verify the genetical associations of leprosy susceptibility genes.

Methods: We sequenced the expression of mRNA, long non-coding RNA (lncRNA) and microRNA of THP-1 derived macrophage. And compared the RNAome of MLS stimulated macrophages with unstimulated macrophages.

Results: In total, 133 mRNAs, 28 lncRNAs and 4 microRNAs were observed to be significantly differentially expressed in MLS stimulated macrophage. KEGG pathway enrichment of differentially expressed mRNA and lncRNA both demonstrated that TNF signaling, NF-κB signaling, cytokine-cytokine receptor interaction, chemokine signaling, NOD-like receptor signaling and TLR signaling pathway were involved in the immune response. The inflammation mediator miR-146 and miR-122 which can regulate interferons signaling pathway were also found to be up regulated in the MLS stimulated macrophage.

Conclusion: Our in vitro transcriptional profile further confirmed the involvement of these immune pathways that genetically associated with leprosy, providing an in vitro disease model for further leprosy pathogenesis studies.

P-178

THE IMMUNOGENICITY AND SAFETY OF INACTIVATED INFLUENZA VIRUS VACCINE IN CLINICALLY CURED LEPROSY PATIENT IN CHINA

Presenter: Yi Zheng

Yi Zheng[1#], Zheng-Gang Zhu[2#], Quan Hu[1,*], Yuan Fang[3,*]

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Background: Leprosy is an infectious disease caused by the bacterium Mycobacterium leprae. Influenza vaccine is an important influenza prevention strategy and the preparations used display good safety and tolerability profiles. But clinical cured leprosy patients have special physical conditions, such as ulcer, nerve system damage and terminal microcirculation disturbance, which could pose challenges for safety after immunization, and the immunogenicity of vaccination is unclear.

Methods: We conducted a clinical study in Wuhan between November 15 and December 15, 2017. Two groups of participants received a 0.5 ml dose of the inactivated split-virion trivalent influenza vaccine and a follow-up 28 days observation of any solicited and unsolicited adverse events.

Results: A total of 65 subjects were included in the study. The total rate of reactogenicity was 0.0%[0/41] in leprosy cured group and 37.5% [9/ 24] in control group. 14 days after vaccination, the seroconversion rate for H1N1 was difference between leprosy cured group and control group (79.17% VS. 41.83%, P=0.0082), but not for N3N2 (50.00% VS. 34.25%, P=0.4468). IL-2, IL-4, IL-6, IL-10, TNF, INF-γ and IL-17 were further selected to detect immune response after vaccination. Before vaccination conducted, leprosy cured group have relatively high concentration of IL-6, IL-10, TNF, INF-γ and IL-17 compared to control group. Compare pre-2 week cytokines concentration change between leprosy cured group and control group, IL-6 was down-regulated when influenza virus was challenged, especially in leprosy cured patient (-11.52 vs. -144.38, P<0.0001). Subgroup analysis revealed that the immunization administration declined IL-17 concentration in Turberculoid type subgroup, but not in Lepromatous type subgroup or control group (p=0.0065).

Conclusions: To our knowledge, the present study is the first clinical study to evaluate the immunogenicity and safety of influenza vaccine in clinically cured leprosy patients. We concluded that clinically cured leprosy patients are relatively safe for influenza vaccine. Leprosy cured patient have immune disorder in producing antibody, compared to normal people. Nevertheless, after screened 7 cytokine and immune mediators, we found that IL-6 and IL-17 are two sensitive indicators in immune response for leprosy affected patients. The identification of indicators might be used as predictive markers in leprosy early symptom monitoring.

P-298

MULTIFUNCTIONAL M. LEPRAE ANTIGEN-SPECIFIC T CELLS ARE MORE PREVLENT IN CONTACTS THAN PATIENTS; IMPLICATIONS FOR PROTECTION AND VACCINE DEVELOPMENT

Presenter: Malcolm Duthie

Malcolm S. Duthie[3], Márcio Bezerra-Santos[1,2]*, Marise do Vale-Simon[1], Aline Silva Barreto[1], Rodrigo Anselmo Cazzaniga[1], Daniela Teles de Oliveira[1], Mônica Rueda Barrios[1], Alex Ricardo Ferreira[1,4], Nanci C. Santos-Bio[1,4], Steven G. Reed[3], Roque Pacheco de Almeida[1,4,5], Cristiane Bani Corrêa[1], and Amélia Ribeiro de Jesus[1,4,5]

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Objectives: Leprosy, or Hansen's disease, is chronic disease caused by *M. leprae* infection that can cause severe neurological complications and physical disabilities. A leprosy-specific vaccine would be an important component within control programs but is still lacking. The T cell responses of individuals that limit bacterial dissemination (i.e., paucibacillary (PB) and most healthy household contacts (HHC)) have been instructive in identifying potential vaccine antigens. Given that multifunctional CD4 T cells (i.e., those capable of simultaneously secreting combinations of interferon (IFN)-γ, interleukin (IL)-2 and tumor necrosis factor (TNF)) have now been implicated in the protective response to several infections, we evaluated if *M. leprae* antigen-specific multifunctional T cells differed between leprosy patients and their healthy contacts.

Methods: We used whole blood assays and isolated peripheral blood mononuclear cells to characterize the antigen-specific T cell responses of PB and multibacillary (MB) leprosy patients, HHC and endemic control individuals. Blood and cells were incubated with either crude mycobacterial extracts (*M. leprae* cell sonicate (MLCS) and purified protein derivative (PPD)) or recombinant ML2028 protein, the homolog of *M. tuberculosis* Ag85B.

Results: Multiplex bead array revealed antigen-specific production of IFN-γ and IL-2 from cells of HHC and PB, confirming a Th1 bias within these individuals. Multiparameter flow cytometry then revealed that the population of multifunctional ML2028-specific T cells observed in HHC was larger than that observed in PB patients.

Conclusion: Taken together, our data suggest that these multifunctional antigen-specific T cells provide a more effective response against *M. leprae* infection that prevents the development of leprosy. These data further our understanding of *M. leprae* infection/ leprosy and are instructive for vaccine development.

P-312

PROTEIN AND mRNA EXPRESSION LEVEL OF LL37 IN LEPROSY PATIENTS AND HOUSEHOLD CONTACTS

Presenter: Mahlet Osman

Mahlet Osman[1,2], Tsehaynesh Lema[1,2], Dawit Hailu[1], Adane Mihret[1], Markos Abebe[1], Kidist Bobosha[1]

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Background: The antimicrobial peptide cathelicidin, also called LL-37, has broad-spectrum antimicrobial activity against bacteria, fungi and viruses. LL-37 is the only human cathelicidin antimicrobial peptide encoded by the gene CAMP. It referred to as LL-37, since it has 37 amino acid sequences starting with two leucines. There are few reports that showed its Level, pro and anti-inflammatory immunomodulatory activity of LL37 in mycobacterial infections; tuberculosis and leprosy that indicates the need for further investigation of the role of LL37.

Objective: To investigate the level of LL37 in different forms of leprosy.

Methods: A cross sectional study was conducted from January 2017 to September 2018 at ALERT hospital. A total of 74 HIV negative individuals consists of 26 leprosy patients (11 tuberculoid leprosy/borderline tuberculoid (TT/BT), 15 borderline lepromatous/lepromatous leprosy (BL/LL)), 23 Household contacts and 25 healthy endemic controls were included in this study; N=25 by convenience sampling. LL37 expression was measured at protein and mRNA level in newly diagnosed leprosy patients attending ALERT hospital, their household contacts and healthy controls.

Result: Plasma level LL37 was significantly higher in household contacts compared to lepromatous patients (p=0.017) and endemic controls (p=0.007). However, there was no statistically significant differences in mRNA expression level of LL37 between the three groups; patients and contacts (p=0.3244), patient and controls (p=0.5560), contact and controls (p=0.0758) and within the two polar forms of leprosy; tuberculoid and lepromatous (p=0.3842).

Conclusion: Our finding demonstrates that the low plasma level of LL37 in lepromatous patients may give a clue why there is a delay in clearing the bacilli from their body However, measuring the level of LL37 at the infection site would be more informative.

P-343

LOCAL HUMORAL RESPONSE DURING *Mycobacterium ulcerans* INFECTION: PRODUCTION OF MYCOLACTONE NEUTRALIZING ANTIBODIES

Presenter: Mélanie Foulon

Mélanie Foulon[1], Amélie Pouchin[1], Marie Robbe-Saule[1], Lucille Esnault[1], Amandine Durand[1], Fida Khater[1], Estelle Marion[1] & Laurent Marsollier[1].

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Objectives: Buruli ulcer (BU), or *Mycobacterium ulcerans* infection, remains the third most common mycobacterial disease worldwide. This chronic infectious disease is characterized by a massive skin tissue destruction leading to the development of significant ulcerative lesions. These are caused by the mycolactone, an

immunomodulatory and analgesic toxin which act locally. Several studies showed that in spite of recruitment of major immune actors, the immune response is not able to control the lesion development. For many years, antibiotic treatment is effectively used for earliest and non-severe stages of BU but the most serious stages remains more complicated to treat. Though, we have recently reported the occurrence of spontaneous healing in 5% of cases in the absence of medical treatment, suggesting a host's strategy development able to counteract the effects of *M. ulcerans*. Within this framework, we investigated the local humoral response all through *M. ulcerans* infection stages using our spontaneous healing's mice model.

Material & methods: Two mice strains, one conventional model (C57Bl/6) and one spontaneous healing model (FVB/N) model, were infected by *M. ulcerans* (10^4 bacilli/tail). Local skin immunoglobulins were quantified at each stage of infection within an ELISA assay and local immune infiltrate was characterized by flow cytometry and histological analysis.

Results: We have showed the presence and the rise of antibodies-producing B-cell during first stages of spontaneous healing process. We identified the presence of immunoglobulins able to recognize the mycolactone all through the infection course in mice and in biopsies of Buruli ulcer patients, while none of these have ever been found in sera of patients or mice, highlighting a distinct humoral signature between systemic and skin. Finally, for the first time, we revealed mycolactone-neutralizing antibodies only in our spontaneous healing mice model.

Conclusion: Our findings pave the way for deploying innovative therapeutic strategies and protocols. Thus, it would be possible to consider the production of monoclonal anti-mycolactone antibodies as an innovative new specific and sensible diagnosis tool. Addedly, reasoning from the fact that neutralizing antibodies broadening the treatment of toxic venom, the use of mycolactone neutralizing antibodies could be a potential therapeutic strategy for Buruli ulcer

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P-383

REPONSE HUMORALE LOCALE LORS DE L'INFECTION A *MYCOBACTERIUM ULCERANS*: PRODUCTION D'ANTICORPS LOCAUX NEUTRALISANT LA MYCOLACTONE

Presenter: Melanie Foulon

Mélanie Foulon[1], Amélie Pouchin[1], Marie Robbie-Saule[1], Lucille Esnault[1], Amandine Durand[1], Fida Khater[1], Estelle Marion[1], Laurent Marsollier[1].
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Objectifs: L'ulcère de Buruli (UB), ou infection à *Mycobacterium ulcerans*, est la troisième mycobactériose au monde après la Tuberculose et la Lèpre. Cette maladie chronique est caractérisée par une destruction massive des tissus menant au développement de larges ulcérations cutanées. Ces lésions sont causées par la mycolactone, toxine aux propriétés immunomodulatrices et analgésiques agissant localement. Plusieurs études ont démontré qu'en dépit du recrutement d'acteurs immunitaires majeurs, la réponse immunitaire cellulaire de l'hôte n'est pas capable de contrôler l'infection. L'antibiothérapie a fait ses preuves dans le traitement des stades précoces mais les formes plus graves restent plus compliquées à traiter. Cependant, nous avons récemment rapporté un phénomène naturel de cicatrisation spontanée des plaies dans 5% des cas en l'absence de traitement médical, suggérant la mise en place par l'hôte d'une stratégie adaptative. Dans ce contexte, nous avons voulu caractériser la réponse humorale locale durant l'infection en utilisant notre modèle original murin de cicatrisation spontanée.

Matériel et méthodes: Deux modèles de souris, un conventionnel (C57Bl/6) et un modèle de cicatrisation spontanée (FVB/N) ont été infectés par *M. ulcerans* (10^4 bacilles/queue). Les immunoglobulines ont été quantifiées à chaque stade de l'infection grâce à un ELISA et l'infiltrat immunitaire local a été caractérisé par des analyses de cytométrie en flux et d'histologie.

Résultats: Nous avons mis en évidence l'émergence de cellules productrices d'anticorps durant les premiers stades du processus de cicatrisation spontanée. Nous avons identifié des anticorps capables de reconnaitre la mycolactone chez les souris infectées et dans des biopsies de patients UB, alors qu'aucun anticorps anti-mycolactone n'a jamais été détecté dans le sérum de souris ou de patients, suggérant une signature humorale distincte spécifique de la peau. Finalement, nous avons mis en évidence des anticorps neutralisant la toxine au sein du modèle de cicatrisation spontanée.

Conclusion: Nos résultats ouvrent la voie vers de nouvelles stratégies thérapeutiques et diagnostiques. Nous envisageons de produire des anticorps monoclonaux dirigés contre la mycolactone afin de développer de nouveaux outils diagnostiques plus sensibles et spécifiques. De plus, étant donné l'utilisation d'anticorps neutralisants contre certains composants toxiques comme le venin, il semble envisageable d'utiliser les anticorps anti-mycolactone dans le traitement de l'ulcère de Buruli.

P-389

IDENTIFICATION OF ANTIGENS FOR EARLY DIAGNOSIS OF LEPROSY

Presenter: Ana Laura Grossi de Oliveira

Ana Laura Grossi de Oliveira[1], Vanêssa Gomes Fraga[1], Mariana Santos Cardoso[1], Anderson Coqueiro dos Santos[1], João Luís Reis Cunha[1], Sandra Lyon[2], Maria Aparecida de Faria Grossi[3], Lilian Lacerda Bueno[1], Daniella Castanheira Bartholomeu[1], Ricardo Toshio Fujiwara[1]

[1]Universidade Federal de Minas Gerais,[2]Hospital Eduardo de Menezes /Fundação Hospitalar do Estado de Minas Gerais, [3]Secretaria de Saúde de Minas Gerais

Objective: Leprosy remains a relevant health problem in many developing countries, presenting difficulties in diagnosis that result in late treatment and severe disabilities. The objective of this study was to identify polymorphic linear B-cell epitopes among different clinical forms of *Mycobacterium leprae* infection by genomic screening approach.

Method: Linear B-cell epitope predictions were performed on the predicted proteome from *Mycobacterium leprae* genome, using the BepiPred 2.0 program, with cutoff of 0.55. Analyzes of the degree of structural disorder of the predicted proteins were carried out in the IUPred program, with a cutoff of 0.5. Then, 300 peptides with higher prediction scores were synthesized by solid phase peptide synthesis in SPOT membrane. The peptides antigenicity was tested by immunoblotting assays with pools of sera from 50 individuals as described: 10 paucibacillary (PB) and 10 multibacillary (MB) leprosy; 10 household contacts (HHC); 10 tuberculosis (TB) patients (used to evaluate cross-reactivity with *M. tuberculosis*); and 10 healthy controls (HC) from Brazil.

Results: After exclusion of the peptides that were reactive with the sera pool of healthy individuals, household contacts and patients infected with tuberculosis, we identified 20 potential antigen candidates, which are specific to clinical forms of leprosy, for measuring subsequent human antibody response as characterized: two extremely specific peptides from tuberculoide-tuberculoide form (TT); one peptide that responded to all forms together borderline-tuberculoide (BT), mid-bordeline (BB) and, borderline-lepromatous (BL), and 17 highly specific peptides from lepromatous-lepromatous (LL) form, that were defined as PEPHANS 1 to 20.

Conclusion: In summary, twenty specific peptides were identified as potential antigens to diagnostic distinct clinical forms of leprosy. All peptides will be tested separately and probably as a chimera with sera from healthy and infected individuals to monitor the immune response of leprosy patients for the purpose of early diagnosis test for *M. leprae* infection.

P-413

AUTOPHAGY IMPAIRMENT IS ASSOCIATED WITH INCREASED NLRP3 INFLAMMASOME ACTIVATION AND TYPE 1 REACTION DEVELOPMENT IN MULTIBACILLARY CELLS.

Presenter: Roberta Olmo Pinheiro

R. O. Pinheiro[1], B. J. A. Silva[1], M. G. M. Barbosa[1], R. B. S. Prata [1], H. Ferreira[1], J. A. P. Oliveira[1] , P. R. Andrade[1], G. M. Sperandio da Silva[2], J. A. C. Nery[1], E. N. Sarno[1], M. O. Moraes[1]

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Objectives: Leprosy reactions are responsible for incapacities in leprosy and represent the major cause of permanent neuropathy. The identification of biomarkers able to identify patients more prone to develop reaction could contribute to adequate clinical management and the prevention of disability. Type 1 reaction (T1R) may occur in unstable borderline patients and also in lepromatous patients. To identify biomarker signature profiles related with the T1R onset, multibacillary patients were recruited and classified accordingly the occurrence or not of T1R during or after multidrugtherapy.

Methods: Analysis of the pattern of gene expression in skin cells from multibacillary patients was performed by the use of PCR array for innate and adaptive immunity and autophagy (QIAGEN). The evaluations of autophagy and inflammasome activation were performed by immunofluorescence and immunoblotting.

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Results: Analysis of skin lesion cells at diagnosis of multibacillary leprosy demonstrated that in the group that developed reaction (T1R) in the future there was a downregulation of autophagy associated with the overexpression of *TLR2* and *MLST8*. The autophagy impairment in T1R group was associated with increased expression of *NLRP3*, caspase-1 (p10) and IL-1β production. In addition, analysis of IL-1β production in serum from multibacillary patients demonstrated that patients who developed T1R have significantly increased concentrations of IL-1β at diagnosis, suggesting that the pattern of innate immune responses could predict the reactional episode outcome. *In vitro* analysis demonstrated that the blockade of autophagy with 3-methyladenine (3-MA) in *Mycobacterium leprae*-stimulated human primary monocytes increased the assembly of NLRP3 specks assembly, and it was associated with an increase of IL-1β and IL-6 production.

Conclusion: Together, our data suggest an important role for autophagy in multibacillary leprosy patients to avoid exacerbated inflammasome activation and the onset of reversal reaction.

ILC-3: BASIC SCIENCE:

3.2 Microbiology

P-005

CHANGES OF BACTERIOLOGICAL INDEX FROM SLIT SKIN SMEARS OF NEWLY MULTIBACILLARY LEPROSY PATIENTS AFTER ONE AND TWO YEARS TREATMENT WITH MULTIDRUG THERAPY

Presenter: Thaverit Sittiwakin

Thaverit Sittiwakin
Rajprachasamasai Institute, Thailand

Objectives: To study the changes of bacteriological index (B.I) form slit – skin smears (SSS) of newly multibacillary leprosy cases after treated with 1 and 2 years of multidrug therapy (MDT).

Methods: This was a retrospectively descriptive study on changes of bacteriological index (B.I) form slit – skin smears (SSS) of 100 newly multibacillary leprosy cases treated with 1 and 2 years of multidrug therapy (MDT) from the medical record of Rajprachasamasai Institute 2007 – 2011. Patients were divided into two groups each group consisted of 50 patients whose B.I. were below and above 4.0.

Results: The initial B.I. prior to MDT of 100 studied cases were ranged from 0.25 – 5.25 (μ= 2.47), and decline of B.I. after treatment with MDT for 1 and 2 years were 25.00 and 44.53 percent respectively. Among those 50 MB cases whose initial B.I. were 4.0 and above, decline of B.I. after 1 and 2 years treatment with MDT were 30.25 and 48.75 percent respectively while such decline of 19.05 and 37.14 percent of B.I. were found among other groups of 50 newly MB cases whose initial B.I. were below 4.0.

Conclusion: The declination of B.I. among the group whose initial B.I. were 4 and above were more than those with initial B.I. below 4. The data supported reduction of MDT duration from 2 to 1 year together with increasing duration of follow-up of those released from treatment (RFT) cases form 5 years to 12 years in order to be able to more effective detection and treatment of more relapsed cases as essential intervention to prevent new transmission from relapsed cases after successful elimination of leprosy.

P-155

MICROFLORA OF TROPHIC ULCERS IN LEPROSY PATIENTS

Presenter: Lyudmila Saroyants

L.V. Saroyants, A.V. Khrapova, N. M. Gabitova, K. Sh. Arnaudova, M. Yu. Yushin
Leprosy Research Institute, Astrakhan, Russia

Objectives: One of the serious complications in leprosy patients who are in clinical regression are neurotrophic disorders, in particular, neurotrophic ulcers, the incidence of which in different regions of the world ranges from 10% to 50%. The success of drug treatment is primarily due to the correct selection of antibacterial agents, which is associated with the identification of pathogens of microflora in trophic ulcers. The aim of the study is identification of pathogenic microflora isolated from trophic ulcers of leprosy patients.

Methods: 15 leprosy patients with neurotrophic ulcers of the feet were examined. To identify the bacterial content of trophic ulcers used yolk-salt agar (Staphylococcus), Endo agar (Escherichia coli, Proteus mirabilis, Klebsiella), meat-peptone agar (Citrobacter, Pseudomonas aerugenosa), Streptococcus agar (Streptococcus). After isolation of pure cultures, further identification was carried out on the microbiological analyzer “BIOMIC V3” (USA) in kits “Biomerieux” (USA). Sensitivity of the isolated strains to antibiotics was studied by disco-diffusion method. Identification of mycobacterial flora was carried out using the methods of polymerase chain reaction and hybridization. DNA amplification was performed using kits of reagents and primers of the company "Hain Lifescience" (Germany), based on DNA-STRIP technology: kits of "GenoType Leprae DR”, “GenoType Mycobacterium CM”, “GenoType Mycobacterium AS” (Germany).

Results: The analysis of the microbial landscape showed that Staphylococcus aureus (33,3%), Proteus mirabilis (20,0%), Pseudomonas aegidiposa (20,0%), Citrobacter (10,3%), Escherichia coli (6,9%), Staphylococcus epidermides (4,8%) Streptococcus sp (3,4%) are sown from trophic ulcers of patients. In the molecular-biologic identification of microflora of ulcers from leprosy patients 20,0% cases in ulcers were detected M.leprae; 40,0% were identified M.scrofulaceum; M.avium were occurred in 26,7% of cases; M.kansasii, M.fortuitum and M.abscessus – 20,0% of cases and M.xenopi – 13,3%. It was found that Staphylococcus sp. is most sensitive to ceftriaxone, gentamicin, levomycetin. Pseudomonas aeruginosa is sensitive to gentamicin, but resistant to ceftriaxone. Proteus mirabilis –sensitive to imipenem with cilastatin. For Streptococcus sp. resistance to ciprofloxacin and erythromycin was revealed.

Conclusion: In some leprosy patients in the stage of clinical regression, trophic ulcers colonized by different mycobacteria, including M.leprae, which may contribute to chronic process and create difficulties in the treatment. The study of the microflora of neurotrophic ulcers is an important step in an integrated approach to the treatment of this complication of the leprosy process.

P-226

LANDSCAPE OF GENOME AND HOST CELL RESPONSE OF *MYCOBACTERIUM LEPRAE* REVEALS PATHOGENIC FEATURES

Presenter: Haiqin Jiang

Haiqin Jiang[1,2], Hongsheng Wang[1,2]

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Objectives: *Mycobacterium leprae* causes chronic infectious disease that can result in debilitating deformities and slowly progress throughout one’s life if left untreated. A strong host genetic contribution to leprosy susceptibility is well established. However, the modulation of the genome and transcriptional response to infection are poorly understood. To better explore the pathogenicity- related molecular mechanisms of *M. leprae*, a pathogen with skin infection. A systems approach exploring the bacterial genome, transcriptome, and host response transcriptome was adopted.

Methods: We used effectiveness data from genome sequence, transcriptome, viability assays and the host response transcriptome of *M. leprae*, and compared with typical pathogenic bacilli and opportunistic pathogen to obtain pathogen features.

Results: *M. leprae* genome comprises 3,27 Mbp with 57.8% G+C content and 2,770 predicted coding genes. Evolutionarily, the bacterium belongs to a cluster in the phylogenetic tree along with three target pathogenic strains,

namely, *M. tuberculosis, M. marinum* and *M. ulcerans*. Phenotypically, *M. leprae* shows different infection and replication capacity with pathogenic bacilli in macrophage. The strain activated NF-kappa B, Cytokine and Chemokine of host innate immune-related signaling pathways, similar gene expression profiles and shared common early-response with pathogenic bacilli. *M. leprae* upregulated specific host response genes, such as CCL4, DSCAM and CDH1.

Conclusion: In this study, we exploited *M. leprae* as a unique resource, to conduct the most comprehensive study of differential gene features in *Mycobacterium species*. We provided insights into the genome characteristics of *M. leprae* and mechanisms of host-pathogen interaction mechanisms by comprehensive comparative analysis of its genome and host response transcriptome. These data will help to elucidate how increased variability of gene expression and effective adaptability potentially affect the pathogenicity of the mycobacteria and the immune processes of the host.

P-359

DIVERSITY OF NONTUBERCULOUS MYCOBACTERIA FROM DIFFERENT BLOCKS OF PURULIA DISTRICT WEST BENGAL OF INDIA

Presenter: Vikram Singh

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Objectives: Nontuberculous mycobacteria (NTM) are ubiquitous environmental opportunistic pathogen found in soil and water which includes more than 198 different mycobacterial species (http://www.bacterio.net/mycobacterium.html). The aim of the present study is to isolate the NTM species from leprosy patient inhabitant area soil and water samples and its association with viable *M. leprae* from the leprosy endemic pockets of Purulia, West Bengal.

Methods: Total 268 and 160 samples were collected from residing environment of leprosy patients from 19 different blocks of Purulia district West Bengal. The environmental samples were processed for decontamination followed by culture on the Lowenstein Jensen(LJ) media for isolation of NTMs. Identification of NTM species was done by PCR using universal primer *16S rRNA* gene target of mycobacteria and Sanger sequencing method. PCR and RT-PCR were performed for the detection of viable *M. leprae* from environmental samples. The Phylogenetic tree was constructed by using 'Mega X' software to find out the Phylogenetic association between *M. leprae* and NTMs.

Results: *M. leprae* DNA was noted in 80(30%) soil samples and 29(18%) water samples. Further, viable *M. leprae* was detected using RT-PCR from 40(15%) soil and 20(13%) water samples. Out of 52 NTM isolates from soil, 29(56%) were SGM confirmed by PCR sequencing method such as *M. simiae(4), M. holsaticum(1), M. europaeum(3), M. chimaera(1), M. scrofulaceum(5), M. parascrofulaceum(5), M. intracellulare(10)*. Twenty three (44%) were RGM confirmed by PCR sequencing method, such as *M. fortuitum(15), M. smegmatis(3), M. timonense(3)* and *M. vaccae(2)*. Thirty six NTM isolates were obtained from water samples, out of which 15(42%) were SGM confirmed by sequencing method such as *M. simiae(1), M. europaeum(4) M. scrofulaceum(5), M. parascrofulaceum(5) and 21(58%) were* RGM including *M. fortuitum(15) and M. smegmatis(6).* Out of all RGM group, *M. timonense* was isolated for the first time from environmental soil sample in recorded literature, out of all SGM group, *M. holsaticum, M. europaeum, M. simiae and M. chimaera* was isolated first time from environmental samples. It was observed that *M. fortuitum and M. intracellulare* was recorded as the most prevalent RGM and SGM species respectively from this region. The Phylogenetic tree reveals that *M. leprae* is closely related to *M. simiae* and distantly related to *M. vaccae.*

Conclusion: Several species of pathogenic and nonpathogenic NTM species along with *M. leprae* was observed from pond soil and water samples from leprosy endemic regions and these might be playing a role in causing disease and maintaining leprosy endemicity in India.

P-382

KETOGENIC DIET BENEFITS AGAINST *MYCOBACTERIUM ULCERANS* INFECTION: KEYS TOWARD WOUND MANAGEMENT IMPROVEMENT IN BURULI ULCER

Presenter: Melanie Foulon

Mélanie Foulon[1], Marie Robbe-Saule[1], Lucille Esnault[1], Laurent Marsollier[1], Estelle Marion[1].
[1]Laboratoire ATOMycA, CRCINA INSERM U1232, 4 Rue Larrey 49933 Angers

Objectives: Ketogenic diet is used for several years in a wide range of pathologies (epilepsy, cancer…). Some studies demonstrated the advantages of this diet in wound healing and tissue repair while some others studies showed utility of this diet in treatment of bacterial infections (urinary tract infections) and/or inflammatory diseases (gout, acnes…).Taken together, these studies bring out the idea that ketogenic diet may be useful to help an organism to take over an inflammation and/or an infection. However, few studies have pushed the investigations supporting this idea. Buruli ulcer, or *Mycobacterium ulcerans* infection, is a chronic infectious disease characterized by large skin ulcerations and a local severe inflammation. In this context, we evaluated the impact of a ketogenic diet on this pathology using an *in vitro* murine model mimicking each stage of human *M. ulcerans* infection.

Material and methods: Two mice groups (n=25), under conventional (control) or ketogenic diet respectively were infected by *M. ulcerans* (10^4 bacilli/tail). The evolution of lesion development was followed and histological and microbiological analyses were performed.

Results: Our primary observations showed that the kinetic of the lesions development was drastically delayed comparatively to mice under a conventional diet. To understand this feature, we were interested in characterization of both host and bacilli responses. We first highlighted a decrease of the local skin inflammation in mice under ketogenic diet. Moreover, we demonstrated that bacilli growth was significantly slower in these tissues, supported by *in vitro* results.

Conclusion: In summary, our results show that ketogenic diet provides consequent benefits to the host in face of the *M. ulcerans* infection in mice. We seek now to take advantage of these benefits and associated it to usual antibiotic treatments in order to reduce treatment length and improve wound healing in Buruli ulcer.

ILC-3: BASIC SCIENCE:

3.3 Molecular Biology and Genetics

P-006

ESTABLISHMENT AND OPTIMIZATION OF PCR BASED ON SPECIFIC REPETITIVE SEQUENCES OF M.LEPRAE

Presenter: Jin Yali

Jinyali Xueguang Ivchengzhi Qugang
Dalian Dermatosis Hospital, China

Objectives: Our objective is to establish a gene amplification method based on specific repetitive sequences of M. leprae genome with pure leprosy DNA in our laboratory.

Methods:

1）.Material

Template DNA: DNHP-63(pureleprosy bacillus DNA) is provided by the US ATCC.

Primer（synthesized by Sangon）： LP1:GCACGTAAGCCTGTCGGTGG

LP2:CGGCCGGATCCTCGATGCAC

PCRamplification system：primer(LP1,LP2),dNTP mix,template,soft water.

2）.Method：

(1)Template 2ug of pureleprosy bacillus DNAwas dissolved in 200ul sterile double distilled water, which is supplied with an estimated bacterial load of 10^7organisms/ml.Then it was diluted into the concention of 10^6/ml，10^5/ml，10^4/ml，10^3/ml ，10^2/ml ，10^1/ml ，10^0/ml，10^{-1}/ml ，10^{-2}/ml.

(2) PCRamplification The final composition of the PCR mixture was 25ulDntp MIX;10ul template DNA;2ul primer;Then sufficient double distilled wateradd to bring the volume to 50ul.

PCR to detect M.leprae DNA.Amplification consisted of one cycle of denaturation at 95℃7min,amplication at 92℃1min, 61℃2min,61℃2min for 30 cycles.extension 72℃10min.

Gel electrophoresis PCR product(10ul) was added to loading buffer(Sigma)2.5ul and electrophoresed in 1.5%agarosegel in TBE bufferat 40Afor 25min. AmplifiedDNA was visualised by ethidium bromide staining plus ultraviolet light and was recorded with a Polaroid camera.

Results:

1.M.leprae PCR after 30 cycles of amplification with different template concentrations from 10^5 /ml to 10^2 /ml.LanM:Marker,Lanes 1-4: template dilution10^5,10^4, 10^3, 10^2. Lane5: negative control.

Fig.1.

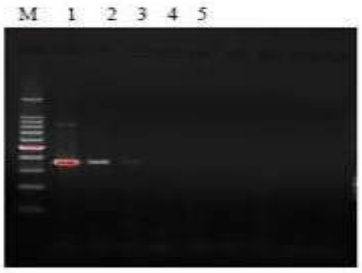

Fig.1 M.leprae PCR after 30 cycles of amplification with different template concentrations from 10^5 /ml to 10^2 /ml LanM:Marker,Lanes 1-4: template dilution10^5,10^4, 10^3, 10^2. Lane5: negative control.

2.The template concentrations is 10^4 /ml, and the primer added were 1ul,0.7ul,0.5ul,0.25ul,0.1ul,as showed above from Lane1 to lane 5.

Fig.2.

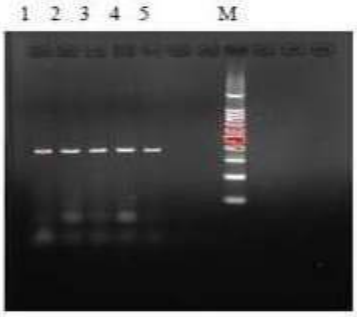

Fig.2 The template concentrations is 10^4 /ml, and the primer added were 1ul,0.7ul,0.5ul,0.25ul,0.1ul,as showed above from Lane1 to lane 5.

3.The template concentrations is 10^2 /ml, and the primer added were 0.1ul,0.2ul,0.3ul,0.5ul,0.7ul,as showed above from Lane1 to lane 5,in which lane1and 2 are with the same amount of primer.

Fig.3.

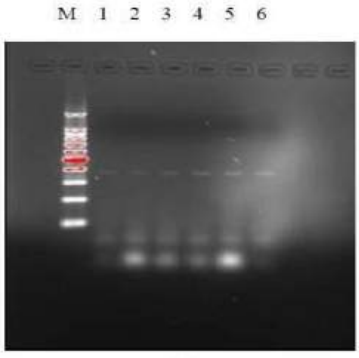

图 3

Fig.3 The template concentrations is 10^2 /ml, and the primer added were 0.1ul,0.2ul,0.3ul,0.5ul,0.7ul,as showed above from Lane1 to lane 5,in which lane1and 2 are with the same amount of primer.

Conclusion: when the pure DNA template concention is 10^2 /ml,the primer concention is 0.1ul*100umol,we can get optimal result.

P-018

GENOTYPING STUDY TO INVESTIGATE LEPROSY DISTRIBUTION IN THE PAST AND PRESENT TIME IN INDONESIA

Presenter: Dinar Adriaty

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Objectives: Leprosy is a chronic disease caused by *Mycobacterium leprae*. Until now, it still becomes a problem in Indonesia especially in the eastern part. According to the archaeological excavations results showed that leprosy already exist in the ancient time, this fact arises more question about how different the leprosy distribution between the past and present. Biomolecular study would be a great tool to investigate the distribution of leprosy in the past and present time as well. The purpose of the research was performed diversity analysis of *M. leprae* based on repetitive sequences of TTC from ancient bones and leprosy patients in Indonesia.

Methods: One of ancient bones who lived 2990 +/-160 BP from Lembata Island -Flores, East Nusa Tenggara, Indonesia (code LL 1/5) and the one of ancient bones who lived Paleolithicum derived from Semawang-Bali, Indonesia (code SMW/III/1990) that were suspected as leprosy sufferers, based on several typical symptoms of leprosy due to the skeletal deformation in the rhinomaxillary area were collected. 173 samples from leprosy patients both MB and PB type in several leprosy endemic areas were also colected, such as Palembang, West Java, East Java, Madura, Bali, Kalimantan, Sulawesi, East Nusa Tenggara, Ambon, Manado. The DNA extraction was performed using a kit from Qiagen products and TTC repeating pattern were seen with the method of direct sequencing.

Results: Genotyping result of ancient bone was obtained; Lembata has 13copies of TTC and Bali has 20copies. While in patients are varies, from Sumatera varies from 20-34copies, Jawa -Bali varies from 10-45copies and mostly have 18copies. In the eastern part of Indonesia such as Ambon has 11copies, East Nusa Tenggara varies from 15-17copies, Kalimantan and Sulawesi varies from 10-47 copies, mosly have 14copies of TTC. According to the TTC repetitions showed that the distribution of disease has the same pattern, whether in the past or present time.

Conclusion: Generally seen that the distribution derived from *M. Leprae* isolates in South American distribute to the east Indonesia and west Indonesia are from India and South East Asia.

P-074

THE DEVELOPMENT OF LABORATORY DIAGNOSIS OF LEPROSY USING POLYMERASE CHAIN REACTION

Presenter: Lyudmila Saroyants

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Objectives: The purpose of this study is to develop methods of laboratory diagnosis of leprosy based on PCR. Design an oligonucleotide system to identify M. leprae, select methods for sample preparation and extraction of DNA from different clinical material, PCR amplification modes of DNA, and test the sensitivity and specificity of the developed test system.

Methods: To detect Mycobacterium leprae DNA a quantitative real-time PCR (qPCR) primer/probe assay, targeting a specific M.leprae gene a 290 bp fragment (16S rRNA), was performed in 18 biopsies, 54 scrapes from skin, 15 scrapes from trophic ulcers, 32 nasal swabs and 29 blood samples. Samples from 32 leprosy patients and

15 healthy household contacts were evaluated and results correlated with clinical and laboratory parameters. Amplification was done as follows: 80° C - 30 s, 94° C - 1 min 30 s 1 cycle; 5 cycles of 94° C - 30 s, 64 °C – 15 s; 45 cycles of 94° C - 10 s, 64 °C – 15 s; 10° C - storage. The test system contains an internal control (IC). The specificity of the PCR test system was performed on 17 strains of different species of mycobacteria.

Results: The sensitivity of PCR was depended on the sample of clinical material. The sensitivity of PCR was comparing with bacterioscopic method. Thus the qPCR positivity compared with bacterioscopy detected among patients was: 100% vs 88,9% in biopsies, 68,8% vs 62,5 in nasal swabs sample, 66,7% vs 59,3% in scrapes from skin, in scrapings from trophic ulcers qPCR positivity in 20% cases was of bacterioscopically negative samples. In any blood sample of M.leprae was not observed. No M.leprae DNA was detected in any of the samples from healthy household contacts.

Conclusion: The obtained results indicate the possibility of using the primer system designed by us, the method of sample preparation, parameters of the DNA extraction protocol depending on clinical material, as well as the amplification reaction protocol for detecting M. leprae by PCR on 16S rRNA. The proposed test system has a high sensitivity and specificity, which allows solving the problem of rapid identification of M. leprae and can be using not only for the diagnosis of active leprosy infection, but also in epidemiological investigations in the study of the spread of the pathogen.

P-095

COMPARISON OF RNA BASED TRANSCRIPTOME ANALYSIS OF M. *LEPRAE* OBTAINED FROM ENVIRONMENTAL AND CLINICAL SOURCES

Presenter: Ravindra Purushottam Turankar

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Objective: This study was conducted to analyse and compare gene expression profile of *M. leprae* obtained from human and environmental sources.

Methods: RNA was extracted from biopsies of newly diagnosed leprosy cases and environmental soil samples. Agilent custom *M. leprae* Gene expression 2x400K (AMADID: 061379) tiling Microarray was designed using Genotypic Right design Technology. The whole genome was tiled at 10bp to obtain probes having 60 mer oligonucleotides covering the entire 3.3Mbp genome was designed. cDNA was prepared, labelled, amplified, hybridised and data was analyzed using Feature Extraction software Version 11.5 of Agilent. The microarray data has been deposited in the NCBI Gene Expression Omnibus (GEO) under the GEO accession number **GSE68192"** Real time PCR was used for validation of expression of upregulated and down regulated genes.

Results: Transcriptome analysis showed that total RNA transcripts 252449 were detected from environmental *M. leprae* genome and 232433 genes which were known and characterised. It was also found, RNA transcript for unknown and uncharacterized RNA were 20017 genes. Functional genes (1645 nos.) of environmental *M. leprae* were detected. RNA expressions of several functional genes of *M. leprae* genome obtained from soil samples were compared to the RNA expression of genes from human patients. Gene expression of transcripts of environmental *M. leprae* were up regulated for 109 genes for respiration followed by 1324 genes for translation, 33 genes for detoxification, 1862 genes for metabolism, 565 genes for regulatory protein, 577 genes for cell wall, 783 genes for lipid synthesis of 22genes for virulence. Real time PCR was used for the validation of expression of *M. leprae* genes from virulence categories. On the other hand, 89 genes for respiration, 1607 genes for translation, 62 genes for

detoxification 1942 genes for metabolism, 610 genes for regulatory protein, 498 genes for cell wall, 917 genes for lipid synthesis and 23 genes for virulence were down regulated in environmental *M. leprae.* Environmental *M. leprae* were inoculated into mouse foot pad (MFP) and it was observed the viable *M. leprae* could be harvested upto 3 months, however futher MFP harvests could not yield any bacilli.

Conclusion: Transcriptomic analysis indicated that several fold changes in gene expression of *M. leprae* transcripts in environmental samples as compared to *M. leprae* isolates from human biopsy samples of leprosy patients indicating that *M. leprae* are surviving in natural environment and probably need adaptation to a natural host before their growth in MFP.

P-100

TRANSMISSION OF *MYCOBACTERIUM LEPRAE* IN MULTI-CASE LEPROSY FAMILIES FROM PURULIA DISTRICT OF WEST BENGAL, INDIA

Presenter: Vikram Singh

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Objectives: The exact mechanism of transmission of leprosy is not understood till now. Molecular markers were used for tracking leprosy transmission in families and community. The objective of the present study was to find out the transmission pattern using *M. leprae* genotyping in leprosy in multi-case families in endemic pockets of Purulia (West Bengal).

Methods: Five leprosy multi-case families including 11 patients and 6 household contacts(HHC) from same families were selected from leprosy endemic pockets of Purulia and slit skin smears(SSSs) were collected in 70% ethanol. DNA was extracted from SSSs. PCR was performed for all samples using *RLEP* gene. Further, SNP genotyping was performed for all the PCR positive samples. PCR amplicons were sequenced and *M. leprae* genotypes were determined using NCBI nucleotide BLAST.

Results: SSSs of all 11 leprosy patients and 3 out of 6 household HHCs were PCR positive for *M. leprae* DNA. One multi-case family from Arsha had 3 patients, index case(Son), case 2(mother) and case 3(grandson), case 2 and case 3 developed the disease within one-year of follow up. Molecular SNP typing of *M. leprae* DNA from all the subjects revealed presence of *M. leprae* of SNP subtype 1D indicating the transmission of *M. leprae* from index case to other HHCs(mother and grandson). Second and third multi-case families from Chandakeyari, Purulia-1 were also showing the presence of *M. leprae* subtype 1D in index case and his contact wife in one family; the index case and cousin in another family. Likewise subtype 1D transmission was observed in the fourth family in which index case transmitted the infection to a friend(neighbour) and 2 HHCs, wife and daughter who developed leprosy after 1 year of follow up. Similarly in the fifth multi-case family SNP subtype 1D was noted in the Index cases and their contacts(neighbour or household). This clearly indicated that focal transmission of *M. leprae* subtype 1D is spreading the disease in the endemic community (HHC and neighbour) in Purulia, West Bengal. Several contacts have shown positivity for *M. leprae* in SSS, without the presence of any clinical signs for leprosy.

Conclusion: Present study indicates that most of the cases and contacts were either infected by the index cases in the house or both had the same source of infection. Contacts that are showing the *M. leprae* DNA positivity should be treated so that they do not develop the disease in future and act as source of infection.

P-122

NOVEL MYOCOBACTERIUM LEPRAE MARKER (LS22) FOR PCR BASED DIAGNOSIS OF LEPROSY

Presenter: Sushma Tatipally

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LEPRA Society- Blue Peter Public Health and Research Centre, Cherlapally, Hyderabad 501301, India

Objective: To evaluate a novel *M.leprae* marker (LS22) for PCR based diagnosis of leprosy

Methods: Clinically diagnosed leprosy patients during June 2018-January 2019, at BPHRC, Hyderabad and NTDRU, Khagaznagar, India were studied. Slit skin samples from lesions and standard body sites were collected from all the patients before initiating MDT. Slit skin smear microscopy (SSS) was done. Gene specific primers were designed to amplify 372bp product of novel marker, *M. leprae* LS22. *DNA from M.leprae- NHDP strain* 19350 was used as a positive control for PCR validation. DNA was extracted from slit skin by standard procedures and *LS22 PCR* was performed.

Results: 44 newly diagnosed leprosy patients were studied. 54.5% (24/44) of slit skin samples were positive for LS 22 PCR whereas 10/44(22S.7%) were positive by slit skin microscopy. Among 27 PB cases, 0 were positive by SSS, 11(40.7%) were positive for slit skin PCR; Among 17 MB cases 10(58.8%) were positive for AFB smear and 13(76.4%) were positive for slit skin PCR.

Conclusion: The study findings showed that LS22 PCR seems to be a promising test for bacteriological diagnosis of leprosy even in paucibacillary leprosy cases.

P-137

ULTRA-SENSITIVE NUCLEIC ACID DETECTION OF *MYCOBACTERIUM LEPRAE* USING INNOVATIVE SAMPLING AND DNA EXTRACTION METHODS

Presenter: Fernanda Kehdy

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Objectives: As one of the major factors contributing to ongoing leprosy transmission and stationary number of cases detected anually is the delay to identify and, thus, treat patients with early infection. The aim of this work was to compare and establish the optimal biological sampling and *Mycobacterium leprae* DNA extraction strategy for early leprosy diagnosis by direct detection of nucleic acids (DNA) from the *Mycobacterium leprae* using qPCR.

Methods: For this, we first tested six different DNA extraction methods in three sets of samples (triplicate) obtained from a segment of mouse footpad: QIAamp® DNA Microbiome Kit, DNeasy® Blood & Tissue Kit (QIAGEN); Maxwell 16 DNA Purification kit (PROMEGA); PowerSoil® DNA Isolation Kit (MO BIO); Phenol-Clorophorm method and Trizol/FastPrep® System, using the manufacturer instructions. After that, the best DNA extraction method were compared to DNeasy® Blood & Tissue Kit (QIAGEN), that is already implemented method in the routine. In this stage we tested seven different types of biological samples (peripherical blood, slit smear skin, skin biopsy, lesion skin swab, oral swab, nasal swab and blood in FTA cards) from a panel of carefully selected 40 positive leprosy patients with two clinical forms of disease (23 multibacillary, MB) and 17 paucibacillary, PB). In all tests *M.leprae* DNA (16S) and an internal control relative to the host DNA (18S) were detected by real-time qPCR.

Results: For samples from a segment of mouse footpad, the QIAamp® DNA Microbiome was the most efficient with Cts values equal to 19.0, 15.0 and 15.5 respectively for each of the three analyzed sets. The QIAamp® DNA

Microbiome proved to be the most efficient method in detecting *M. leprae* DNA also in almost all types of biological samples (except for lesion swab) for MB patients, with skin biopsy and slit smear skin samples presenting the highest PCR positivity percentage (100% and 91%, respectively). For PB patients whose bacillus DNA availability is low, the only biological sample with satisfactory yield was skin biopsy using the QIAamp® DNA Microbiome method for DNA extraction with 71% of PCR positivity (an increase of 10X over the DNeasy® Blood & Tissue Kit method). Although QIAamp® DNA Microbiome has been shown to be the best extraction method (especially for skin biopsy) for detection of *M. leprae* DNA, there is a loss of internal control amplification (18S host target) when compared to method or DNeasy® Blood & Tissue. This data was already expected due to a property of the QIAamp® DNA Microbiome method of degrading DNA before the microorganism's cell wall rupture.

Conclusion: In conclusion, our results indicated that the QIAamp® DNA Microbiome, skin biopsy and slit smear skin were the most efficient DNA extraction method and biological samples for early leprosy diagnosis.

P-146

MOLECULAR SCREENING OF PRIMARY DRUG RESISTANCE IN *MYCOBACTERIUM LEPRAE* FROM NEWLY DIAGNOSED LEPROSY CASES FROM PURULIA, WEST BENGAL, INDIA

Presenter: Madhvi Ahuja

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Objectives: Currently, leprosy treatment and control are based on World Health Organization (WHO)-recommended multidrug therapy (MDT) continue since last three decades. Using MDT, the prevalence of leprosy has come down drastically all over the world but still few endemic pockets are available. As on March 2018, 53 districts in 11 States/UTs reported with PR > 2/10,000 population which includes West Bengal. The annual case detection rate (ANCDR) of West Bengal was 9.52/100,000 in year 2017-18. Purulia is one of the endemic districts in West Bengal with ANCDR of 3.0/100000. It has been noted from earlier experience that any therapeutic control measure for prevention of disease with antibiotics ultimately leads to emergence of drug resistance. Therefore, a surveillance mechanism should function as a 'watch dog' for identification of drug resistance. The study was undertaken to screen for *M. leprae* drug resistance to dapsone, rifampicin and ofloxacin by PCR sequencing of *folP1, rpoB* and *gyrA* genes respectively in patients from Purulia.

Methods: In the present study, slit- skin smears samples were collected from 113 newly diagnosed leprosy cases from TLM Purulia hospital in the duration of 2017-18. DNA extracted from these samples and were analyzed for the genes associated with drug resistance in *M. leprae* genome. Wild-type strain (Thai-53) and drug-resistant (Z-4) strain mouse footpad-derived were tested as reference strains.

Results: Out of these 113 cases 2.65% were found to be associated with Rifampicin resistance as revealed by mutations in *rpoB* region. We also observed 1.76% and 5.3% of the *M. leprae* DNA samples showing mutations that was associated with resistance to Dapsone and Ofloxacin respectively. One patient each was resistant to Rifampicin and Dapsone and Rifampicin and Ofloxacin respectively.

Conclusion: Results from this study revealed the presence of resistance to anti-leprosy drugs in new cases of leprosy. The findings of this study show the emergence of primary resistance to rifampicin in new cases of leprosy. The emergence of new cases with resistance to ofloxacin indicates that resistant strains are actively circulating in endemic regions of India from secondary resistance cases and infecting the naive population at risk.

P-171

DEVELOP AND FIELD EVOLUTION SINGLE TUBE NESTED PCR, SYBRGREEN PCR METHODS, FOR THE DIAGNOSIS OF LEPROSY IN PARAFFIN-EMBEDDED FORMALIN FIXED TISSUES IN YUNNAN PROVINCE, A HYPER ENDEMIC AREA OF LEPROSY IN CHINA

Presenter: Yan Wen

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Objectives: To determine the best molecular method for diagnosing and monitoring leprosy in FFPE specimens, we developed an single tube nested PCR (STNPCR) (131-bp) and SYBRGreen PCR(101-bp) assay using primers for RLEP gene of Mycobacterium leprae and evaluated against already established primers of repetitive sequence of M. leprae(RLEP) (372-bp).

Methods: FFPE biopsy were obtained from 150 leprosy patients(during or post-MDT) and 29 other confounding dermatoses examined by Bacteria index(BI), simple PCR, STNPCR, and SYBRGreen PCR using primers amplifying either a 372-bp, a 131-bp or a 101-bp fragment of RLEP, respectively.

Results: For leprosy patients during MDT, STNPCR showed highest sensitivities of 76.0%, 54.9%, and 63.6%, highest specificity of 100%, PPV of 100%, NPV of 70.7%, 47.5%, and 39.7%, and highest accuracy of 84.8%, 68.0% and 70.6% for MB, PB and leprosy patients, respectively. which were higher than those of SYBRGreen PCR, and simple PCR. For leprosy patients post-MDT, SYBRGreen PCR showed highest sensitivities of 50.0%, 20.0%, and 34.4%, highest specificity of 100%, PPV of 100%, NPV of 80.5,% 70.7%, and 60.4% and highest accuracy of 83.7%, 72.7%, and 67.4% for MB, PB, and leprosy patients, respectively. Higher than those of STNPCR, and simple PCR.

Conclusion: This suggests that STNPCR or SYBRGreen PCR (amplification 131-bp and 101-bp fragment, respectively) of RLEP in FFPE specimens were better as the diagnostic tests and monitor response to MDT therapy in comparison to the simple PCR based on amplification 372-bp fragment detection method. Also, FFPE specimens can be transited remotely or retrieval leprosy patients previously.

P-187

IMMUNOGENETIC ANALYSIS OF *CCL2* AND *NOS2* GENES IN LEPROSY

Presenter: Keshar Kunja Mohanty

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National JALMA Institute for Leprosy and Other Mycobacterial Diseases

Objectives: The immunogenetic role of *CCL2* and *NOS2* gene polymorphisms was investigated in leprosy affected persons residing in northern part of India

Methods: A case control study was conducted among the leprosy affected persons visiting the OPD of National JALMA Institute for Leprosy and Other Mycobacterial Diseases and healthy controls. Four SNPs each of *CCL2* (-*2518A>G, -362G>C, -1549A>T, -2134T>G*) and *NOS2* (- *1026G>T, -1659C>T, -2447C>G, -954G>C*) were genotyped by melting curve analysis using FRET technology in RT-PCR or by PCR-RFLP (for -*2518A>G*) in 578 leprosy cases and 521 healthy controls. Chi square test and Odds ratio with 95%CI were analyzed using STATA /SE 11.0 software. Online software SNPSTAT was used for haplotype analysis.

Results: The CC genotype at *CCL2* -362G>C is significantly associated with leprosy affected persons with OR 2.4, p=0.003. Conversely, GC heterozygous genotype is significantly over represented in healthy controls (p=0.027). T allele at -2134 *CCL2* site was indicated to be a risk allele for developing RR in BT, BB and BL leprosy cases (p=0.03). GG genotype (OR=5, p=0.005) and G allele (OR=2.27,p=0.018) at -2518 CCL2 and CC genotype (OR=4.21, p=0.01) and C allele (OR=2.31, p=0.02) at -362CCL2 were indicated to be associated with risk of ENL reactions in BL and LL patients. Haplotype AGTGCG of CCL2 (*-2518A>G,-362G>C* and *-2134T>G*) and *NOS2* (*1026G>T, -1659C>T, -2447C>G)* was significantly higher in healthy controls compared to leprosy cases {OR=0.15, 95% CI (0.03-0.70), p=0.017)}. Furthermore, GCTGCG haplotype was indicated to be associated with leprosy (p<0.0001). Linkage disequilibrium analyses indicated that strong LD between *CCL2 -2518A/G* and *-362G/C* sites (D' = 0.83, Pvalue = 0.0001), between *CCL2 -2518A>G* and *-2134 T>G* sites (D' = 0.6726, P- value = 0.029), *-362G>C* and -2134 T>G sites (D' = 0.0.9967, P- value = 0.001). Further, strong LD was observed between *NOS2 -1026G>T* and *-1659C>T* sites (D' = 0.7833, P- value = 0.0001)*, NOS2 -1026G>T* and *-2447C>G* sites (D' = 0.9271, P- value = 0.0001), *NOS2 -1659C>T* and *- 2447C>G sites* (D' = 0.8399, P- value = 0.0001).

Conclusion: Haplotype and Linkage disequilibrium analysis strongly suggested that certaincombination of different alleles/genotypes in multiple location of CCL2 and NOS2 genesalongwith the interaction of various environmental factors influencing the disease susceptibility and pathogenesis in our study population.

P-189

ANALYSIS OF VDR GENE POLYMORPHISM AND ITS EXPRESSION IN LEPROSY PATIENTS FROM NORTH INDIA

Presenter: Itu Singh

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Objectives: VDR is present on many immune cells like dendritic cells, macrophages, T cells and B cells etc., and after cell stimulation it plays a major role in host immune response. Since leprosy is a spectral disease determined by immune status of the host hence the present study has been carried out to find out the association of VDR gene polymorphism, gene expression in leprosy patients. In the present study, we investigated the association of VDR gene polymorphism, and its expression in leprosy patients across the spectrum.

Methods: A total of 215 leprosy patients and 150 healthy controls were enrolled in the study. Healthy individuals from the same geographical area and having similar societal and financial background were included in the study as healthy controls. VDR gene polymorphism of SNPs Taq1, Fok1 and Apa1 was done by PCR-RFLP. VDR mRNA gene expression was quantitated by relative quantification using Pfaffl method by qPCR. Statistical analysis was done by Graph-Pad Prism software (version 6). Chi-square test was done for analysis of Hardy-Weinberg equilibrium. SNPstat software was used to calculate allele frequencies, genotype frequencies and Odds ratio (OR) and 95% confidence interval (CI) to find out the association between genotype and leprosy.

Results: All the studied SNPs were found to be in Hardy-Weinberg equilibrium. SNPs of VDR gene Taq1 and Fok1 was found to be associated with leprosy patients. ff genotype of Fok1 was significantly associated with leprosy patients in comparison to healthy controls [p = 0.0064; OR (95% CI) 3.27 (1.51–7.11)]. Recessive model of Fok1 genotype was found to be significantly associated with leprosy patients in comparison to healthy controls [p = 0.007; OR (95% CI) 2.7 (1.29–5.67)]. Mean mRNA expression ratio of VDR/GAPDH was found to be significantly lower in leprosy patients in comparison to healthy controls (TT/BT vs HC 0.702 vs 1.076; BL/LL vs HC 0.462 vs 1.076, p<0.05).

Conclusion: ff genotype of Fok1 was found to be significantly associated with leprosy patients. VDR gene expression was found to be significantly lower in leprosy patients in comparison to healthy controls. Further, low VDR gene expression level in patients might be responsible for impaired immune response in leprosy.

P-200

ASSOCIATION ANALYSIS BETWEEN FLG LOSS-OF-FUNCTION MUTATIONS AND LEPROSY IN CHINESE HAN POPULATION

Presenter: Zihao Mi

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Objectives: To systematically study the *FLG* loss-of-function (LoF) mutations in leprosy.

Methods: We systematically screened the LoF mutations of *FLG* in 945 patients of the infectious skin disease leprosy using a newly reported array-based high throughout sequencing method. Mutations discovered in patients were subsequently screened in 916 controls. And discovered mutations were also verified using sanger sequencing.

Results: In total, 21 LoF mutations were discovered and subsequently screened in 916 controls, of which 11 were not found in healthy controls. Two LoF mutations (K4022X and Q1790X) were found to be associated with leprosy. And the association between the combined 21 discovered LoF mutations and leprosy was also significant.

Conclusion: These results implied that skin barrier dysfunction caused by *FLG* LoF mutations may facilitate the infection of leprosy pathogens. This systematic and large scale study also indicated that *FLG* LoF mutations increased the risk of infectious skin diseases, which could be further confirmed by studies on other infectious skin diseases without AD or IV background.

P-216

THE SINGLE NUCLEOTIDE POLYMORPHISMS OF INTERLEUKIN 12B-RS3212227, 12RB1-RS121434493 IS ASSOCIATED WITH INCREASED DISEASE SUSCEPTIBILITY IN LEPROSY PATIENTS

Presenter: Arun Sundaramoorthy

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Background: Leprosy is a chronic granulomatous infection caused by *Mycobacterium leprae*, and obligate intracellular bacillus, that attacks cutaneous tissue and peripheral nerves producing skin lesions, nerve degeneration, anesthesia, infection and deformities or debilitating type 1 or type 2 lepra reactions are the major causes of morbidity. The type 2 lepra reactions are associated with circulation and tissue deposition of immune complexes of the disease. Genetics plays a crucial role in controlling susceptibility to infectious diseases.

Objectives: Analyze the interleukin 12B-rs3212227, 12Rb1-rs121434493 gene single nucleotide polymorphisms in leprosy patients.

Methods: A total of 50 (Male: 30 Female: 20) with an average age of 37.05 ± 8.62 years Leprosy of experimental subjects with age and gender-matched control subjects were recruited. Genotyping was done by polymerase chain reaction/restriction fragment length polymorphism (PCR–RFLP) methods.

Results: Interleukin 12B-rs3212227 gene CC genotype had a higher risk of developing the leprosy when compared to control subjects and the variation observed were statistically significant at P< 0.05. IL12Rb1-rs121434493 gene polymorphisms identified in limited patient's and more samples are continually process.

Conclusion: The CC genotype of rs3212227 SNP in IL12B gene plays a genetic risk in leprosy patients.

P-222

GENOTYPING OF MYCOBACTERIUM LEPRAE ISOLATES FROM CUBAN LEPROSY PATIENTS.

Presenter: Lucrecia Acosta Soto

J.L. Ruiz-Fuentes[1,2], I. Carralero[1], O. Suárez[1], L. Acosta[3,4].

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Objectives: To evaluate the genotypes (SNPs) of *Mycobacterium leprae* obtained from lymph swabs of leprosy patients stored at the Institute of Tropical Medicine "Pedro Kouri", Cuba.

Methods: A total of 90 samples were studied. DNA amplifications were carried out by nested PCR (nPCR) which amplifies a repeated fragment of *M. leprae* genomic DNA (RLEP). Genotypes 1/2 and 3/4 were differentiated using BstUI mediated PCR-RFLP analysis of the locus at nucleotide position 2,935,685 that only digests the genotype 3/4. Differentiation of genotypes 3 and 4 was achieved by SmlI mediated PCR-RFLP at nucleotide position 14,676 that exclusively digests the SNP-Type 4. Differentiation between SNP-Type 1 or 2 was performed by direct PCR sequencing. Additionally, each of the genotypes detected was related to the clinical form developed and the residential areas of the patients.

Results: The SNP-type was obtained for a total of 84 patients, of which 84.5% were of type 3 (European). In 10 of the patients, SNP 4 (African) was detected and the genotype SNP 1 (Asian) was observed in 3 of the patients. Association between the SNP genotype and the clinical form of the disease was not observed.

Spatial analysis of the genotypes distribution found in Havana showed that all the genotyped patients inhabited in 10 of the 15 municipalities of the city. Only in the "10 de octubre" Municipality were detected three genotypes.

Conclusion: To our knowledge, the present study constitutes the first report of genotyping of *Mycobacterium leprae* in Cuba. Genotypes 1, 3 and 4 were detected in endemic patients. Circulation of genotypes was consistent with the population dynamics of Cuba. A correlation between the genotype detected and the residential area of the patients was observed, suggesting a possible epidemiological relationship.

P-257

SPATIAL PATTERN AND FACTORS ASSOCIATED TO THE MISDIAGNOSIS OF LEPROSY IN BRASIL DURING 2003 - 2017

Presenter: Eliane Ignotti

K V R N Neves[1], E Ignotti[2]

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Objectives: To analyze the spatial pattern and factors associated to the misdiagnosis of the new cases of leprosy in Brazil among 2003 and 2017.

Methods: A cross-sectional study of the cases who were discharged MDT treatment due to misdiagnosis of leprosy among 2013 to 2017. The database was the official national information system for leprosy (Sinan). A division by 3 periods of five years of time to compare the proportion of misdiagnosis with the new cases detection rate (NCDR) to verify changes in the spatial pattern by Kernel density. Factors associated to the misdiagnosis were verified by logistic regression for demographic, clinical and operational variables (sex, age, clinical form, detection mode, skin spots and presence of neuritis) in the significance level of 5%.

Results: A sum of 574,181 cases of leprosy were reported in Brazil during the15 years study period, out of them 7,477 (1.3%) were discharged by misdiagnosis. There was a reduction in the new cases detection rate of 29.04 to 12.76 per 100,000 inhabitants among 2003-2017. However, the proportion of misdiagnosis remained stable, with the highest peaks in 2004, 2008 and 2014. The spatial pattern of proportion of misdiagnosis by kernel density shows hot spots in different areas of NCDR. While this last presents the same spatial pattern in the 3 five years, the proportion of misdiagnosis increases in the last five years (2013 – 2017) in São Paulo, Minas Gerais in the Southeast and in the Northeast region. According to the logistic regression, the odds of leprosy misdiagnosis is lower for males 37% lower for males (OR = 0.63; CI: 0.60 – 0.66); and higher for children compared with all age groups, indeterminate clinical form, for people diagnosed without skin patches (OR = 1.95; CI: 1.83 - 2.08) and presenting neuritis at the time of diagnosis (OR = 1.20; CI: 1.13- 1.27)

Conclusion: The proportion of cases notified of leprosy and discharged of treatment by misdiagnosis has been stable during the last 15 years representing less than 2% of the total cases. The spatial pattern of NCDR differs from that observed as misdiagnosis during the same period. The risk factors for misdiagnosis are female, children, classified as indeterminate clinical form, without skin patches and presenting neuritis at the time of diagnosis.

P-258

GENETIC SIGNATURES AND FUNCTIONAL ANALYSIS OF PATHOGEN-SELETED POLYMORPHIMS IN THE *PKLR* AND *G6PD* GENE

Presenter: Ohanna Cavalcanti Lima-Bezerra

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Objectives: *PKLR and G6PD* encodes for pyruvate kinase (PK) and glucose-6-phosphate dehydrogenase (G6PDH) from glycolysis and phosphate pentose pathway, respectively, both enzymes enrolled in glucose metabolism. Mutations for PK deficiency impair ATP production and leads to a decrease of red blood cells (RBCs) half-life. Likewise, mutations for G6PDH deficiency may induce oxidative stress in RBCs and thus result in hemolysis. Because both genes are linked with RBCs integrity, they are under selective pressure by *Plasmodium* in Africa. Mutations for PK deficiency have a dual role: association with resistance to malaria and susceptibility to intracellular pathogens, such as mycobacteria. Also, as previously demonstrated, *G6PD* gene plays a critical role in *Mycobacterium leprae* survival during Schwann cell infection. Thus, we hypothesized that malaria selective pressure in Africa shaped resistant alleles in *PKLR* and *G6PD* genes and those, otherwise, could behave as an evolutionary trade off for intracellular pathogens.

Methods: Aiming to investigate the association of single nucleotide polymorphisms (SNPs) in the *PKLR* and *G6PD* gene with mycobacterial diseases, we performed case-control studies with leprosy in Rio de Janeiro followed by functional analysis to test the genotype-phenotype correlation.

Results: As results, *PKLR* gene showed a strong susceptibility predisposition since both individually four tested SNPs and the haplotype G/G/G/G (haplotype frequency in leprosy cases – 0.39 – and controls – 0.27) were significantly associated with leprosy in Rio de Janeiro after ancestry adjustments. Moreover, an independent case-control study with tuberculosis (TB) was performed in Mozambique, confirming the susceptibility association of *PKLR* SNPs with mycobacterial diseases (G/G/G/G frequency was higher in TB cases – 0.48 – than in controls 0.38). In addition, G/G/G/G haplotype was correlated with higher ferritin and haptoglobin loads in healthy subjects and leprosy patients, which supports a relevance role of the *PKLR* gene with mycobacterial infections. On the other hand, *G6PD* gene presented one SNP (A376G) modestly associated with leprosy susceptibility in the male case-control study from Rio de Janeiro. However, functional analysis suggested that *M. leprae* seems to revert the phenotype of the mutation since we observed an increase in *G6PD* expression and G6PDH activity in monocytes 48 hours after infection. In this case, mycobacteria was able to maintain its viability independently of the host genotype. Lastly, *PKLR* and *G6PD* SNPs associated with leprosy risk were enriched in Africans (1000Genomes) and Salvador (EPIGEN) compared to Europeans cohorts.

Conclusion: In conclusion, genes of energetic metabolism that are under malaria selection participate with different role in mycobacterial diseases susceptibility.

P-315

STUDYING THE CAUSAL INTERRELATIONSHIP BETWEEN EXPRESSION OF VITAMIN D RECEPTOR AND CATHELICIDIN ANTIMICROBIAL PEPTIDE GENES AND SEROLOGICAL BIOMARKERS

Presenter: Ana Laura Grossi de Oliveira

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Objectives: Despite all efforts to eliminate leprosy, its transmission still continues to challenge containment measures. Early detection using biomarkers can help in the timely implementation of control actions, and applying correct treatment the disease can be cured. We studied the causal interrelationship between Vitamin D Receptor (VDR) and Cathelicidin Antimicrobial Peptide (CAMP) gene expressions, and the serum levels of CAMP, cytokines, and Vitamin D in newly diagnosed leprosy patients and post-six months of multidrug therapy (MDT).

Methods: A correlation matrix, based on Pearson's correlations, was calculated to find the main associations among variables, whose the p-value are significant and r> 0.70, allowing, consequently, to evaluate the causal relationship among them, by means of path analysis. Thus, these analyses demonstrated the direct and indirect effects of VDR and CAMP gene expression in relation to cytokines, and vitamin D and the CAMP serum levels in newly diagnosed individuals with leprosy and after six months of MDT. Firstly, we assessed serum samples of 34 leprosy patients consisting of paucibacillary (PB), and multibacillary (MB), as well as, 18 healthy controls and 25 household individuals. The Vitamin D serum levels were analyzed by High Performance Liquid Chromatography (HPLC), the serum cytokines were quantified by Cytometric Bead Array (CBA) and the data acquired by flow cytometry, and the cathelicidin levels were measured by an Enzyme-Linked Immunosorbent Assay (ELISA). Furthermore, the gene expression analyses were performed using real-time PCR. The statistical analysis was accomplished using Graph-Pad Prism software (Version 7) being considered as statistically significant the results

with α significance level of 5% ($p<0.05$). Regarding, the path analysis, all path regression coefficient and residual effect were obtained with the Genes – Software for Experimental Statistics in Genetics.

Results: According to the proposed model (path analysis), VDR and CAMP gene expressions were considered independent variables indicating a causal relation to Th1 and Th17 cytokine serum levels in both newly diagnosed leprosy patients [PB (R^2= 0.9319) and MB (R^2=0.9569)]; and after six months of MDT [PB (R^2= 0.9667) and MB (R^2= 0.9569)]. The direct and indirect effects of these gene expressions were related with **IL-2** at the leprosy diagnostic [PB_{Tzero} (VDR=0.738; CAMP via VDR=0.660); MB_{Tzero} (VDR=0.458; CAMP=0.500)] and, after MDT with **IL-17F** [PB_{T6M} (VDR=0.305; CAMP=0.331); as well as, **IFN-*γ*** for MB_{T6M} (VDR=0.426; CAMP=0.262)]. In addition, for MB_{T6M} patients we found **IFN-*γ*** serum levels can be influenced directly to IL-17F (0.456) and IL-21 (0.6465); along with **IL-2** serum levels extremely influenced (R^2=0.9718) by IL-17A (0.617), IL-17F (0.426), IL-21 via IL-17A (0.500) and, IL-6 via IL-17A (0.368). These direct and indirect effects were larger than residual effects. Moreover, for MB_{T6M} patients there is an important correlation between expression of VDR and the serum response of **IL-21**, which in turn was associated with **IFN-*γ*** implying in association of joint response between Th1 and Th17 cytokines. Serum vitamin D levels did not show moderate or strong association with any other biomarker that generated an interpretation in the path analysis. Although the household contacts and healthy individuals presented significant coefficient correlation values among the biomarkers, direct and indirect effects were lower than residual effect in path analysis.

Conclusion: Collectively, these observations suggest that the VDR and CAMP gene expressions had direct/indirect effects on cytokines serum levels for newly diagnosed and post-six months of MDT leprosy patients. Th1 and Th17 cytokine profiles represented by IL-2, IFN- *γ*, and IL-17F, IL-21 seems to be more influenced by these gene expressions in leprosy patients as opposed to household contacts and healthy subjects. Taken together, these results indicate that important cytokines recognized as central factors in the control of the leprosy immune response are thoroughly influenced by the expression of the VDR and CAMP genes.

P-336

LEPROSY DIAGNOSIS : AN UPDATE ON THE USE OF MOLECULAR TOOLS

Presenter: Vina Listy Pramita

Vina Listy Pramita[1], Dhelya Widasmara[1], Santosa Basuki[1]

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Objectives: Patient with leprosy frequently is diagnosed based on basil from conventional method such as clinical examination, skin smear and histological. These methods routinely are used as diagnosis tools to detect Mycobacterium leprae. However, in this situation making definitive diagnose and differential are difficult, especially in Paucibacillary case which not found acid fast bacteria. Therefore it is necessary to have a sensitive, specific, and appropriate investigation for approval of the presence of acid fast bacteria, so that it can be diagnosed earlier. Polymerase chain reaction (PCR) as molecular diagnosis is a reliable method of detecting small numbers of organisms through the amplification of DNA sequence to a detectable level. Phenolic glycolipid-I (PGL-I) as serological diagnosis is a specific surface antigen of the cellular wall of Mycobacterium leprae and an elevated number of specific antibodies against this antigen reflects the activation of a humoral response and the presence of bacterial load.

Methods: A 14-year-old woman complained of white patch on the cheek area for 3 months accompanied hypoesthesia on sensibility examination, examination of slit skin smears was not found for acid fast bacteria. There are no enlargement of nerves. On histopathological examination it was concluded that leprosy was suspicious of the indeterminate type. Patients examined using PCR examination on nasal smear, ear lobe slit, blood and using Elisa anti PGL-I.

Results: Patients examined using PCR examination on nasal smear, ear lobe slit and blood obtained positive results at all extraction sites and using ELISA anti PGL-1 method found that igM 444 u/ml (cut off 605 u/ml) and igG 0 u/ml (cut off 630 u/ml) that show seronegative results.

Conclusion: Molecular biology is a strategies complementary especially on paucibacillary patient which its bacterial index is zero. This method gives high sensitivity and specificity in diagnosis to detect whether there is pathogen or not. ideally, sensitive and specific methods such as PCR provide a promising approach for early diagnosis and treatment, leading to possible reduction of permanent deformities and disabilities and a reduced socioeconomic burden due to leprosy in endemic countries.

P-368

GENOTYPING AND ANTIBIOTIC RESISTANCE IN LEPROSY PATIENTS FROM SPAIN.

Presenter: Lucrecia Acosta

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Objectives: To evaluate the genotypes (SNPs) and their resistance to antibiotics of *M. leprae* from the patients diagnosed at the Sanatorium Fontilles in the period June 2011-December 2018, Spain.

Methods: A total of 466 samples of DNA (stored at the laboratory of Fontilles) from 142 different individuals were analysed (DNAs from swabs from scrapings of ear lobe and edges of skin lesions and biopsies). DNA amplifications were carried out by a nested PCR (nPCR) which amplifies a repeated fragment of *M. leprae* genomic DNA (RLEP). The type of SNP of the samples was determined by amplification by conventional PCR of the locus of the 3 SNPs A, B and C at positions 14.676, 1.642.875 and 2.935.685, respectively. Thereafter, the amplicons were sequenced. Resistence to antibiotic of each SNP was analysed using the commercial kit GenoType LepraeDR (rifampicin, dapsone and ofloxacin).

Results: *M. leprae* DNA was detected in a total 182 samples from 64 patients (7 MB and 57 PB). DNA from 10 biopsies (7 patients) were genotyped and 3 patients were detected showing genotype Type 4 (the most common in Northeast Africa) and other 4 patients found to be of the Type 3 (the most common in Latin and South America and Europa). *M. leprae* susceptible strains showed a wild type profile in 61 (61/62) of paucibacillary leprosy patients and mutations in rpoB and folP1 mutant genes were present in one of them (1/62).

Conclusion: To our knowledge this is the first characterisation of the genotypes of the SNPs of *M. leprae* in Spain and, moreover, their resistance to antibiotics has been analysed. It has been demonstrated the presence of the genotypes type 3 and 4 in Spanish patients and resistance to rifampicin/dapsone was detected.

P-376

MOLECULAR GENOTYPING OF *MYCOBACTERIUM LEPRAE* CIRCULATING IN LEPROSY PATIENTS FROM PURULIA DISTRICT OF INDIA

Presenter: Ravindra Purushottam Turankar

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Objectives: No significant reduction in new case detection rate in leprosy strongly suggest that the transmission of infection is continuing despite worldwide implementation of multidrug therapy (MDT). The success of MDT has drastically brought down the prevalence rate to less than 1/10,000 but the annual new case detection rate has not come down at many places of the world. Therefore, it is very clear that even today at this stage of elimination, the transmission of leprosy is still continuing in many endemic situations. Molecular strain typing methods have been used recently to gain insight and understand transmission of *M. leprae* in an endemic region (Purulia district of West Bengal, India) the study was undertaken to probe the extent and variability in genetic diversity of *M. leprae* in this region and their transmission pattern by using SNP and VNTR analysis.

Materials and Methods: Slit skin scrapings (SSS) of 100 leprosy patients from the villages of Purulia District were obtained for DNA extraction. *M. leprae* DNA were confirmed by PCR method using RLEP and 16S rRNA gene target. Further, molecular typing was carried out using SNP typing PCR and Multiplex PCR for VNTR followed by Sanger sequencing of amplicons to determine mutations and fragment length analysis respectively to determine numbers of tandem repeats respectively from clinical samples of leprosy patients.

Results: All the PCR positive SSS samples were found to be of SNP type 1 except one which was type 2. Subtype 1D was more prevalent (82%) than the other subtypes found viz. subtype 1A (2%) and subtype 1C (15%). We also found subtype 2G (1%) in one of the SSS samples of leprosy patient. Using data for SNP subtypes and VNTR pattern for the *M. leprae* strains from different blocks of Purulia a phylogenetic tree was constructed to understand transmission.

Conclusion: The present study indicated that the Subtype 1D of SNP type1 was more prevalent in East Indian population followed by 1C, 1D. Presence of Subtype 2G of SNP type 2 was also noted in these samples. Molecular typing based on SNP and VNTR would be useful in tracking transmission and spread in particular geographical area and in families

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P-397

NON-CODING RNAS IN LEPROSY: NOVEL EPIGENETICS EVENTS AND ITS INFLUENCES IN THE IMMUNOPATHOPHYSIOLOGICAL ASPECTS OF THIS DISEASE

Presenter: Pablo Pinto

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[‡] equal contribution; [1]Laboratory of Human and Medical Genetics - Federal University of Pará, Belém, Pará, Brazil.; [2]Center of Oncology Research - Federal University of Pará, Belém, Pará, Brazil ; [3]Dermato-Immunology Laboratory - Federal University of Pará, Marituba, Pará, Brazil. [4]Laboratory of Spatial Epidemiology - Federal University of Pará, Castanhal, Pará, Brazil.

Objectives: To describe the first piwi-interacting RNA (piRNA) global expression profile (piRNome) in leprosy patients and to highlight these molecules as novel biomarkers and its relation to immunopathophysiological events of leprosy.

Methods: We analyzed the piRNome of tuberculoid (TT; n = 5) and lepromatous (LL; n = 6) lesion tissues of leprosy patients (LP) that were diagnosed on Reference Unit in Dermatology of Pará State Dr. Marcello Cândia, and of non-leprosy subjects (NL; n = 6). The experiments were conducted in the MiSeq platform (Illumina), and the differential analysis was performed using DESeq2 package in R software. *In silico* analysis for target prediction was performed using miRanda v.3.3a software and functional enrichment was performed using DAVID Bioinformatics Resources v.6.8 software.

Results: We found the expression of 337 piRNAs in all samples. Among them, 15 were exclusively expressed in TT, 86 in LL and 69 in NL, while 139 piRNAs were expressed in all lesional tissues. Four comparisons were performed: i) TT vs NL, ii) LL vs NL, iii) LP vs NL, iv) TT vs LL. piRNAs were differentially expressed in (i), (ii) and (iii) comparisons, all downregulated on leprosy. The predicted target genes for the differentially expressed piRNAs were submitted to functional enrichment analysis. Interestingly, we found the same pathways previously described in association to the global expression of miRNAs in leprosy, such as immunity, apoptosis, demyelination and loss of sensation. We also found functional enrichment for bacterial recognition and phagocytosis, epithelial-mesenchymal transition and neuropathic pain pathways.

Conclusion: A recent study showed piRNA pathway was involved in the regeneration of adult sensory axons after laser axotomy. Their analysis revealed that animals deficient in a subset of components involved in regulating piRNA transcription, maturation, and secondary amplification had increased axon regeneration responses 24 hr after the injury versus controls, indicating that piRNA downregulation was necessary for neural regeneration. This finding may be correlated with our results. Leprosy is primarily characterized by lesions with loss of sensation, and it seems that piRNA pathways regulation may be a new mechanism of neural injury with potential to work as biomarkers or therapeutic targets to leprosy and other neurodegenerative diseases.

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P-402

WHOLE GENOME SEQUENCING OF *M. LEPRAE* STRAINS OBTAINED FROM SLIT SKIN SMEARS AND NASAL SWABS IN BANGLADESH

Presenter: Charlotte Avanzi

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Introduction & Objectives: High throughput sequencing methods are expensive and less efficient with DNA extracts from human samples. In the past years, we have optimized a DNA extraction method allowing the depletion of host DNA by enzymatic treatment for efficient shotgun M. leprae genome sequencing. The limit was evaluated for a bacillary index of 3. However, the host depletion method can only be used on human skin biopsies and is not applicable for slit skin smears and nasal swabs where the amount of bacterial DNA is often meager. New methods and quality controls are needed to sequence *M. leprae* genome from these difficult samples efficiently.

The project aims to sequenceof strains isolated in nasal swab and slit skin smear of leprosy patients and their household contact from Bangladesh

Methods: A total of 41 DNA extracts from slit skin smears (n=31) and nasal swabs (n=30) were prepared for sequencing. These samples were collected on index leprosy cases (20) and their household contacts (18). DNA

was extracted without enrichment resulting in a mixture of human and bacterial DNA. For each sample, the presence of M. leprae DNA was assessed by qPCR, and the Ct value was used to optimize the subsequent enrichment steps. Libraries were then target enriched in singleplex or duplex for the M. leprae genome using a custom MYbaits Whole Genome Enrichment kit. Enriched libraries were then multiplexed and sequenced on an Illumina HiSeq. Raw reads were analyzed as described previously using an in-house pipeline.

Results: A total of 25 genomes were sequenced from 20 patients with >5X coverage while none of the strains from household contacts harbored more than 5X coverage. The limit of efficient enrichment by qPCR is estimated for a Ct at 26 while this limit was previously evaluated for a Ct at 17 with the host depletion methods. For samples with a Ct<15, libraries can be successfully captured in duplex or triplex without decrease of the efficiency.

Conclusions: The Bait capture is efficient for DNA extract from slit skin smear and nasal swabs below a Ct of 26. From the genome sequenced, specific SNP from each index strain can now be inferred and used to design specific primers sets that will be used to determine the similarity with the strain found in household contact by PCR sequencing. The bait capture can be applied for DNA extracted from different human samples and is promising for samples with low bacillary index.

P-422

MYCOBACTERIUM LEPRAE-INDUCED TAG ACCUMULATION IS CAUSED BY INCREASED EXPRESSION OF GPAT3 IN HOST MACROPHAGES

Presenter: Kazunari Tanigawa

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Objective: *Mycobacterium leprae* (*M. leprae*), the causative agent of leprosy, parasitizes within host macrophages. *M. leprae* lives and replicates in foamy or enlarged phagosomes within macrophages that are filled with lipids, and provide essential source to form cell wall of the mycobacteria. *M. leprae* infection modulates a series of host gene expressions which are necessary for the lipid accumulation. However, the actual component of such lipids have not been identified.

Methods and Results: In the present study, we tried to identify the lipid species accumulated following infection and to elucidate the underlying mechanisms for the lipid accumulation within *M. leprae*-infected macrophages. We found that infection by *M. leprae* significantly increased triacylglycerol (TAG) levels by high-performance thin-layer chromatography (HPTLC) and LC-MS/MS analysis. Such sustained increase of TAG was observed only by live *M. leprae*. However dead *M. leprae*, latex beads, phorbol 12-myristate 13-acetate (PMA), peptidoglycan (PGN) did not increase TAG

Interestingly, *M. leprae*-infected macrophages, mRNA and protein expression of glycerol-3-phosphate acyltransferase 3 (GPAT3), a key enzyme in de novo triacylglycerol synthesis was remarkably increased, whereas expressions of other isoforms including GPAT1, GPAT2 and GPAT4 were unchanged. In addition, GPAT3 expression was high in lepromatous type leprosy compared to tuberculoid type leprosy in the examination of clinical specimens by reverse transcription PCR (RT-PCR). Furthermore, *M. leprae* infection and lipid accumulation were suppressed in GPAT3 KO THP-1 cells compared to control cells using immunofluorescence staining.

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Conclusion: These results suggest that live *M. leprae* has the ability to actively induce GPAT3 expression to facilitate the accumulation of TAG within host macrophages and to further maintain an environment suitable for the intracellular survival within the macrophage. Above results also suggest that the monitoring of GPAT3 mRNA levels in slit-skin smear specimens may be a useful indicator to predict prognosis in leprosy patients.

ILC-4: EPIDEMIOLOGY and CONTROL:

4.1 Epidemiology

P-001

A STUDY ON GENDER DIFFERERNCES IN NEWLY DETECTED LEPROSY CASES IN SICHUAN, CHINA, 2000-2015

Presenter: Yang-Ying Liu

Yang-Ying Liu[1], Mei-Wen Yu[2], Yong Ning[1], Hao Wang[1]

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Objectives: Many researches on gender differences in leprosy found that women patients were detected with the disease later, had more serious disabilities than men patients. We analyzed the gender differences related to epidemiological characteristics of new cases of leprosy detected from 2000 to 2015 in Sichuan Province, China.

Methods: A total of 2900 new leprosy cases were detected from 2000 to 2015, of whom 2075 (71.6%) were men and 825 (28.4%) were women with a gender ratio of 2.5. Men cases were older than women cases when they were detected. The gender ratio of patients aged 15-30 was significantly lower than that of patients aged 31-45 and 46-60. The proportion of Grade 2 Disability among men (20.6%) was significantly higher than among women (17.3%). The average period of delay in detection among men cases was similar with that among women.

Results: A total of 2900 new leprosy cases were detected from 2000 to 2015, of whom 2075 (71.6%) were men and 825 (28.4%) were women with a gender ratio of 2.5. Men cases were older than women cases when they were detected. The gender ratio of patients aged 15-30 was significantly lower than that of patients aged 31-45 and 46-60. The proportion of Grade 2 Disability among men (20.6%) was significantly higher than among women (17.3%). The average period of delay in detection among men cases was similar with that among women.

Conclusion: Gender-related differences existed among the leprosy cases detected from 2000-2015. Women patients were younger than men patients. The detection of leprosy in women was not later than in the case of men. The disability situation in men was more serious than in women.

P-002

ANALYSIS ON DISABILITY AND HEALTH STATUS OF CURED LEPROSY PATIENTS IN GANSU PROVINCE

Presenter: Shu Mei Feng

FENG Shu mei[1], HE Jian[1], GE PengFei[1], WU Shan[1], ZHANG Hong-mao[1], HE Jiong[2], MAO Weiwu[3], WANG Kejian[4]

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Objectives: To explore the disability and health status of cured leprosy patients in Gansu Province, so as to provoide a basic data for rehabilitation service system.

Methods: A questionnaire was used to collect the survival data to investigate by the end of July 2017.

Results: Male and female was 416 and 188 in total of 604 cured leprosy patients, respectively, of which the age reach 65 to 74 had a highest proportion (37.75%).Majority of cured patients were predominantly multicellular (MB)

(79.8%). There were 171 cases (28.31%)with disability, among whom 2 grade disability accounted for 75.44%. 259 cases (42.88%) were included in the social security,among 2 grade disability reach to 62.79%. 578 cases (95.70%) were included in the medical security,among 2 grade disability reach to 95.35%. There were 415 cases (68.71%) with self-care ability, and the number of people lacking working ability was 295 cases (48.84%). The cured patients who had 1 grade disability and 2 grade disability self-care ability and labor ability were lower than those without disability, the difference was statistically significant (P<0.05). 175 cases (28.97%) suffered from chronic diseases, among which cardiovascular and cerebrovascular diseases in the first palce

Conclusion: The survival status and social-economic rehabilitation with cured patients of leprosy is still poor,so we should bulid comprehensive rehabilitation service system for these group, especially among 2 grade disability, to promote their physical and mental health and improve their quality of life.

P-004

LEPROSY IN NEPAL FROM THE POST-ELIMINATION ERA

Presenter: Niraj Parajuli

Parajuli N[1], Baskota R[2]

[1]National Academy of Medical Sciences,Bir Hospital, Kathmandu, Nepal [2]Chief, Leprosy Control Section, Epidemiology and Disease Control Division, Ministry of Health, Nepal

Objectives: To study the trends of leprosy during the post-elimination period.

Methods: A cross- sectional descriptive study was done after obtaining the national annual report data on leprosy published by Ministry of Health and population, Government of Nepal during the post elimination period of 8 years.

Results: Although newer cases of leprosy are being diagnosed annually, the prevalence rate is sustained below the elimination threshold which is defined as less than 1 case per 10,000 population. The proportion of multibacillary leprosy among the new cases is almost half. On the contrary, the proportion of new multibacillary child cases is on increasing trends. New cases of grade 2 deformity seem to be on a slight change only. The rise of number of defaulters through the years is quite alarming. Similarly, all cases of relapse were in multibacillary type.

Conclusion: Nepal is intensifying its efforts to achieve elimination at subnational level and sustain the elimination status. The transition to new federal system of governance provides both opportunities and challenges ahead to sustain the elimination. Strong commitment by the local and federal government along with strong partnership from stakeholders is required to achieve all the elimination targets as set by the national leprosy program.

P-014

CURRENT STATUS OF CURED LEPROSY SURVIVORS IN HUAIAN CITY

Presenter: Dizhong Feng

Dizhong Feng [1]， Zhao-hui Zhang[2]

[1]Jinhu County Center for Disease Control and Prevention, [2]Huaian Municipal Center for Disease Control and Prevention

Objectives: To investigate the status of cured leprosy survivors in Huian City

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Methods: Cured leprosy patients were investigated about income, living situation, labor capacity, chronic diseases, disabilities, rehabilitation demand and status.

Results: Eight hundred and seventy seven cured leprosy survivors were collected, among the 877 patients the male-to-female sex ratio was 2.86:1. the average age was 70.18±10.05 years old.15.28% cured leprosy survivors were unmarried.19.95% was living along,9.46% had the need for living in leprosy hospital, but only 2.62% were hospitalized, 56.90% totally or partially lost ability to work and 54.38% had a income less than 5000 RMB per year. The total prevalence of chronic diseases and disability was 32.61% and 50.63%.The prevalence of chronic diseases among the disabled was 53.61%, which was higher than that among the non-disabled (30.48%) .

Conclusion: The living condition of cured leprosy patients is poor. Rehabilitation need is high and more support from the whole society is needed.

P-015

INVESTIGATION AND ANALYSIS OF SURVIVAL STATUS OF HEALING LEPROSY IN TAIZHOU CITY

Presenter: HaiyanLu

Lu Haiyan, Zhu Xingxing, Zhao Xiaolan, Zhang Xiang

Taizhou Center for Disease Control and Prevention 225300

Objectives: To master the living conditions of healed leprosy patients in Taizhou City, Jiangsu Province, and to provide scientific evidence for the development of leprosy prevention measures and policies.

Methods: A unified questionnaire was used to conduct a return visit survey on the leprosy register of Taizhou City, and the Epidata data was entered and analyzed.

Results: 2,428 cases of leprosy in the home were investigated, including 1,722 males and 706 females. The male-female ratio was 2.44:1 and the average age was 73.13 years.50.66% Of the responded survivors had varying degrees of disability, and only 20% of those who survived survived the subsistence allowance or the rural five-guarantee benefits, and faced the threat of major chronic diseases.

Conclusion: The home-based leprosy healers in Taizhou have a hard life, an age structure, a single source of living economy, and imperfect social security. They are in need of social and private care for home leprosy healers.

P-016

THE SURVIVAL AND HEALTH STATUS OF LEPROSY HEALING PATIENTS IN XUZHOU

Presenter: Rongyan Xu

Rongyan Xu

Xuzhou municipal centre for disease control and prevention

Objectives: To find out the survival and health status of leprosy healing patients in xuzhou, and provide the basis for the formulation of accurate safeguard measures and policies.

Methods: Using the individual information check list of the healers of the leprosy hospital in Jiangsu Province, which was designed by the Jiangsu CDC. All the survivors of leprosy in the city were investigated, and the data were analyzed.

Results: The trend of the aging of leprosy is obvious in Xuzhou, which Farmers accounted for the majority, with

30.56 percent being single and 22.73 percent living alone . the deformity and aging lead to the lack of economic sources, Who need the social system security and government participation; It is also a difficult problem for leprosy prevention and control work to take care of leprosy patients who cannot take care of themselves. 44.95 percent of the healers of leprosy have two levels of disability. It is necessary to carry out the prevention and rehabilitation services of the deformity of the leprosy, provide protective support, implement the surgical correction in time, assist the disabled to provide value and auxiliary equipment and carry out rehabilitation training services. 15.91 percent of the leprosy healers have different degrees of other diseases, and the health condition of those cured by leprosy is not optimistic.

Conclusion: The living conditions of the survivors of leprosy healers are not optimistic in Xuzhou. The government departments should continue to strengthen social security, coordinate the relevant departments to actively carry out the rehabilitation of malformed disability, further improve the quality of their survival, actively carry out the contract service for leprosy patients, and provide accurate service to the leprosy healers.

P-023

LEPROSY IN THE NORTH AND NORTHEAST REGIONS OF BRAZIL: AN INTEGRATED SPATIO-TEMPORAL APPROACH

Presenter: Anderson Fuentes Ferreira

A. F. Ferreira[1], E. A. Sousa[2], G. S. M. García[1], A. S. Reis[1], M. S. A. P. Pinto[1,3], M. S. Lima[1], E. S. N. Andrade[4], C. R. F. Coriolano[4], S. A. Sena Neto[5,6], I. M. Donato[7], A. N. Ramos Jr[1]

[1]Department of Community Health, Faculty of Medicine, Federal University of Ceará, Fortaleza, Brazil; [2]Multidisciplinary Institute in Health, Federal University of Bahia - Campus Anísio Teixeira, Vitória da Conquista, Bahia, Brasil. [3]Netherlands Hanseniasis Relief, Ceará, Fortaleza, Brazil [4]Ministry of Health, Secretariat of Health Surveillance, General Coordination of Leprosy and Diseases in Elimination, Department of Surveillance of Communicable Diseases, Brasília, Federal District, Brazil [5]State Agency for Health Surveillance, Government of the State of Rondônia, Porto Velho, Rondônia, Brazil; [6]Foundation Federal University of Rondônia, Department of Information Science, Porto Velho, Rondônia, Brazil; [7]Department of Nursing, Faculty of Pharmacy, Dentistry and Nursing, Federal University of Ceará, Ceará, Fortaleza, Brazil

Objectives: To analyze spatio-temporal patterns of the occurrence of leprosy in the North and Northeast regions of Brazil from 2001 to 2017.

Methods: A mixed population-based ecological study with temporal and spatial trend analysis of epidemiological indicators based on new cases of the Notifiable Diseases Information System living in North and Northeast Brazil.

Results: A total of 396,987 new cases were analyzed, 9.2% in children under 15 years and 5.4% in cases with a Degree of Physical Disability 2 (G2D). The Northeast recorded 66.4% of the new cases. The states of Pará and Maranhão were the ones with the highest number of cases, while Tocantins and Maranhão had the highest detection rates. The majority of cases were male, 15-59 years of age and of race/brown color. The temporal trend presented a reduction for most of the indicators and study variables. The G2D rate presented a maintenance trend for the Northeast region; for the states of Amapá, Tocantins, Rio Grande do Norte, Paraíba, Alagoas, Sergipe and Bahia; for the age group 0 to 14 years; and for municipalities with a "very high" social vulnerability index. The spatial and spatio-temporal analysis showed agglomerates with a concentration of hyperendemicity and with a high risk of detection involving municipalities of Tocantins, Pará and Maranhão. We highlight the presence of areas with low detection despite the maintenance of G2D detection.

Conclusion: Leprosy in the North and Northeast of Brazilian persists as a critical public health problem. The temporal and spatio-temporal patterns identified reinforce the maintenance of the epidemiological relevance of priority areas in Brazil. Even so, there is a need to qualify control actions in municipalities with low general detection and in children to reduce late diagnosis. The relevance of the development of specific strategies in populations at greater risk was also verified.

P-024

HIDDEN ENDEMIC CASES OF LEPROSY ON THE ISLAND OF MARAJÓ, PARÁ, BRAZIL

Presenter: Moises Silva

M.B. da Silva[1], E. Jorge[1], R.C. Bouth[1], A.R. Gobbo[1], A.C.C. Messias[1], G. Conde[2], J.G. Barreto[3], J.S. Spencer[4], Claudio Guedes Salgado[1].

[1]Dermato-Immunology Laboratory - Federal University of Pará, Marituba, Pará, Brazil, [2]Laboratório de Suporte à Decisão - Federal University of LSD/UFOPA-LSD, [3]Spatial Epidemiology Laboratory - Federal University of Pará, Campus Castanhal, [4]Department of Microbiology, Immunology, and Pathology, Colorado State University, Fort Collins, CO, U.S.A.

Objective: To evaluate the effectiveness of detecting *M. leprae* DNA in earlobe slit skin smears (SSS) by using quantitative PCR (qPCR) to measure the copy number of the repetitive element RLEP compared to testing anti-PGL-I titers by ELISA as a biomarker for infection in the leprosy hyperendemic town of Salvaterra on Marajó Island, Pará state, Brazil.

Methods: Using available data from Brazil's National Disease Notification System (SINAN), 34 cases of leprosy were diagnosed on Salvaterra county, Marajó Island, considered a hyperendemic region, between the years 2006-2016. As part of an active surveillance follow-up study funded by the Brazil Ministry of Health, 149 contacts of these former patients were examined for clinical symptoms of leprosy and samples of blood and earlobe SSS were obtained to assess anti-PGL-I antibody titer and *M. leprae* DNA by qPCR, respectively.

Results: Of the 149 subjects who received a physical examination by an experienced dermatologist, 26% (38/149) were diagnosed with leprosy based on clinical signs and symptoms. Two were relapse cases (2/38, 5.3%), one was likely a treatment failure (1/38, 2.6%) and 4/38 (10.5%) were ≤15 years old. The majority of cases were categorized as multibacillary (34/38, 89.5%), with 50% (19/38) presenting with disability grade 1 (DG1), and 8% (3/38) with disability grade 2 (DG2). Anti-PGL-I titers revealed seropositivity in 74.8% of clinically healthy household contacts (HHC, 83/111) and 71.0% of newly diagnosed cases of leprosy (27/38). The results of RLEP amplification revealed that 20% of HHC were positive (22/111), while 81.6% of newly diagnosed cases were positive (31/38). When both biomarkers of infection were examined, double positivity (PGL-I+/RLEP+) occurred in 14% of HHC (15/111) while 63.2% (24/38) of the newly diagnosed cases were double positive.

Conclusions: Although follow-up of HHC of diagnosed leprosy cases is mandatory, it is estimated that only about 20% of individuals in this area ever receive any follow-up examination. In contrast to the 34 cases reported over 10 years, our efforts of active surveillance revealed 38 new cases in one week's time representing a very large hidden endemic, with more than half showing disability (22/38, 58%), indicating delayed diagnosis. Laboratory findings showed that 14% of HHC were double positive (PGL-I+/RLEP+) similar to what was found in the majority of newly diagnosed cases. This suggests that the epidemiological situation of leprosy infection may be even worse on the island of Marajó, warranting increased active surveillance and follow-up of HHC in this area. Financial support: Brazil Ministry of Health, CNPQ, CAPES, UFPA, SESPA, The Heiser Fund of the New York Community Trust.

P-027

STATUS OF CHILDHOOD LEPROSY IN PRE AND POST ELIMINATION ERA IN URBAN AREAS OF MUMBAI

Presenter: Vivek Pai

Pai V V, Ashish Khodke, Tulsiram K, Pawar PL

Bombay Leprosy Project, Vidnyan Bhavan, 11, V N Purav Marg, Sion - Chunabhatti Mumbai, Maharashtra, India

Objectives: Monitoring of leprosy in children is important from epidemiological point of view as a reasonable indicator of ongoing transmission of the disease in the community. We (Ganapati et al 1973, 1974, 1991) have

documented through various field based studies very high prevalence of childhood leprosy in Mumbai viz School surveys 5.67/1000, School surveys in endemic areas 11/1000, and Private school survey 6.9/1000. As per WHO 2016-2020 strategy aiming at zero disability amongst children affected with leprosy, it is important to study the trends of childhood leprosy.

We share our findings using retrospective analysis of child cases below 14 years of age group with reference to grade 2 deformity status in BLP project area of approx. 2 million population.

Methods: Study period comprised of pre elimination (2000 to 2005) and post elimination (2005 to 2017). In 2000 total number of new cases detected were 247, of which 44 (18%) were children. Among 44 children, 42 were paucibacillary (PB) cases and 2 were multibacillary (MB) cases. Of 44 children, two were diagnosed with grade 2 disability.

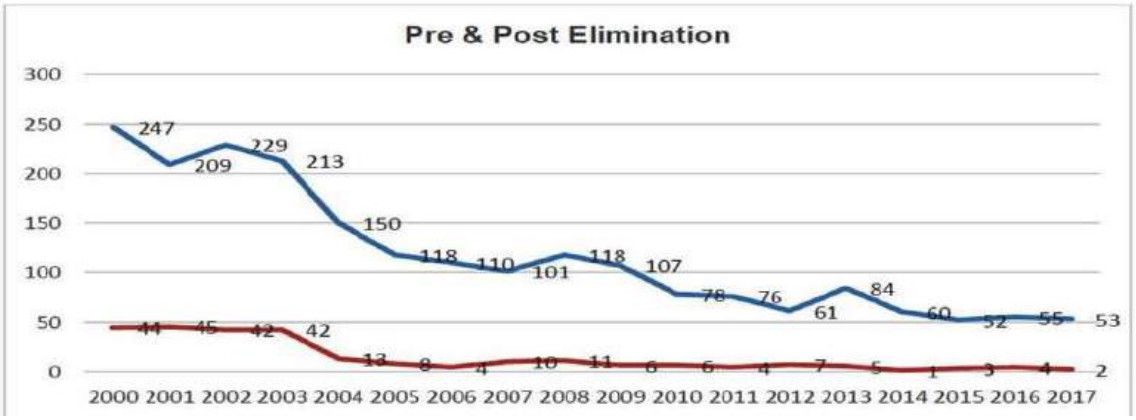
In 2001, 45 (21%) child cases detected amongst 209 total new cases. 36 were PB and 9 were MB. Among 45 children, 3 were smear positive and there was no child detected with disability. In 2002, 42(18%) were child cases among 229 total cases. 38 were PB and 4 were MB. Out of 42 child cases, 2 were smear positive and 2 were of grade 2 disability.

In 2003, 42 (19.7%) were child cases among 213 total new cases detected. 39 were PB and 3 were MB. One child case was smear positive and one case with Grade 2 deformity. In 2004 13 (8.6%) were children among 150 total cases. 9 were PB and 4 were MB. There was no smear positive case but one detected with grade 2 disability.

Since 2005 to 2017, child cases amongst total new cases detected were below 10 except in year 2007 and 2008 when there were 10 and 11 child cases respectively. 2 smear positive child cases found in year 2007 among 10 cases. From 2014, child cases were below 5 among total new cases identified. No grade 2 deformity in year 2012 to 2015 and no smear positive among children since 2010. School surveys do not yield new cases.

Conclusion: As seen from the data in project area of BLP Mumbai, child cases have shown a drastic reduction and no smear positive and deformity cases has been seen in the post elimination period seen specially for the last eight years.

Graph: 1



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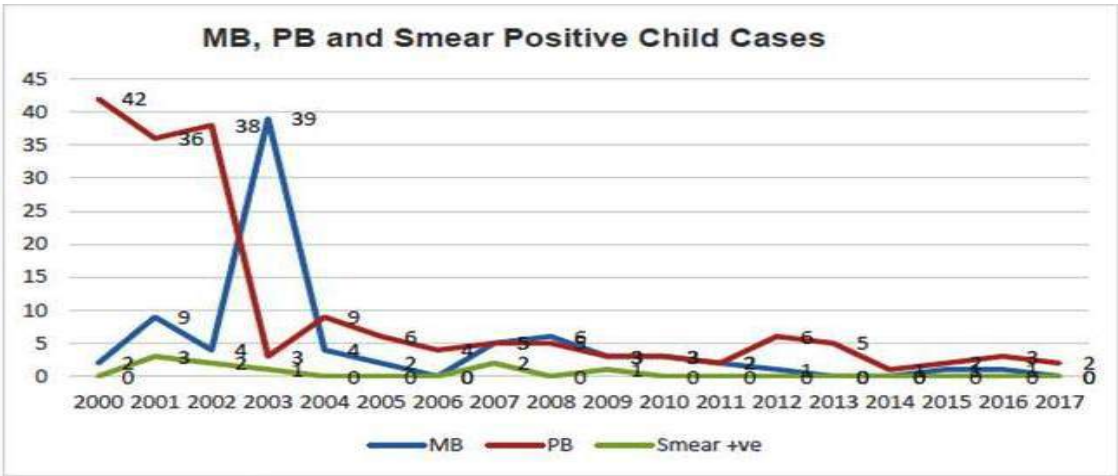
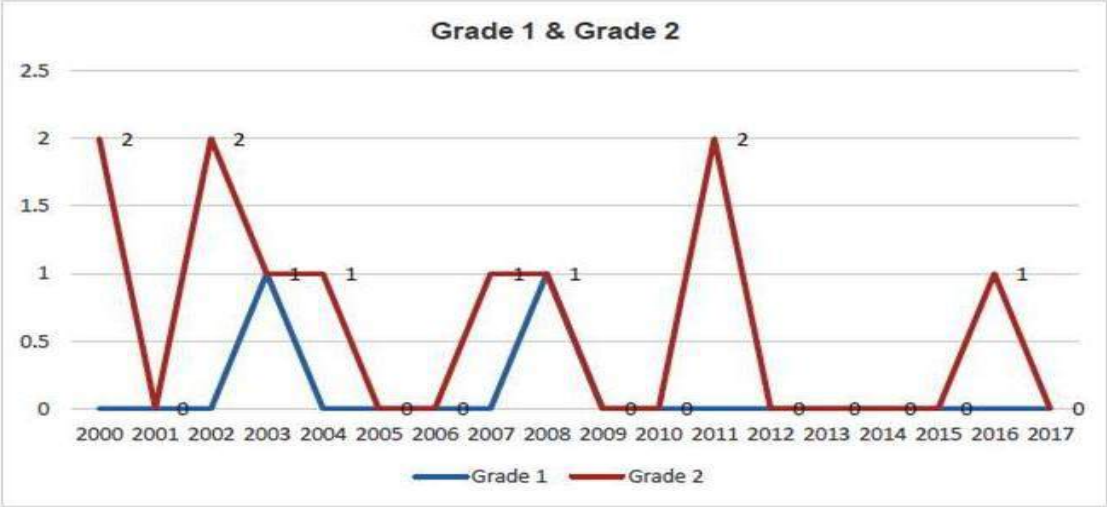




Result

P-033

REVIEW OF CHILDHOOD LEPROSY IN SOUTHERN NIGERIA (2011-2018): PROGRESS TOWARDS ZERO TRANSMISSION

Presenter: Chinwe Eze

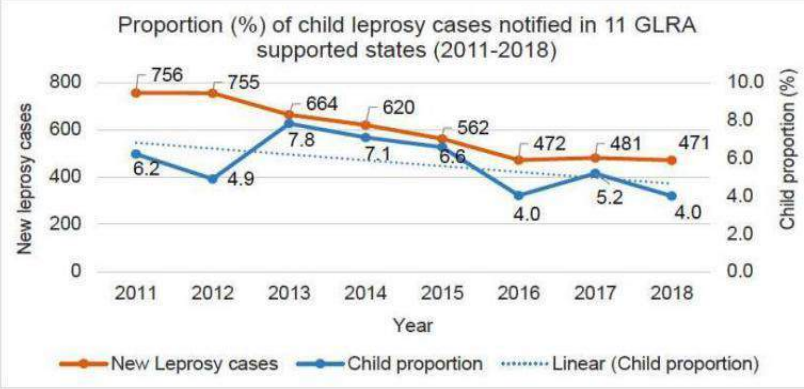
Joseph Chukwu[1], Charles Nwafor[1], Anthony Meka[1], Ngozi Ekeke[1], Joy Ikebudu[1], Ngozi Murphy-Okpala[1], Okechukwu Ezeakile[1], Chukwuka Alphonsus[1]

[1]German Leprosy and Tuberculosis Relief Association, Nigeria

Objectives: To access the trend in childhood leprosy in 11 German Leprosy and Tuberculosis Relief Association (GLRA) supported states in Southern Nigeria from 2011-2018

Methods: A retrospective desk analysis of leprosy case notification data routinely reported in 11 states of Southern Nigeria from 2011-2018 was conducted. Count of new leprosy cases notified was done and the proportion of child leprosy cases among the new cases notified for the 8 years was determined.

Results: A total of 4781 new leprosy cases were notified during the period under review. Of these, 280 (5.8%) were children within the age group of 0-14 years. The total new leprosy cases notified was consistently on the decline from 2011 with a marginally slight increase from the 2016 figure in 2017, and dropped again in 2018. Conversely, the proportion of child leprosy cases increased from 6.2% in 2011 to 7.8% in 2013 before a general downward slide to 4% in 2018. In addition, the trend in the number of child leprosy cases corresponds with the trend in child proportion over the years reviewed. Noteworthy is that the slight increase in total leprosy cases notified in 2017 also resulted in increase in the number of child leprosy cases and child proportion same year.



Conclusion: Childhood leprosy is an indicator of the efficiency of leprosy disease control program and a reflection of the level of transmission in a given population. As expected, the proportion of child leprosy cases followed the trend of new leprosy case notification, generally declining as the number of new leprosy cases notified in the supported states also declined. The observed trend in number and child proportion in relation to the total new cases from 2013-2018 could imply that transmission is being controlled or that much efforts are not being made in identification and notification of new leprosy cases. Nonetheless, the proportion of child leprosy cases notified in these states each year is an evidence that active transmission is still ongoing especially within the endemic areas. This underscores the need to intensify efforts in implementing active case finding strategies such as awareness creation, contact tracing (not just household contacts but also extra domiciliary contacts e.g. neighbors) and skin camps in order to improve early case finding and treatment if the goal of zero transmission and ultimately a leprosy-free world will be attained.

P-075

RISKS ASSOCIATED WITH ANTI PHENOLIC GLYCOLIPID-1 (PGL-1) SEROPOSITIVITY IN HOUSEHOLD CONTACTS OF LEPROSY PATIENTS

Presenter: Fatma Rosida

Fatma Rosida[1],Trisniartami Setyaningrum[1], Iswahyudi[2], Cita Rosita Sigit Prakoeswa[1,2], Indropo Agusni[1,2], Shinzo Izumi[2]
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[2]Institute of Tropical Disease, Airlangga University, Surabaya, Indonesia.

Objectives: Leprosy is a chronic infection caused by *M. leprae*. It is still a challenging health problem in Indonesia with many new cases each year found in big city such as Surabaya. Leprosy occurs more commonly among household contacts. High titer of specific *M. leprae* antibody found in blood without clinical symptoms is considered

as subclinical leprosy. Early detection of this state plays an important role in elimination goal. This study evaluate anti-PGL-1 antibody profiles in household contacts of multibacillary patients undergoing observation in Department of Dermatology-Venereology, Dr. Soetomo Teaching Hospital, Surabaya

Methods: We observed 62 household contacts of new leprosy patients and or within 3 months therapy at Dermatology-Venereology outpatient clinic, Dr. Soetomo Teaching Hospital Surabaya, Indonesia. Blood were collected using filter paper and IgM anti-PGL-1 antibody were examined using ELISA.

Results: Eighteen contacts (29%) tested positive for anti-PGL-1 antibodies with an average of 942,4±390,6 u/mL. The number of contacts based on the seropositivity rate was 17.7% for +1 and 11.3% for +2. Seropositive female was 22,6% and age-group of 18-36 years equal to 9.7%. Duration of contact-group of 6-16 years was 9,7%. Consanguinity with the patients was determined for 22,6%. Occupants more than 4 person in the household was 17.7% (973.9±428.2 u/ml).

Conclusion: Female, productive age, long-term contact, and inhabit crowded area of household contacts tend to develop clinical leprosy.

P-076

THE DECLINE OF AUTOCHTHONOUS LEPROSY IN THE VALENCIA REGION OF SPAIN: PATTERNS AND TRENDS 1940-2015

Presenter: Ines Suarez-Garcia

I. Suárez-García[1,2,] J.R. Gómez Echevarría[3], F. Moll Cervera[3], D. Gómez-Barroso[4], P.E.M. Fine[5]

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Objectives: The aim of this study was to describe the patterns and trends of autochthonous leprosy in the Valencia Region (Spain).

Methods: We included all new leprosy cases originating from the Valencia Region between the years 1940 and 2015. Patients originating from other countries or other Spanish regions were excluded. New cases were analysed by age, sex, clinical types, occupations, and geographic distribution.

Results: A total of 442 patients with presumably autochthonous leprosy were included. Incidence rates consistently declined over the study period. Mean age at onset gradually increased from 34.2 years during the period 1940-1949 to 59.5 years during 2000-2015. There were no cases with clinical onset after 2006 and no cases born after 1973. Patients were predominantly males (57.7%) and 85.4% had multibacillary leprosy. The proportion of multibacillary cases increased gradually after 1970. The majority of male patients (67.9%) worked in agriculture. Most of the cases, especially during the later periods, were concentrated in the coastal regions. 67.6% of the patients had at least one known leprosy contact: 50.5% had family contacts and 23.3% had nonfamily contacts.

Conclusion: Our findings are consistent with trends described in other regions with declining leprosy incidence rates and suggest that the transmission of *M leprae* infection in this area may well have now stopped. Autochthonous leprosy in this region has had a male predominance and a high proportion of multibacillary cases. The geographic distribution and the high incidence in agricultural workers suggest that environmental factors should be further explored.

P-080

INCIDENCE AND CHANGE IN LEPROSY ENDEMICITY - DATA FROM TWO CROSS-SECTIONAL SURVEYS OF POPULATION IN FIROZABAD DISTRICT, UTTAR PRADESH (INDIA)

Presenter: Anil Kumar

Kumar A, Yadav VS, Girdhar A, Chakma JK

Department of Biostatistics & Epidemiology[1] and Department of Clinical Sciences[2,3] National JALMA Institute for Leprosy & Other Mycobacterial Diseases (ICMR) Taj Ganj, Agra -282004 (India) dranil250158@gmail.com

Objectives: To assess incidence of leprosy and change in leprosy endemicity in Firozabad District (U.P.).

Methods: A random sample of 148061 populations is covered by resurvey methods, spread over 259- 230 rural/29 urban units. The resurvey was conducted after 4 years starting March 2011. All clinically confirmed cases detected in disease free population in first survey, are labeled as incidence cases and Other among newly added population as new cases and treated as per W.H.O. standard treatment regimens for PB/MB disease.

Results: The overall incidence of leprosy was found to be 3.40 per 10000 Person Years; 3.12 in Healthy contacts, 29.69 in PB contacts and 89.26 in MB contacts. The increase in incident cases from Healthy contacts to PB Contacts to MB Contacts is found significant ($p<0.001$). Incidence rate also increased significantly by age; from 1.14 in young <15 to 7.96 in >44 years of age, and with endemicity levels in areas with 3 or more cases. In terms of Odds Ratio, incidence rate increased significantly: 7 folds by age groups, 8.7 folds in PB contacts and 26 folds in MB contacts and 2-3 folds by endemicity status. Incidence rate also found to be significantly high (3 to 3.5 folds) in some areas by endemicity like Tundla, Narkhi and Aravon blocks as that of Aeka block of the district. The data suggests that leprosy endemicity had increased in more areas than decreased in fewer areas.

Conclusion: Incidence and endemicity of leprosy are useful parameters to assess transmission. Incidence rate increased significantly with reference to contact status. Present study also suggests that transmission continue to be significantly high in the areas studied and new case detection rate is doubled in areas under study.

P-086

TRENDS IN HANSEN'S DISEASE: A DEMOGRAPHIC PROFILE OF NEW CASES OF HANSEN'S DISEASE IN A TERTIARY HOSPITAL IN CALOOCAN FROM 2014-2018

Presenter: Ma Cristina Georgina Paloma

M.C.G. Paloma[1], M.T.M. Malahito[1]

[1]Dr. Jose N. Rodriguez Memorial Hospital, Philippines

Objectives: The general objective of this study is to determine the number of new cases of Hansen's disease patients in a tertiary hospital in Caloocan City from 2014-2018. The specific objectives are as follows:
1. To determine the age of new cases
2. To determine the gender of new cases
3. To determine the address/residence of these new cases

Methods: The main method used in this study is a review of secondary data, located in the dermatology outpatient clinic of a tertiary hospital in Caloocan City.

Results: In 2014, there were 25 new cases, 3 of these were 10-15 years of age and 22 were above 15 years old. Eighteen were male and seven were female. Only 5 of the new cases were from Caloocan City, the rest of the patients were residing in other areas. In 2015, there were 54 new cases: three were 10-15 years old and 51 new

patients were above 15. Forty-seven patients were male and only 7 were female. Again, most of the patients were residing outside Caloocan city. In 2016, there were 22 new cases. Four patients were 10-15 years old while the rest were above 15. Fourteen were male and eight were female. This time, 18 of the 22 new cases were living in Caloocan City. In 2017, there were 18 new cases, two were 10-15 years old and 16 were above 15. There were 13 male patients and 5 female patients. Sixteen were residing in Caloocan city while only two were from other cities. Finally, in 2018, there were 55 new cases. Five were 10-15 years old while 50 were above 15. Forty-three were male and 12 were female. Only 15 patients were from Caloocan, the rest were residents of other cities.

Conclusion: In the last 5 years, there were a total of 174 new cases of Hansen's Disease diagnosed at a tertiary hospital in Caloocan City. Ninety percent of the new cases are above 15 years old, hence they received the adult dose for multi-drug therapy. Majority of the patients are males. Most of the patients (62%) do not reside within Caloocan City where the hospital is located.

P-087

EPIDEMIOLOGICAL ANALYSIS ON LEPROSY OF THE MIGRATING POPULATION FROM 2000 TO 2015 IN KUNMING

Presenter: Jun He

HE jun[1], He yan[1], xiongli[1], zhouyuxiang[1], shuitiejun[1], zhangzhuming[1]
Yunnan center for disease control and prevention, Kunming Yunnan 650022, China

Objective: To study the epidemiological characteristics of leprosy of the migrating population in Kunming , 2000.1-2015.12,and to provide basis for Source tracking in the future.

Methods: Date were collected from the Leprosy Management Information System in China(LEPMIS) from 2000.1 to 2015.12 in Kunming. A descriptive and comparative analysis were performed.

Results: 383 new leprosy cases of the migrating population and 38 new leprosy cases of the migrating population were detected from 2001.1 to 2015.12, 84.3% and 8.4%,respectively.,the difference was significant (P<0.001); Among the new leprosy cases of migrating population, 2.6% were children under 15 years,92.1% multibacillary ,and 39.5% suffered from grade 2 disability; The positive rates were 30.5% and 44.7% respectively between the registered population and tne migrating population, the difference was significant (P=0.048).

Conclusion: This study will provide the evidence of leprosy control strategies by tracing the source of infection of the leprosy on the migrating population.

P-088

SCREENING FOR LEPROSY IN SOUTH KIVU, DR CONGO: EPIDEMIOLOGICAL PROFILE IN AN UNSUPPORTED HEALTH ZONE (UZ) (UVIRA) VERSUS TECHNICALLY AND FINANCIALLY SUPPORTED HZ (IDJWI) FROM 2010 TO 2017

Presenter: Mulume Musafiri

MULUME MUSAFIRI[1], DIDIER MUHIMA[3], NGONGO KASONGO[1], SANDUKU PASTEUR[1], CHIRAMBIZA Jean Paul[1], Pascal KEMAINA[4], BIREMBANO FREDDY[1], PATRICK KATOTO[5], PATRICK KATOTO[6]

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Objectives: Leprosy is among the diseases with long incubation duration and it is also disabling. RD Congo is among the 10 countries most affected by Leprosy in the world. After elimination, the fight against leprosy is now

focussed in the HZ with incidence and / or disabilities due to leprosy; Idjwi HZ is one of them. On the other hand, in others HZ, screening is passive. This is the case of the ZS Uvira. We armed to study predictors factors of screening between the two HZ (supported vs. unsupported).

Methods: A retrospective study of data from central registers of 2 HZ from 2010 to 2017 has enabled us to analyze individual data by calculating the means and proportions. After a descriptive analysis, the relative risk calculation was used to compare the results of the two HZ was used for all statistical analyses with R software.

Results: 171 new cases were detected during the period under study. 53 PB and 118 MB (31% vs 69% P <0.001), 46 cases of grade 1 and 2 disability at the start of treatment (26.9% P <0.001).

107 cases were registered in Idjwi HZ against 64 in Uvira HZ (62.6% vs 37.4% ; P: 0.001). The average prevalence in both HZ is 0.48 and 0.19 / 10 000hab respectively ; P: 0.03, range [0.22 - 1.04 / 10000hab] for Idjwi HZ and [0.06 - 0.38 / 10 000hab] for Uvira HZ. The proportion of children under 14 years of screening is 14% and 4.9 %; P: 0.06. We observe a lower risk to be detected of leprosy when male in Idjwi than in Uvira (RR : 0.7 6 95% CI : 0.59-0.99 p = 0.036), age, when subject is more than 40 years (RR = 0.72 IC : 0.56 - 0.92, p = 0.007). But in both ZS, equal risk of disability at beginning of treatment (RR 0.87 95% CI : 0.66 -1.16; p = 0.38).

Conclusion: After leprosy declaration of elimination, we can observe high prevalence in both supported and unsupported HZ. Referring to Uvira HZ, we think that other unsupported HZ with low-incidence still contain undetected leprosy cases with the risk of developing disabilities if no action is taken

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P-089

PROFILE OF LEPROSY CASES IN CHILDREN UNDER 15 YEARS AGE DETECTED WITH DEGREE 2 OF PHYSICAL DISABILITY AND INVESTIGATED AS CRITICAL INCIDENT. BRAZIL, 2018.

Presenter: Jurema Guerrieri Brandao

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Objectives: To describe the leprosy cases in children under 15 years old with degree 2 of physical disability in Brazil, in 2018.

Methods: We conducted a descriptive study with all the investigated leprosy cases in children under 15 years old detected with degree 2 of physical disability and reported in Brazil in 2018. An electronic form created specifically for the purpose of this study was used. The form comprises variables related to reasons for late diagnosis, investigation of sources of infection and characterization of physical disabilities. Data analysis was performed using of Stata 15.0 and Microsoft Excel 2010 Softwares.

Results: In 2018, 21 leprosy cases in children under 15 years of age with degree 2 of physical disability at diagnosis were included. The reasons reported for late diagnosis were: in 61.9% of the cases (n = 13), health professionals did not suspect of leprosy; 71.4% of the children (n = 15) were identified by spontaneous demand; 33.3% (n = 7) took 13 to 24 months between the perception of signs and symptoms and the seek for medical care; 38.1% (n = 8) took more than 12 months between the first visit and the diagnosis. In 47.6% of the cases (n = 10) the physical disability was not the reason for seeking for a health service; 47.6% (n = 10) consulted from 2 to 3 times for the diagnosis; 57.1% (n = 12) had consultations in three or less health units; 61.9% (n = 13) were diagnosed in a specialized health unit, however 66.6% of the patients (n = 14) resides in a primary care area.

Regarding contact surveillance: 45.6% (n = 21) of registered contacts were examined; 23.8% (n = 5) of the new cases detected among the contacts examined; in 71.4% (n = 15) of the cases the index case was identified, with the father (n = 6) being the most likely source of infection. About physical disabilities: 57.1% (n = 12) performed a simplified neurological evaluation on the same date of diagnosis, identifying as main physical disabilities: claw fingers (28.7%; n = 6), claws fingers associated with muscle wastage or trophic ulcers (28.6%, n = 6), anesthesia associated with trophic wounds and /or traumatic hands (19.0%; n = 4).

Conclusion: The results suggest the need to strengthen capacitation actions for health professionals and health education for the general population, aiming the early diagnosis of leprosy in this group.

P-104

USE OF GEOGRAPHIC INFORMATION SYSTEMS EXPLORING THE EPIDEMIOLOGICAL CHARACTERISTICS OF LEPROSY IN GUANGXI, CHINA, 2011-2016

Presenter: Hu Guanhao

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Objectives: To analyze the epidemiological characteristics of leprosy in Guangxi, China by using GIS technology, and to provide evidence for the prevention and control of leprosy.

Methods: Descriptive epidemiological analysis of new cases of leprosy, discovery rate of leprosy, and grade 2 disability rate in Guangxi, China from 2011 to 2016 were performed using GIS system.

Results: Guangxi is located in the south part of China, with an area of approximately 236,700 square kilometers and population of about 48.38 million. As of 2016, 32,828 cases of leprosy have been found in the whole region, which determine Guangxi as an epidemic area of leprosy in China. In 2011-2016, there were 314 new cases of leprosy patients in Guangxi, 52 cases of grade 2 disability, and grade 2 disability rate was 16.56%. The average prevalence rate and average discovery rate for 2011-2016 were 0.1106/100,000 and 0.4726/100,000 respectively. According to the GIS natural discontinuity classification method, the new cases of Guangxi in 2011-2016 were concentrated in the west and the south; the average rate of discovery in western Guangxi was higher than that in other areas; the new cases of grade 2 disability was diffusely distributed.

Conclusion: The western and southern part of Guangxi are high-epidemic areas for leprosy. It is necessary to attach great importance to the prevention and control of high-epidemic areas, and to continuously increase investment in health resources, implement precise prevention strategies, and eliminate leprosy hazards.

P-105

THE CLINICO-EPIDEMIOLOGIC PROFILE OF HANSEN'S DISEASE IN DR. JOSE NATALIO RODRIGUEZ MEMORIAL MEDICAL CENTER DERMATOLOGY OUT PATIENT DEPARTMENT: A 5 YEAR REVIEW

Presenter: Anna Tankeh

A.C. Tankeh[1],V.R. Ramilo[1], A.B. Mendoza[1]

[1]Dr. Jose Natalio Rodriguez Memorial Medical Center, Department of Dermatology

Objectives: The objective of this study is to determine the clinical characteristics of newly diagnosed Hansen's Disease patients at our institution and to compare the presence or absence of skin manifestations, neurological

deficits and deformities in accordance to the World Health Organization (WHO) classification Eyes, Hands and Feet (EHT) Score, in the various leprosy types.

Methods: This is a descriptive retrospective study. All study subjects were newly diagnosed Hansen's Disease patients seen at Dr. Jose N. Rodriguez Memorial Medical Center between January 2014 and December 2018. In total, 274 subjects were enrolled. Patients who returned after default, relapses and transferred for treatment from other institutions were excluded from the study.

Results: A total of 274 subjects, the majority of whom (58%) were between 21 and 50 years of age, were included, and the male-to-female ratio was 3:1. Of these 274 subjects, 36% were from Caloocan City. Lepromatous Leprosy was observed more frequently (45%). At the time of diagnosis, 99% of all subjects presented with skin manifestations. The prevalence of neurological deficit (Maximum WHO Grade 1 EHT Score) at the time of diagnosis was 41%. The prevalence of deformities (Maximum WHO Grade 2 EHT Score) at the time of diagnosis was 14%.

Conclusion: Hansen's Disease is a chronic granulomatous disease caused by *Mycobacterium leprae* that mainly affects the skin and nerves. Its course and manifestations are dependent on the status of the individual's immune response and ranges from the tuberculoid to lepromatous spectrum. Further studies are needed to fully determine the clinical characteristics of each type of leprosy in the country.

P-138

SPATIAL ANALYSIS AS A MONITORING TOOL OF HANSENIASIS IN HYPEREMPHEMIC MUNICIPALITY OF MARANHÃO - BRAZIL

Presenter: Ariadne Siqueira de Araujo Gordon

A. S. A. Gordon[1], B. L. Paiva[2], J. G. Barreto[2]

[1]Federal University of Maranhão, Campus Imperatriz, Maranhão, Brazil. [2]Spatial Epidemiology Laboratory, Federal University of Pará, Campus Castanhal, Pará, Brazil.

Objective: The State of Maranhão has the third highest annual new case detection rate (NCDR) of leprosy in Brazil (35,17/100,000) and is considered hyperendemic. Imperatriz, the second largest city in Maranhão, has an even higher NCDR (41,36/100,000) compared to the State average. Additionally, Imperatriz stands out with a high hidden prevalence, indicated by the high proportion of cases among children below 15 years old. The use of spatial analysis for the identification and monitoring of high-risk areas for leprosy is a dynamic and important strategy to understand the factors that influence the transmission and contributes to the decision-making process and effective disease control. The objective of this study was to identify the spatial and temporal distribution of leprosy cases reported from 2001 to 2016 in the hyperendemic city of Imperatriz.

Method: The study population comprises all cases of leprosy reported from 2001 to 2016 in Imperatriz. The reported cases were mapped during field work using the application MapIt for Android device and exported to the QGIS software for data analysis and map generation. Data were analyzed as individual points (Kernel density estimation) and aggregated by census tracts (NCDR by sector).

Results: A total of 6,019 cases were reported during the study period. We estimate to map at least 80% of the cases in the urban area. To date, 45.83% (2,783) of the reported cases have been mapped, as this is an ongoing research. The preliminary analysis suggests a heterogeneous spatial distribution, with the formation of spatiotemporal agglomerates. Of the reported cases, 57% were male, 9.8% were less than 15 years old at the time of diagnosis. For a larger census organization, the municipality is divided into sectors, 222 in total, having an average number of cases per sector of 12.4, in some sectors there are no registered cases and in others there are 53 cases per sector.

Conclusions: Identifying the hotspots of leprosy cases, it will be possible to correlate it with the contributing factors (socioeconomic data and quality of the primary care service) for the maintenance of the transmission chain. Thus, helping to monitor and identify areas of greatest risk for the transmission of leprosy, bringing new elements to the organization of health services in terms of active search for the early diagnosis of new cases. Demonstrating to the managers that the presentation of the cases through maps favors planning and directing the actions of health surveillance.

P-139

EPIDEMOLOGICAL LEPROSY SITUATION IN BRAZIL FROM 2008 TO 2017

Presenter: Carmelita Coriolano

C.R.F. Coriolano[1] F.F.R. Silva[1] J. G. Brandao[1] P.T.T Sá[1] M.M. Bastos[1] V.L.G. Andrade[2]

[1]General Coordination of Leprosy and Diseases in Elimination - CGHDE, Health Surveillance Department – SVS, Ministry of Health - MS, Brasília, DF, Brazil [2]Pan American Health Organization, Brazil

Objectives: To describe the epidemiological situation of leprosy in Brazil from the last ten years 2008 to 2017

Methods: A descriptive cross-sectional study was conducted by MoH in Brazil from 2008 to 2017, included all new leprosy cases reported in Sistema Oficial de Agravos do Brasil. The variables studied were: sex, ethic group, operational classification, clinical form, detection mode, annual new case detection rate (per 100,000 inhabitants), average leprosy detection rate in children under 15 years old disability rate, proportion of grade 2 disability cases among new cases

Results: In Brazil during the last ten years from 2008 to 2017, 321,771 new cases of leprosy were detected, of which 23,016 were in children under 15 years of age, corresponding to 7.15% of the total number of new cases in the country. Among the new cases of all ages and sex, 7.44% were detected with visible physical deformities. 55.61% were male, 66.90% of the race / black color, 63.63% of the multibacillary form and 44.88% were detected by referral. The number of new cases declined by 34.09%, ending in 2017 the series with 26,875 producing a detection rate of 12.94 cases / 100,000 inhabitants when compared to the data from the beginning of serie 2008. In this decade the rate of new cases presented a decreasing of trend (APC) -5.59% CI 95% (-6.18% to -5.00%) year.

Conclusion: Despite the reduction in the general detection rate of new cases of leprosy, the majority of cases classified as multibicycle, visible disability and, above all, occurrences in children younger than 15 years, indicate the persistence of the disease and the possibility of hidden endemia.The epidemiological and operational profiles of leprosy in Brazil point to the need for differentiated strategies considering local particularities.

P-149

IMPACT ON MINI LEPROSY ELIMINATION CAMPAIGN (MLEC) IN RUPANDEHI DISTRICT NEPAL

Presenter: Raj Kumar Paudel

Raj Kumar Paudel[1],Gopal Hari Pokheral[1], Tekaram Adhakari[2]

[1] The Leprosy Mission Nepal, [2]Anandaban Training Canter [3] District Public Health Office, Rupandehi Nepal

Objectives: Leprosy is a fairly common infectious disease with a worldwide distribution cause by Mycobacterium leprae an acid fast bacillus. Aim of the mini leprosy elimination programme to early case detection from high risk community. The target of eliminating leprosy as a public health problem has long been reached in the country in

terms of the World Health Organization (WHO) definition of less than one case of leprosy per 10,000 populations. In Nepal > 1,85,000 cases treated with MDT since 1982, about > 30,000 cases leprosy related disability and around 3000 new cases every year diagnose. in 2016/17 3215 new case diagnose its prevalence rate 0.92 per 10,000 population. However in Rupandehi District still endemic district (122 new case) prevalence rate 1.20 per 10,000 population.

Methods: More than 51 percent population 520947 from 10 municipality covered out of 16 municipality in Rupandehi, District. Total 149 trained health workers involved the leprosy diagnosis and 838 male volunteers/Female Community Health Volunteers (FCHVs) mobilizing for door to door visit after orientation. Health workers screened sign and symptom of leprosy and diagnose in 55 government health institution and 20 expert leprosy diagnose team reconfirm from referral centers within three days Feb 7 to 9, 2018.

Results: Total 1110 suspected leprosy were referred in health institution from door to door survey and 62 confirm diagnose leprosy by trained health workers with reconfirming. Among total detected cases 51.60% were MB leprosy and 48.40% were PB leprosy cases. Female proportion among detected cases were 37.09% and child were 3.22%. Disability grade II is 25.80% among detected cases which is significantly higher than national and district figures.

Conclusion: This intervention expose the hidden cases on those 3 days campaign activities including awareness programme. High percentage of WHO disability grade II indicate that more leprosy awareness and such kinds of campaign needed in high prevalent districts to find early cases.

P-151

ANALYSIS ON PREVALENT TRENDS AND TIME SERIES OF LEPROSY IN SUQIAN DURING 1997-2016

Presenter: Lianhua Zhang

Zhang Lian-hua[1],Zhang Yang[2]

[1]Jiangsu Provincial Center for Disease Control and Prevention , [2]Suqian municipal Center for Disease Control and Prevention

Objectives: To investigate prevalent trends and time-series of leprosy in Suqian during 1997-2016 with construct prediction model for forecasting.

Methods: Time series of leprosy patients period totality in each quarter during 1997-2016 was established based on data from leprosy quarterly report over the years and Leprosy Management Information System in China(lepmis) , A ARIMA model was fitted to forecast quarterly period case numbers in 2016 and 2017.

Results: The best ARIMA model of leprosy patients period totality in each quarter during 1997-2015 in Suqian was ARIMA(1,0,0)(2,1,0)4,true values of quarterly period case numbers in 2016 were all between 95%CI of predicted ones.

Conclusion: Arima can be well used to forecast prevalent trends of leprosy and provide scientific basis for leprosy prevention and cotrol.

P-152

SURVEY ON CURRENT SITUATION OF SURVIVORS CURED OF LEPROSY OUTSIDE THE LEPROSY HOSPITAL(VILLAGE) IN ZHEN JIANG CITY

Presenter: Zhaoqing Chen

Zhaoqing Chen[1], Hui Jiang[1]

[1]Zhenjiang Center for Disease Control and Prevention

Objectives: To further grasp the situation and health status of survivors cured of leprosy outside the hospital(village) of leprosy.

Methods: To investigate all survivors registered outside the hospital(village) of leprosy in Zhenjiang city by questionnaire of "personal information review form of survivors cured of leprosy outside the hospital(village) of leprosy in Jiangsu province".

Results: Among 242 survivors cured of leprosy in Zhenjiang , male to female ratio was 2.3:1, the average age is (70.57 + 8.271) years old, the maximum age was 91 years old, the minimum age was 47 years. 32.5% of the healers were unmarried, divorced, or widowed. Partial or complete loss of self-care ability is as high as 38.9%, partially or completely lost the ability to work up to 58.3%, 45.5% were cured with chronic non communicable diseases,13.6% of patients with secondary or above disability, only 5.4% of the survivors would like to live in the leprosy hospital(village), 19% of the survivors had rehabilitation needs. 20.2% percent of people enjoy a minimum living security, 5.4% percent of people enjoy the five guarantees family.

Conclusion: The government and relevant departments should pay more attention to such a group of people, play a leading role in planning, policy support, investment and other aspects, and improve the service system of cured leprosy survivors, so as to improve the quality of life in leprosy survivors from aspects such as living standards, rehabilitation, medical care and so on.

P-153

THE EPIDEMIOLOGICAL PROFILE OF LEPROSY IN CHINA, 2017

Presenter: Peiwen Sun

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[1]Institute of Dermatology, Chinese Academy of Medical Sciences & Peking Union Medical College / National Center for STD and Leprosy Control, China CDC

Objectives: To describe the epidemiological situation of leprosy, and to provide evidence for making specific strategies in leprosy control programme.

Methods: Using descriptive analysis method to analyze the data of leprosy in 2017 which were from Leprosy Management Information System in China (LEPMIS).

Results: A total of 634 newly detected cases were reported in 2017 with a case detection rate of 0.046 per 100,000 populations. The proportions of child case under 15, multi-bacillary and disability grade 2 were 1.4%, 91.8%, 20.0% respectively. A total of 52 relapse cases were reported in 2017, among which 28 cases were relapsed after multi-drug therapy. The registered cases were 2697 by the end of 2017 with a prevalence rate of 0.194 per 100,000 populations.

Conclusion: In China, the overall leprosy epidemic situation is still at low level but the distribution is unbalanced, both in the high prevalence areas and the migrant population gathering areas. In order to accelerate towards a leprosy-free world, the input and efforts should be sustained in coming years.

P-165

A 9-YEAR RETROSPECTIVE STUDY TO ANALYSE TRENDS IN MULTIBACILLARY LEPROSY AND SMEAR-POSITIVITY OVER 9 YEARS (2010-2018) FROM INDIA

Presenter: Sunil Dogra

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Department of Dermatology, Venereology and Leprology,[1] Department of Histopathology,[2] Postgraduate Institute of Medical Education and Research, Chandigarh, India

Objectives: To analyse the trends in prevalence of multibacillary leprosy over the last 9 years. The study also aimed to assess rates of slit skin smear-positivity in multibacillary patients in the study period.

Methods: This was a retrospective study done at a tertiary care hospital in north India, utilizing the records of newly-diagnose leprosy patients in the last 9 years, from 2010 to 2018. Prevalence of multibacillary leprosy patients (LL, BL) and slit skin smear-positivity in the multibacillary cases was determined and analysed.

Results: A total of 1095 new cases of leprosy were detected in the 9-year duration, out of which 785 cases (71.7%) were multibacillary patients. Majority of the multibacillary patients were males (M: F= 2:1). The proportion of multibacillary cases increased steadily from 60% in 2011 (66 out of 110 patients) to 75.7% in 2018 (109 out of 144 patients). Of total 785 multibacillary leprosy cases, only 372 (47.3%) were found to be smear-positive during the study period. Smear-positivity was found to be highest in the year 2013 (74%) and lowest in the year 2017 (27.3%). Of the smear positive cases, 33.8 (126 out of 372) had BI more than 3 indicative of high bacillary load .

Conclusion: Leprosy continues to be a humongous health problem in India even in the post-elimination phase. Prevalence of multibacillary leprosy is high with a rising trend in the recent years. A significant proportion of these multibacillary patients are smear-negative. Better case detection and awareness is needed for early detection and management of multibacillary leprosy. Since clinical examination alone may not always be diagnostic, slit skin smear examination is useful investigative tool for leprosy diagnosis.

P-168

LEPRA REACTION IN A FILIPINO POPULATION IN THE OUT-PATIENT DEPARTMENT OF A TERTIARY GOVERNMENT HOSPITAL: A 5-YEAR RETROSPECTIVE

Presenter: Katrina Kashmyr Kua

Katrina Kashmyr B. Kua, MD[1], Ma. Angela M. Lavadia, MD, FPDS MD, FPDS[1], Milali T. Torres, MD, FPDS[1]

[1]Department of Dermatology, East Avenue Medical Center, Quezon City, Philippines

Objectives: To analyze and identify the risk factors which contribute to Hansen's disease reactions in patients who consulted in East Avenue Medical Center from January 2011 to December 2016.

Methods: In a retrospective study, medical records of Hansen's disease patients in reaction registered at the East Avenue Medical Center Department of Dermatology between January 2011 and December 2016 were reviewed. Of 194 identified records within the specified time frame, 78 met the inclusion criteria. Descriptive analysis was used

for baseline characteristics and a binary logistic regression model was applied for identifying risk factors correlated with Hansen's disease reactions.

Results: Of the 194 cases analyzed, 127 were male and 67 were female. Majority of cases presented between the 21 to 30 age range. The lepromatous lepromatous form was the most common clinical and histopathologic form. Lepra reactions were documented in 78 cases (40.2%). The average time to reaction was 5.38 ± 1.19 months. Multivariate analysis identified three clinical features of Hansen's disease associated with lepra reactions. These were borderline lepromatous and lepromatous lepromatous clinical forms of hansens disease, and multibacillary treatment regimen.

Conclusion: Lepra reactions are common complications in Hansen's disease patients. Borderline lepromatous and lepromatous lepromatous clinical forms and multibacillary treatment regimen are significantly associated with the reactions. Early detection in cases with risk factors followed by appropriate treatment could prevent the morbidity of patients with Hansen's disease.

P-169

CURRENT STATUS OF 140 CASES CURED LEPROSY SURVIVORS

Presenter: Dizhong Feng

Dizhong Feng[1], Fuhua He[1]

[1]Jinhu County Center for Disease Control and Prevention

Objectives: To understand the living and health status of leprosy survivors in Jinhu County , to provide reference for improving their quality of life.

Methods: Household survey of leprosy survivors and analysis of data .

Results: Of 140 leprosy survivors, the sex ratio is 2.59: 1, average age 73.11 ±8.94 years, unmarried survivors accounted for 10.71%, Living alone 21.40%, 40.72% of the total loss or partial loss of working ability. The longer the course of disease, the longer the healing time .The living condition of cured leprosy patients is poor. 53.57% of annual household income is less than 5,000 yuan, 38.57% of families have annual income less than 20,000 yuan, the prevalence of chronic diseases is 31.43% , disability 33.57% , rehabilitation demand rate 15.00%.

Conclusion: Leprosy cures survivors poor health, the Whole Society Should Strengthen the Humanities and Health Concern for Curing the Survivors of Leprosy.

P-190

THE LIVING CONDITIONS AND HEALTH STATUS OF LEPROSY HEALING PATIENTS IN HUAI'AN CITY

Presenter: Zhaohui Zhang

Zhaohui Zhang[1], Yujun Shi[1] ,Xiufu Sun[1]

[1]Huaian municipal center for disease control and prevention

Objectives: To understand the living conditions and health status of leprosy healing patients in Huai'an City, and provide reference for improving their quality of life.

Methods: Household survey of leprosy survivors and analysis of data.

Results: Of the 854 leprosy cure survivors, the sex ratio was 2.78:1, the average age was 73.11±8.94 years, the unmarried person was as high as 13.35%, the individual living alone was 21.01%, the person with complete or partial loss of working ability was 44.83%, and the annual income was less than 5,000 yuan. Among them, 56.56% had45.67% of the family's annual income of less than 20,000 yuan, the prevalence of chronic diseases was 42.27%, the disability rate was49.18%, and the rehabilitation demand rate was 16.16%

Conclusion: Leprosy cures survivors with poor health conditions. The whole society should strengthen the humanistic and health care of survivors who are cured by leprosy. We should start from the aspects of disability rehabilitation, life support, and elimination of discrimination to improve the quality of life.

P-191

SITUATIONAL DIAGNOSIS OF LEPROSY IN THE STATE OF RIO DE JANEIRO

Presenter: Rayara Dias

A. Silva[1], R.M. Dias[1], P.S. Brandão[2]

[1]State Secretary of Health of the State of Rio de Janeiro [2]University of the State of Rio de Janeiro

Objectives: To know the situation of leprosy in the context of the State of Rio de Janeiro (ERJ) in 2017.

Methods: This is an analytical descriptive study of the comprehensive care network in leprosy and the epidemiological profile of new leprosy cases in the ERJ in the year 2017. The data system used was the Information System of Notification Diseases (SINAN / SES) -RJ) and the National Registry of Health Establishments (CNES). The data contained in both information systems were analyzed considering Order 149 of February 2016, which approves the Guidelines for Surveillance, Attention and Elimination of Leprosy as a Public Health Problem.

Results: We highlight the lack of information about the comprehensive care network in leprosy in the ERJ. The year 2017 presented a coefficient of detection of new cases of 5.59 cases per 100 thousand inhabitants. There is a trend towards an increase in the annual detection rate of new cases of leprosy, which may represent the beginning of the expected drop in detection of new cases. The rate of cure of new cases of leprosy in the state was 80.6%, below the 90% goal established for the State and municipalities in the Interfederative Pacing. The ERJ obtained a ratio of 73.9% of the contacts examined and evaluated 89.1% of the new cases diagnosed, presenting a Physical Impairment Level II (GIF II) of 13.2% at the time of diagnosis. Regarding the evaluation of GIF at the time of the cure, the proportion of patients evaluated in the leprosy patients was 67.9%, which represents a poor performance in this year. Regarding the operational classification, 66.8% are classified as multibacillary and 33.2% as paucibacillary.

Conclusion: We evidenced an invisibility of the integral care network in leprosy, directly impacting the actions developed to control the endemic disease. According to the information presented, it is imperative to prioritize health education actions, contact surveillance, diagnostic qualification and prevention and treatment of disabilities from Primary Care, and this assumes its role as caregiver in an integrated and regularized network.

P-192

POST ELIMINATION EPIDEMIOLOGICAL TREND OF LEPROSY IN A TERTIARY LEPROSY CENTRE IN NEPAL

Presenter: Ramesh Sharma

Ramesh Sharma[1]

[1]Green Pastures Hospital and Rehabilitation Centre, Nepal

Objectives: To study the epidemiological trend of new leprosy cases that (have) visited the Green Pastures hospital, a tertiary leprosy treatment centre located in Pokhara, Western Nepal (in the 8 years after elimination was declared).

Methods: Charts of all new leprosy cases diagnosed at Green Pastures Hospital after declaration of elimination in 2010 till 2017 A.D. (2067-2075 B.S.) were analysed.

Results: A total of 915 patients were diagnosed with leprosy in those 8 years of study. The number of new cases in 2010 was 105 while that in 2017 was 103. Number of multi-bacillary cases in 2010 was 84 and that in 2017 was 87. Highly smear positive cases (smear more than 3+) rose from 16 to 40. Three children under the age of 14 years were diagnosed with leprosy in 2010 and the same number of children diagnosed in 2017. Fourteen patients presented with grade 2 disability in 2010 (13%) while 11 patients presented with grade 2 disability in 2017 (10.7%). In 2014, one child with grade 2 disability was diagnosed.

Conclusion: Though declared elimination in 2010, the number of the new cases is not decreasing as expected. New cases with high bacillary index are still being diagnosed which suggests need for more focused efforts in active case detection and early treatment if we are to achieve the target of a world free of leprosy and disabilities. At the same time, we are still getting new child cases and even with deformities.

P-193

CHARACTERISTICS OF LEPROSY NEW CASE IN WENSHAN OF YUNNAN, 2009-2015

Presenter: Jun He

HE jun[#1],Wu Feng Zhi [#2],yangjun[#1],xiongli[#1]

Yunnan center for disease control and prevention

Objective: To analyze the characteristics of new cases of leprosy in Wenshan from 2009 to 2015,and to provide the basis for preventing and controlling regional leprosy.

Methods: Exploratory data analysis and GIS spatial analysis were used to analyze the spatial, temporal and population distribution of new cases of leprosy in Wenshan during 2009-2015, which were collected from the center for disease control and prevention of Yunnan province.

Results: The new cases of leprosy were mainly aged 10-40,which accounted for 66.95%. According to the gender structure which was more likely to be male, the male to female ratio was 2.06:1. In the spatial distribution, the new cases of leprosy were concentrated in 73 towns, accounting for 71.57% of the total number of towns, which showed a characteristic of wide distribution with low incidence. Three hot spots were obtained through the general G-statistic model analysis. In the time distribution, the new cases of leprosy presented a continuous downward trend since 2012.

Conclusion: The incidence of leprosy from 2009 to 2015 in Wenshan among male teenagers was higher than that of their female peers. Leprosy showing a low prevalence in Wenshan distributed widely with the characteristic of spatial cluster in the whole region.

P-203

LEPROSY AMONG SCHOOLCHILDREN IN THE AMAZON REGION

Presenter: Valderiza Lourenco Pedrosa

V.L. Pedrosa[1], Dias LC[1], Talhari C[1,2], J.I.L. Paleta Júnior[1], Galban E[1]. Santos M[1,2], A.G. Sachett[1,2]

[1]Fundação Alfredo da Matta, [2] Universidade do Estado do Amazonas

Objectives: To determine the detection rate of previously undiagnosed cases of leprosy among schoolchildren who are under 15 years of age living in Manaus, Amazonas, Brazil, and their possible source of infection by contact tracing.

Methods: This was a school-based, cross-sectional study in which the identification of active leprosy cases was conducted in 277 out of 622 randomly selected public schools in Manaus, Amazonas, Brazil. Suspected cases of leprosy were referred to the Alfredo da Matta Foundation, a reference center for leprosy in Manaus.

Results: A total of 34,547 schoolchildren were examined, and 40 new leprosy cases were diagnosed. Among new cases, 57.5% were males, and 80.0% demonstrated paucibacillary leprosy. A total of 196 of 206 registered contacts were screened, and 52.5% of the newly diagnosed children's cases had at least one positive household contact. In these contacts, grandparents (52.4%) were the most common co-prevalent cases, while 14.3% were uncles, 9.5% were parents and 9.5% were granduncles. Seven contacts (5.0%), including four siblings of child patients were newly diagnosed. Our data indicate that the prevalence is 11.58 per 10,000, which is 17 times higher than the registered rate.

Conclusion: This study suggests that the prevalence of leprosy among schoolchildren may have remained unchanged over the past thirty years. It also indicates that that active case finding is necessary for reaching the World Health Organization's goals of zero detection among children, especially in endemic areas where the prevalence of leprosy is obscure. Moreover, we assert that all children must have their household contacts examined in order to identify the possible source of infection and interrupt the disease's transmission. Novel strategies to reinforce contact tracing associated with large-scale strategies of chemo- and immune-prophylaxis should be expanded to prevent the perpetuation of the disease cycle.

P-214

CHILDHOOD LEPROSY — STILL A PROBLEM IN THE ERA OF ELIMINATION!

Presenter: Neena Khanna

Neena Khanna

Department of Dermatology and Venereology, All India Institute Of Medical Sciences, New Delhi 110029 India

Introduction: In the era of leprosy elimination, childhood leprosy is a surrogate marker of recent transmission of disease.

Objective: To study clinical profile of childhood cases of leprosy presenting at a tertiary care hospital in Northern India, in the decade after its elimination.

Materials and Methods: A retrospective analysis of 6-year data retrieved from case records of patients younger than 18 years registered in the leprosy clinic at a tertiary care hospital in Northern India was undertaken. Demographic (age, sex) and disease characteristics (history of contact, duration of disease, type of leprosy, bacteriological status and presence of reactions and disabilities) were noted.

Results: Of the 2226 cases registered in leprosy clinic, 163 (7.3%) were children with mean age of 12.7 ± 1.7 years and with a male preponderance (4:1). A history of contact with leprosy was present in 17 (10.4%). Mean duration of illness before diagnosis was 27.3 ± 8.1 months. Based on clinicopathological and bacteriological parameters, borderline tuberculoid leprosy was the commonest clinical type of leprosy (63; 38.7%) followed by borderline lepromatous (45; 27.6%) while indeterminate leprosy was seen in 3 (1.8%). There were no patients with histoid or tuberculoid leprosy. Slit skin smear was positive in 26 (15.9%) and lepra reactions were observed in 33 (20.2%) patients with 18 (11%) having type 1 and 15 (9.2%) having type 2 reactions. Grade 1 disability was noted in 11 (6.7)% and grade 2 in 51 (31.2%) children.

Conclusion: Despite elimination, children (and a third of them with disabilities) continue to present in alarming numbers in India, indicating recent transmission and importantly gaps in the national program aimed at leprosy elimination. This data also emphasises the need for early detection of childhood cases through proactive methods to prevent development of disabilities.

P-215

CAN UNIVERSAL SCREENING COMPREHENSIVELY IDENTIFY LEPROSY MORBIDITY? - A PILOT PROJECT

Presenter: Suresh Munuswamy

Suresh Munuswamy[1], Shyamala Anand[3], Jayaram Parasa[2], Steffi Sam[1], Priyadarsini Suresh[1], Robin Lizzy Sunny[1], Rony Sunny[1], Angeleena Singh[1], Sushmita Paul[1]

[1]Public Health Foundation India, [2]LEPRA Society India , [3]American Leprosy Missions , United States of America

Objectives: To identify and map leprosy morbidity in communities in known high endemic pockets through universal screening of households.

Methods: 78 contiguous villages in a known leprosy endemic block of Vizianagaram district, Andhra Pradesh, India were selected for this study begun in 2018. A questionnaire universal screening survey was administered for all 11233 households to record the presence of leprosy and other Neglected Tropical Diseases and any associated morbidity, as well as other relevant information. Geo tagged photos of the front of all households were taken with due permission from survey participants, to improve process reliability and accuracy of input data.

Results: People with leprosy were identified in 17 out of 78 surveyed villages. Maps are being created to show geo location of surveyed villages and highlighting the villages with people affected by leprosy and leprosy morbidity. The maps also show the location of primary health facilities in relation to these villages.

Conclusion: The reality of leprosy in India is that even in high endemic areas, people affected by leprosy live scattered in communities and their numbers are small in relation to the general population. It easy therefore for them to be overlooked by health systems and other development processes. Universal surveys with geotagged data and clear visual representations of that data on maps can better inform planning by government and non-government sectors for a precise approach to address the specific health and socioeconomic needs of this particularly neglected group of people for whom leprosy can have devastating consequences.

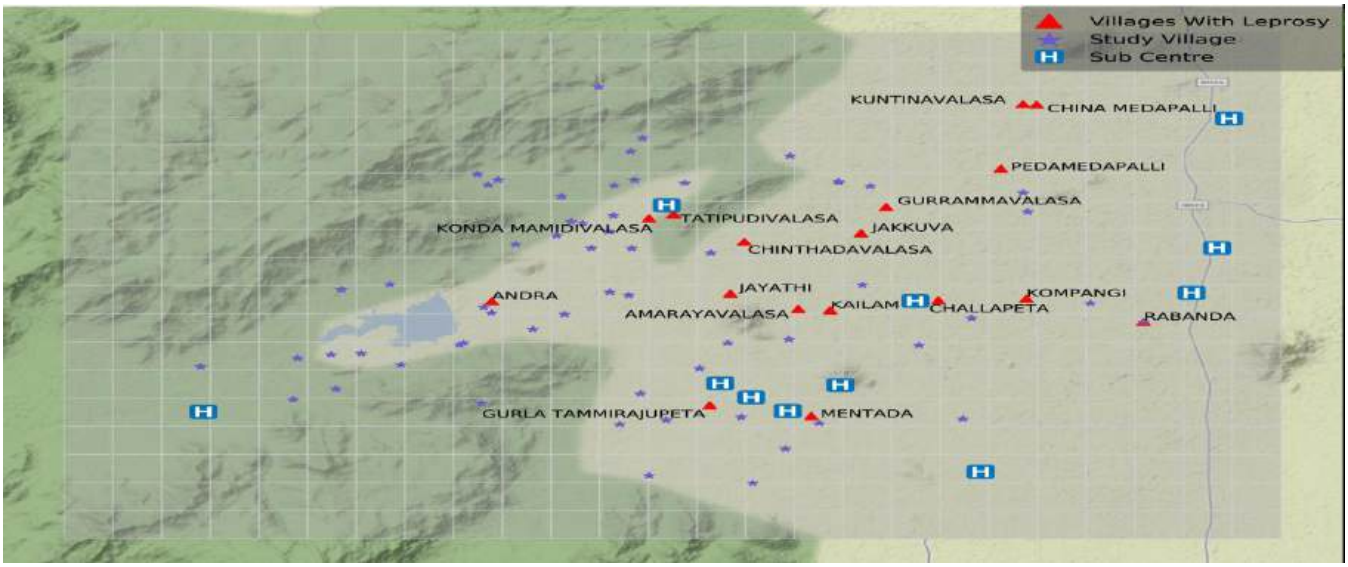

Fig 1:Map view with survey villages, health care facilities and villages with people affected by leprosy.

P-217

A CLINICO-DEMOGRAPHIC STUDY OF LEPROSY IN ELDERLY POPULATION: A RETROSPECTIVE STUDY FROM A TERTIARY CARE CENTRE IN NORTH INDIA

Presenter: Tarun Narang

T Narang[1], S Dogra[1], S Kumar[1]

[1]Department of Dermatology, Venereology and Leprology, [1]Postgraduate Institute of Medical Education and Research, Chandigarh, India

Objective: To study the clinico-demographic parameters of elderly patients (age ≥ 60 years) with leprosy.

Methods: A retrospective analysis of leprosy patients aged 60 years or more, enrolled in our Leprosy clinic from August 2010 to January 2019 was performed. Data pertaining to their clinico- demographic details and treatment was noted on a pre-designed clinic proforma.

Results: Of the 1232 patients enrolled in Leprosy clinic in that period, 105 (8. 5%) patients were elderly. The mean age was 65.1 ± 5.4 years with male predominace (M: F ratio-76:29). Borderline tuberculoid was the commonly observed spectrum observed in 39 patients (37.1 %) followed by Borderline lepromatous in 32 (30.5%) patients, Lepromatous leprosy in 22 (21.0 %) patients, and pure neuritic leprosy in 9 (8.6 %) patients. The mean duration of disease was 26.1 ± 45.8 months. Baseline neuritis was present in 38 patients (36.2%). Type 2 lepra reaction was seen in 41 patients (39.0%). Overall disability rate was 27.6 % (29 patients) with grade 2 disability seen in 11 patients (10.4%). 47 patients (44.8 %) has coexisting comorbidities like hypertension (37.1 %) , diabetes (30.45 %) and tuberculosis (2.9 %). The mean bacteriological index at baseline was 2.3 ± 2.1. 98 patients (93.3 %) were started on Multibacillary (MB) MDT and 7 on Paucibacillary (PB) regimen (6.6 %). Adequate follow up data to ascertain treatment response, adverse effects and other parameters associated with treatment was available for only 80 patients (74-MB and 6-PB). Treatment response with MDT was adequate with clinicopathological improvement and fall in BI/MI in 71 (88.8 %) out of these 80 patients. 9 patients (8.6 %) were switched to alternative regimen after inadequate response or relapse after MDT therapy. Neuritis improved on MDT in 18 (54.5%) out of 33 patients with baseline neuritis who had adequate follow up data while 11 patients (13.75 %) developed new onset neuritis on MDT.

Conclusions: Leprosy in elderly warrants special considerations owing to presence of comorbidities and lower functional reserves. Multibacillary leprosy, delay in diagnosis and increased rate of disabilities was seen in our patients. Treatment in this subset can be challenging due to presence of coorbidities like diabetes and hypertension which could increase the risk of disability.

P-224

UNDERNUTRITION AND FOOD INSECURITY AS RISK FACTORS FOR LEPROSY IN NORTH GONDAR ZONE, ETHIOPIA

Presenter: Jessica Fairley

P.V. Anantharam[1], L.E. Emerson[1], K. Bilcha[2], A.G. Bayih[3], F.M. Yehuala[3], B. Tesema[3], E.A.Yirga[3], J.K. Fairley[2], A.B. Tesfaye[3]

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Objectives: Ethiopia has nearly 4,000 new cases diagnosed every year. Prevention remains a challenge, as transmission pathways are poorly understood and susceptibility and disease manifestations are highly dependent on the individual host immune response. An immune response that predisposes an individual to active leprosy, in particular multibacillary infection, could be a driver of more infectious cases in the community. Nutritional deficiencies, such as protein-energy malnutrition, have been linked to reduced cell-mediated immunity and food insecurity has been associated with leprosy. The aim of this project was to identify nutritional risk factors for leprosy.

Methods: Between June and August 2018, recently diagnosed patients were enrolled as leprosy cases and individuals without contact with known cases were enrolled as controls in Gondar and surrounding health centers. Participants answered survey questions on biometric data, demographics, socioeconomic situation, and dietary habits. Urine was tested for *Schistosoma mansoni* infection by Schisto POC-CCA™ rapid diagnostic test (RDT). Descriptive statistics, univariate and multivariate analyses were conducted to examine associations between undernutrition and leprosy.

Results: Eighty-one patients were enrolled (75% male) with an average age of 38.6 years (SD 18.3). The majority of cases were multibacillary (90%) and 21 participants (25.9%) had schistosomiasis. There was a high prevalence of undernutrition with 24 (29.6%) of participants underweight (BMI <18.5) and 17 (21%) with a low middle upper arm circumference (MUAC). On univariate analysis, both low BMI (OR = 7.20, 95% CI 2.34 22.11) and low MUAC were significantly associated with leprosy (OR = 6.82, 95% CI 1.78 26.13) while low BMI was not found to be significantly associated with *S. mansoni* infection. On multivariate analysis, underweight was still significantly associated with leprosy (aOR = 5.9, 95% CI 1.5 23.5). Cutting the size of meals/skipping meals (OR = 2.9, 95% CI 1.0, 8.32) or not having enough money to get more food (OR = 10, 95% CI 3.44 29.06) was more common in cases of leprosy than controls.

Conclusion: These findings suggest a strong association between leprosy and undernutrition. Skipping meals and not having enough money to get more food support the framework that food insecurity could lead to undernutrition that then may increase susceptibility to leprosy. Schistosomiasis infection did not appear to be a driver of undernutrition. In conclusion, this study highlights the need to increase our understanding of the interplay of undernutrition, food insecurity, and the transmission of leprosy.

P-232

ECOLOGICAL STUDY OF TIME SERIES OF LEPROSY INDICATORS IN MARANHÃO FROM 2001 TO 2015.

Presenter: Léa Márcia Costa

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[1] Secretaria de Estado da Saúde do Maranhão, Brazil [2] Universidade Federal do Maranhão, Brazil

Objectives: Leprosy represents a significant public health problem, especially in low- and middle-income countries. In 2015, 210.758 leprosy cases were recorded worldwide and infections cases were reported in 136 countries. Of all of cases, 13.0% occurred in Brazil. Maranhão is one of the most endemic states. In 2015, 4.461 new cases were detected in the State, which corresponds 13.4% of Brazil's cases. Systematic analysis of epidemiological indicators related to leprosy, for instance the detection coefficient on general population and children under 15 years, and proportion of contacts examined and proportion of cure, make it possible to evaluate geographic and temporal aspects of the infection. This can lead to planning, management and analysis of policies and interventions especially in states of Brazil with high levels of leprosy greatness, such as Maranhão. The objective of this work was to analyze leprosy in the Maranhão State by region between 2001 to 2015.

Methods: The cases were extracted from the National System of Notification Disorders and population data of the Brazilian Institute of Geography and Statistics. Indicators analyzed: (i) those that assess the burden of morbidity and magnitude of leprosy: rate of leprosy detection in the general population and children under 15; and (ii) evaluate the quality prevention actions and health care services: proportion of intradomiciliary contacts examined and proportion of cure. The indicators were calculated according to the recommendations of Health Ministry.Statistical analysis: For analysis of the temporal trend was used the linear regression model of Prais Winsten.

Results: We analyzed 77.697 leprosy cases in the general population and 7.599 in children under 15. The detection coefficient of population decreased 24.3%, from 88.91 in 2001 to 64.61 cases / 100,000 inhabitants in 2015. On the population under 15 years, the reduction was 20.1%, from 24.9 in 2001 to 19.9 cases / 100,000 inhabitants in 2015. Regarding the proportion of contacts examined, Maranhão presented an increasing tendency. On the other hand, there was a steady trend in the proportion of leprosy.

Conclusion: Despite the reduction of detection coefficients on the Maranhão population, these indicators remain high in almost all the regions. The results of this study suggest the need for efforts and intensification of actions to eliminate the disease, especially in regions with such a high cases of leprosy.

P-245

SPATIO-TEMPORAL ANALYSIS OF LEPROSY-RELATED MORTALITY IN BRAZIL: AN INTEGRATED APPROACH OF THE NORTH AND NORTHEAST REGIONS

Presenter: Anderson Fuentes Ferreira

A. F. Ferreira[1], E. A. Souza[2], M. S. Lima[1], G. S. M. García[1], M. S. A. P. Pinto[1,3], S. A. Sena Neto[4,5], E. S. N. Andrade[6], C. R. F. Coriolano[4,6], A. S. Reis[1], Léia G. T.[7], A. N. Ramos Jr[1]

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Objectives: To analyze temporal trends and spatial patterns of leprosy-related mortality in the North and Northeast regions of Brazil from 2001 to 2017.

Methods: A mixed population-based, time-based and spatial ecological study based on secondary data from death certificates from the Ministry of Health Mortality Information System (SIM-MS), including basic and associated causes of death.

Results: There were 4,907 deaths related to leprosy, 59.3% as an associated cause. Unspecified leprosy (A30.9) was responsible for most of the mentions in the death certificate (baseline cause: 72.7%, associated cause: 76.1%). There was an increased risk of leprosy mortality for males aged ≥60 years of age and of race/color black or brown. The time trend for joinpoints analysis showed an increase in the general trend of mortality, in the Northeast region and in the states of the Tocantins, Maranhão, Alagoas and Bahia, as well as in the male sex. There was a tendency to increase for race/color yellow and brown. Large municipalities showed a reduction in trends, with an increase in mortality for municipalities with a population of less than 100,000 inhabitants. Municipalities with a very high social vulnerability index showed an increase in the mortality trend. For the spatial distribution of rates adjusted for age and sex, as well as spatial analysis of spatial moving averages and standardized mortality ratio, high mortality rates and standardized mortality ratios were found to be above the mean for the states of Acre, Rondônia, south of the state of Pará, Tocantins, Maranhão, Piauí, southern Ceará, and regions of northern and southern Bahia.

Conclusion: Leprosy mortality in the North and Northeast is a persistent public health problem. The temporal and spatial patterns identified indicate the need to strengthen integral attention prioritizing specific areas and populations in the Country.

P-246

CLINICAL-REACTIVE PROFILE OF PATIENTS IN POLYCHIMIOTERAPIC TREATMENT FOR HANSENÍASE IN A SPECIALIZED AMBULATORY IN THE CITY OF MANAUS, AMAZONAS, BRAZIL.

Presenter: Jacqueline Sachett

G.G.C.G. Oliveira[1], D.H.F. Simões[1], L.B.Toscano[1], R.C.S. Cruz[1], V.L. Pedrosa[1], J.A.G. Sachett[1,2]

[1] Fundação Alfredo da Matta,[2] Universidade do Estado do Amazonas

Objectives: to describe the clinical profile of leprosy patients who presented leprosy reactions in a specialized outpatient clinic in the city of Manaus, Amazonas, Brazil.

Methods: a cross - sectional study, based on the medical records of active patients in December / 2018, attended at the reference center for leprosy in the state of Amazonas, who are or are being treated for leprosy. Failure patients and those who had the treatment suspended were excluded.

Results: 140 active patients were identified, being 70% (98) males and 30% (42) females. The predominant mode of entry was that of new case, with 101 cases (72.1%), followed by recurrence with 19 cases (13.6%). The age of patients ranged from 10 years to 79 years, the predominant age group being between 46-60 years, totaling 43 (30.7%) individuals. The patients who presented a reactive picture were 56 (40%), 41 (73.2%) men and 15 (26.8%) women and of these 34 (60.7%) presented type 1 reaction (reverse reaction - erythematous plaques infiltrates and neuritis) and 22 (39.3%) type 2 reactions (erythema nodosum leprosum - painful erythematous nodules with or without the presence of fever). Among the men with a reactive picture (41), 22 (53.7%) presented type 1 reactions and 19 (46.3%) type 2 reactions. Of the 15 women with a reaction frame 12 (80%) presented type 1 and 3 reactions 20%) type 2 reaction. Among the patients undergoing treatment for the reaction, 52 (92.9%) used prednisone, 22 (39.3%) used thalidomide, and 18 (32.1%) of the patients concomitant use of thalidomide and prednisone.

Conclusion: Males were the predominant among the population served. Women presented more type 1 reaction when compared to type 2 reaction. Men presented almost similar numbers between those who are in treatment for type 1 and type 2 reactions. Monthly follow up of the patients helps the identification of signs symptoms of reaction

states for better targeting of the assistance to the members of the multi-professional team and referrals to internal and external specialties to the service.

P-255

EPIDEMIOLOGICAL SITUATION OF LEPROSY IN A REFERENCE CENTER OF AMAZONAS

Presenter: Jacqueline Sachett

V.L. Pedrosa[1], J.I.L. Paleta Júnior[1], L.C. Dias[1], J.A.G. Sachett[1,2]

[1] Fundação Alfredo da Matta,[2] Universidade do Estado do Amazonas

Objective: to characterize the epidemiology of leprosy cases in an Amazon Reference Center.

Methods: This was a retrospective study of the visits performed at the Alfredo da Matta Foundation in Manaus-AM in the year 2017.

Results: 174 cases of leprosy were reported. Of these 134 (77.0%) were new cases, 20 (12.0%) relapses, 16 (11.9%) other re-entry and 4 (2.9%) transfers. The 134 new cases detected in 2017 by the Foundation are equivalent to 29.2% of the cases reported in the state and 85.3% of the cases reported in Manaus. This framework reflects the need for an increasingly effective implementation of the process of decentralization of activities in the state. Of the total number of new cases, 85 (63.4%) were by spontaneous demand, 35 (26.1%) were referred for referrals, 5 (3.7%) were submitted to a collective examination and 3 (2.2%). In the detection of new cases in relation to gender, there was always a predominance of men. The proportion of new cases in women for the period 2000 to 2017 showed an annual average of 39.1%. The M / F ratio was 1.7. The detection of cases in children under 15 years is one of the indicators to measure the recent transmissibility of the disease and its tendency. In the year 2017, 03 (2.3%) cases were detected. Regarding the degree of incapacity, all 134 (100%) new cases detected in 2017 were evaluated in relation to the degree of disability. Of the new cases evaluated, 16 (12%) had disabilities, considered high (> 10) according to the Ministry of Health parameter. In a historical series of cases, a degree I oscillation is observed in the last years, showing the diagnosis late cases of leprosy. The proportion of multibacillary cases (MB) among the new cases presented an upward trend in the period from 2002 to 2017, especially in the last years. In 2017, 81 (60.5%) MB cases were detected and the MB / PB ratio was 1.5. The proportion of contacts examined was 80.1%, considered as regular (> 75% to 89.9%) in relation to the parameters recommended by the Ministry of Health.

Conclusion: These results showed that leprosy in the state of Amazonas is still at alarming levels and require intensification of actions for the early detection of leprosy.

P-256

IN-SERVICE TRAINING FOR LEPROSY DIAGNOSIS IN HARD TO REACH AREA OF THE BRAZILIAN AMAZON REGION: UNVEILING HIDDEN PREVALENCE COOPERATIVELY WITH THE LOCAL HEALTH-CARE WORKERS

Presenter: Josafa Barreto

Bárbara Lopes Paiva[1,2], Raquel Carvalho Bouth[1], Ana Caroline Cunha Messias[1], Sidney de Assis da Serra Braga[1], Naila Ferreira da Cruz[1], Sâmela Miranda da Silva[1], Leticia Souza da Silva[1], Aline Barral Takahashi[1], Angélica Rita Gobbo[1], Lillian Spencer[1], Marco Andrey Cipriani Frade[3], Moises Batista da Silva[1], Claudio Guedes Salgado[1], Josafá Gonçalves Barreto[1,2]

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Objectives: This report describes our experience delivering in-service training for diagnosis and management, during a journey to a hard-to-reach area of the Brazilian Amazon region. Additionally, we identified the local health-care staff profile and evaluated the available structure and operation of the local leprosy control program.

Methods: In December 2018, we provided a one-week (40hs) intensive in-service training for the primary health-care workers in the municipality of Anapu, which is marked by agrarian conflicts and located about 700km from Belém (Pará capital city). The first four hours of training were dedicated to theoretical content, and 90% of the time was devoted to hands-on supervised dermatoneurological examination at the residences of the index patients (IP) reported in urban or rural areas. Forty-five health professionals were trained, including physicians, nurses, community health agents (ACS), nursing and laboratory technicians. Our experienced team consisted of dermatologists, nurses, physiotherapists and biomedicals. We applied questionnaires to evaluate the educational profile and quality of health service.

Results: We visited 51 IP, 210 household contacts were examined and 40 (19.0%) new cases were detected (9 primary neural, 1 indeterminate, 14 borderline tuberculoid, 14 borderline borderline,1 tuberculoid, 1 lepromatous), besides 4 borderline borderline relapse cases. 13 (29.5%) cases were identified with grade 1 disability and 5 (11.4%) cases with grade 2. Among the new cases, 24 were in women and 9 in children. Ability profile analysis revealed: 100% of the physicians and nurses had only theoretical classes on leprosy in college. 40% of the physicians and 33% of the nurses received only 1 theoretical training course. 50% of physicians and 100% of nurses answered they have difficulties in diagnosing leprosy. 50% of physicians and 67% of nurses said that chill is a suggestive symptom for leprosy. 28% of the ACS didn't receive any capacitation course and 61% have difficulties to identify suspected cases. 72% of the ACS said that chill is a suggestive symptom for leprosy. Basic tools for leprosy diagnosis were found in all 5 health services, while only 40% had MDT supply and physicians.

Conclusion: In only one week of December, we detected twice new cases as compared to January-November of the same year, unveiling a very high hidden prevalence. We verified low professional qualification and difficulties to follow the leprosy control program. The in-service training, based on case-detection campaigns visiting families of people affected by leprosy, proved to be an important strategy to be considered by the health services.

P-259

EVALUATION OF LEPROSY CASES NOTIFIED IN 2017 BY THE DERMATOLOGY REFERENCE UNITY OF PARÁ STATE, NORTHERN BRAZIL.

Presenter: Jessyca Lisboa de Oliveira

Jessyca Lisboa de Oliveira[1], Louise Sousa de Souza[1], Apolônio Carvalho do Nascimento[2], Raquel Carvalho Bouth[1], Angélica Rita Gobbo[1], Ana Caroline Cunha Messias[1], John Stewart Spencer[3]. Josafá Gonçalves Barreto[4], Moises Batista da Silva[1], Claudio Guedes Salgado[1]

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Objectives: To perform an epidemiological survey of the leprosy cases reported by the Dermatology Reference Unity of Pará State Dr. Marcello Candia (URE-MC).

Methods: Retrospective evaluation of leprosy cases notified in the year 2017 by URE-MC, health unit located inside the former leprosy colony in Marituba, Pará state, northern Brazil, Amazon region

Results: During the year 2017, URE-MC was responsible by 20.4% (515/2,526) of totalall notifications in Pará, most patients from the metropolitan area of Belém, the state capital, accounting for 340 (66.0%) of 515 notifications. New leprosy cases represented 73.2% (377/515) of total, 84.6% (319/377) of those were diagnosed as multibacillary and 38.2% (144/377) presented grade 1 (DG1) or grade 2 (DG2) disability, indicating diagnostic delay. The hidden leprosy cases and high endemicity situation of leprosy is confirmed by the data of notification on children. This population corresponded to 8.9% (46/515) of reported cases, 82.6% (35/46) MB and 26% (11/46) already presented disability, with 45.4% (5/11) showing DG2 at the time of diagnosis. When we evaluated the

bacilloscopy, 42.3% (218/515) of all cases were positive, 55.5% (121/218) borderline and 44.5% (97/218) lepromatous. In the borderline group, 55.4% (67/121) were DG0, 31.4% (38/121) DG1, 12.4% (15/121) and 0.8% (1/121) was not evaluated. In the lepromatous group, 32% (31/97) presented DG0, 43,3% (42/97) DG1, 23.7% (23/97) DG2 and 1% (1/97) was not evaluated.

Conclusion: The high number of new MB cases and those presenting G2D at the time of diagnosis, the high number of children under 15 years of age also diagnosed with MB and already with G2D, confirm the lack of coverage of basic health care, the high circulation of bacilli, and the high number of cases on the metropolitan area of Belém, a 3 million people region at Amazon.

P-260

TREND OF GRADE-2 DISABILITY IN BRAZIL BETWEEN THE YEARS 2001 - 2017.

Presenter: Pedro Terra Teles Sá

P.T.T. Sá[1]; J.G. Brandao[1]; M.M. Bastos[1]; E.R. Oliveira[1]; C.R.F. Coriolano[1].

[1]General Coordination of Leprosy and Diseases Elimination, Secretariat of Health Surveillance, Ministry of Health, Brasilia, DF, Brazil.

Objectives: To describe the trend of grade-2 disability in Brazil 2001 to 2017.

Methods: A time series study was carried out. We used: a) the rate of grade 2 of physical disability among the new leprosy cases at the time of diagnosis (by 1 million inhabitants) and b) number of new cases in children under 15 years old with grade-2 disability. We used secondary data collected in February of 2019 from the Brazilian Official System of Disease Notification. Trend analysis was performed using the Prais-Winsten technique, and the Annual Percentage Change (APC) and respective confidence intervals were calculated.

Results: Between 2001 and 2017, the trend of the grade-2 disability rate among new leprosy cases showed a decreasing trend (APC 3.36% (95% CI) : -4.60; -2.10). Between 2001 and 2017, the number of new cases in children under 15 years of age with grade-2 disability showed a tendency to decrease with an APC of -2.61% (95% CI: -4.76; -0.41).

Conclusion: Analyzes of the trend of physical grade-2 desability indicators in both the general population and those younger than 15 years old showed a statistically significant reduction between 2001 and 2017, indicating that the physical disabilities resulting from leprosy have decreased in Brazil. This reduction can be justified by the actions developed to reduce the burden of leprosy in Brazil.

P-281

CURRENT KAP ABOUT LEPROSY AMONG GENERAL POPULATIONS: A COMPARATIVE STUDY BETWEEN HIGH PREVALENT AND LOW PREVALENT DISTRICTS OF WEST BENGAL.

Presenter: Gitanjali Saha

G. Saha[1], N.K. Mondal[2], R.N. Dutta[3]

[1] Director, Greater Calcutta Leprosy Treatment & Health Education Scheme of G.Saha, [2] Professor, Dept. Of Community Medicine, Maldah Medical College of N.K. Mondal. [3] Former Professor, Dept. Of Dermatology IPGME & R, Kolkata of R.N. Dutta.

Objectives:

- To assess perception and practices about leprosy among general populations.
- To compare KAP of the respondent populations between low & high endemic districts of West Bengal.

- To identify factors contributing to gap in KAP among them resulting in active transmission, delayed diagnosis and discrimination.
- To identify hidden cases, if any, among general population with a view to put them to early treatment.

Methods:
Type of the Study: A cross sectional observational study

Settings: The study was conducted in 3 high prevalent & 3 low prevalent districts of West Bengal.

Study subjects:

1. General population of the same villages where selected leprosy patients live, for assessment of their perception and practices regarding leprosy and finding out hidden cases, if any.

Sample size: About 40 community members from each community where patient lives (considering 1000 population in each village with 5 family members in each family) totaling 12000 community members in 3 high endemic and 3 low endemic districts of West Bengal.

Sampling techniques: Multi-stage sampling technique was adopted.

Results: Total 4460 adult persons were interviewed to assess knowledge & perception of people residing in the same villages wherefrom leprosy patients were identified.1530 adult persons from high endemic districts and similarly, 2930 persons from community in low endemic districts were interviewed.

The patients including family members & villagers residing in high endemic districts were comparatively poor, illiterate, and belonging to socially backward classes, their knowledge, attitude& practices towards leprosy with respect to some pertinent attribute, were found to be better than that of people living in low endemic districts. Self-reporting (47.03%vs27.83%), & early reporting (71.89% vs57.39), were found to be more in high prevalent districts.

Total 42 cases (15 from low endemic & 27 from high endemic districts) were suspected for leprosy, 40 cases were confirmed and 17 patients, 6 MB & 11 PB cases, registered for treatment. 2 patients were under observation. Out of 42 suspected cases, 11 cases were children (26.2%). Of these suspected cases two patients from low endemic districts**, had deformity**, but in spite of repeated effort made from the investigating team, they could not be registered.

Conclusion: Stringent IEC activities need to be implemented in both areas to increase knowledge, develop positive attitude & alleviate stigma from heart of the community to reach a “Leprosy Free India”.

P-282

CURRENT STATUS AND THE INFLUENCE FACTOR ANALYSIS OF CHRONIC DISEASES IN PEOPLE AFFECTED BY LEPROSY IN JANGSU PROVINCE

Presenter: Guangjie Jin

Guangjie Jin[1], Lianhua Zhang[1]

[1]Jiangsu Provincial Center for Disease Control and Prevention

Objective: To investigate the status of chronic diseases in people affected by leprosy (PAL) in Jiangsu province, analyze the influencing factors and discuss the preventive measures.

Methods: A general survey was conducted by leprosy control workers to investigate PAL both in leprosy villages and in the community (hereinafter referred to as the village group and the home group respectively) with self-designed questionnaire .

Results: A total of 12724 PAL completed the survey, including 803 of the village group and 11921 of the home group, with 8969 males and 3755 females. The prevalence of hypertension, hyperlipidemia, coronary heart disease, stroke, diabetes mellitus, tumor and psychosis were 28.7%, 2.9%, 5.2%, 2.8%, 5.3%, 2.0% and 0.4%, respectively. The influencing factors include gender, age,registered residence type and residence mode.

Conclusion: PAL are faced with not only physical deformity and psychological disorder but also with chronic diseases such as heart disease, hypertension and diabetes.The village group,female,old age,urban residence certificate are more likely to have chronic diseases. With the government and society help vulnerable groups-PAL, the government department concerned should pay attention to the special group.

P-295

EPIDEMIOLOGICAL ANALYSIS OF LEPROSY IN LIANYUNGANG CITY

Presenter: Suzhen Xu

Xu Suzhen[1], Yang Haoshu[1], Fu Xin[1]

[1]Lianyungang Municipal Center for Disease Control and Prevention

Objectives: By analyzing the epidemic situation of leprosy in Lianyungang City in the past 18 years from 1997 to 2014, this paper provides a scientific basis for the formulation of current leprosy control measures.

Methods: According to the sex of newly discovered cases, age at diagnosis, period of disease, mode of discovery, type ratio, source of infection and disability rate, descriptive epidemiological method was used to analyze.

Results: Leprosy cases in Lianyungang City are distributed in 4 districts and 3 counties, of which Guanyun is the largest. The incidence of the disease was higher in males than in females, and the ratio of males to females was 3.29:1; The main occupations were farmers, accounting for 95.56% (86/90); The oldest age was 84 years old and the youngest age was 17 years old, with an average age of 45.83 years. Most of the cases were in the 30-44 age group, accounting for 41.11% (37/90); Home infection was the most common source of infection, accounting for 28.89% (26/90); the ratio of polybacterium to oligobacterium was 10.13:1; 60.00% (54/90) were found in dermatology clinics.

Conclusion: leprosy is in a low epidemic state in Lianyungang City. It advocates the combination of active and passive detection methods in order to detect leprosy early, treat leprosy in time and control the source of infection.

P-303

FACTORS ASSOCIATED TO LATE DETECTION OF LEPROSY IN BENIN

Presenter: Ghislain Emmanuel Sopoh

Sopoh Ghislain Emmanuel[1, 6]; Gnimavo Ronald Sètondji[2]; Djossou Parfait[3]; Wadagni Anita[4]; Barogui Yves[5]; Houezo Jean-Gabin[4]; Johnson Roch Christian[3].

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Introduction: Leprosy, a neglected tropical disease, caused by *Mycobacterium leprae or* Hansen's bacillus *,* causes, in the absence of early treatment, so-called Grade 2 Disabilities (G2D). Many factors related to both the

individual and the community but also the health system could be responsible for and late diagnosis and treatment. This study aims to identify the factors associated with late detection of leprosy in Benin.

Methods: This was a cross-sectional, descriptive and analytical study carried out from 1st February to March 31, 2018 and involving all patients and staff of leprosy treatment centers and some public health facilities of the peripheral level throughout Benin country. The dependent variable of the study was the presence or absence of G2D, reflecting the late or early detection . We used a logistic regression model to determine the factors that are associated with late detection of leprosy. The variables retained in the final model were those whose level of significance was less than 5%. The adequacy of the final model had been verified with the Hosmer-Lemeshow test.

Results: Were included 254 leprosy patients throughout the country. The average age was 48.24 ± 18.37 years. Male predominance was noted with a sex - ratio of 1.23 (140/114). The majority of leprosy patients (58.27 %) were detected with G2D. Multiple visits to traditional healers (OR = 13.28, 95%CI : 5.88 - 30 ; p <0.001), fear of stigma associated with leprosy (OR = 8.22 ; 95%CI : 1.26-53.82 ; p = 0.028) and attendance multiple hospital practitioners (OR = 4, 48 ; 95%CI : 1.07-18.77 ; p = 0.040) were the individual-related factors associated with late detection of leprosy in Benin. Ignorance of leprosy by 81.82% of health workers, the permanent reduction of material and financial resources allocated to the leprosy control program were also identified as explanatory factors.

Conclusion: The result of this study point-out the need to integrate in control programs strategies to reduce stigma and banish all forms of discrimination against leprosy patients.

P-304

SILENT CITIES FOR LEPROSY IN THE STATE OF RIO DE JANEIRO

Presenter: Rayara Dias

A. Silva[1], R.M. Dias[1]

[1]State Secretary of Health of the State of Rio de Janeiro

Objectives: To analyze the epidemiological and operational information of counties in the state of Rio de Janeiro that have shown low detection of new cases of leprosy in the period from 2013 to 2017.

Methods: This is an exploratory analysis based on the historical series of the detection of new cases of leprosy and the situational diagnosis of the counties of the state of Rio de Janeiro (ERJ), from January 2013 to December 2017. Data collection was (SINAN), available from the State Department of Health of Rio de Janeiro, from the National Registry of Health Establishments (CNES), and from information provided by the ERJ Leprosy Management. All counties that had zero or only one case diagnosed in the selected period were considered silent counties.

Results: Of the 92 counties of the state, 12 (13%) presented between zero or only one new case of leprosy in the total of the last five years. Of the 12 counties, currently 10 (83%) have 100% coverage of Primary Care. It was verified that 8 (73%) counties have a coordinator of the leprosy program. Regarding the performance of leprosy training for professionals in the basic care network, 6 (55%) counties stated that they had not performed in the last years, followed by 4 (36%) who did and 1 (9%) who did not report. Still, in relation to leprosy care, it was possible to identify that 5 (42%) counties have more than 3 health care units, 3 (25%) have only one unit that provides care, and in 4 (33%) counties were not identified units that treat leprosy patients. Regarding the distribution of reference units in Leprosy in the state, 11 (92%) of the total number of silent counties do not have any type of reference unit in the National Registry of Health Establishments (CNES).

Conclusion: Counties have stopped presenting new cases of leprosy, which may be reflecting operating weaknesses in services. On the other hand, the ERJ Health System showed a high growth in Basic Care coverage, reaching 100% of the population in some regions. This situation may be due to the lack of training of basic health care professionals and the incipient decentralization of leprosy control actions to this level of attention. It is also noted that in most counties (90%), there is no official referral unit for leprosy care, nor support to basic care teams.

P-311

ANALYIS ON SURVIVAL STATUS OF SURVIVORS OF LEPROSY IN LEPROSY VILLAGE OF TAIZHOU CITY

Presenter: Xiaolan Zhao

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[1]Taizhou Center for Disease Control and Prevention 225300; [2]Taixing Center for Disease Control and Prevention 225400; [3]Jiangyan Institute of Dermatology and Prevention 225300; [4]Jingjiang Institute of Dermatology and Prevention 214500

Objectives: Through the analysis of the survival status of survivors of leprosy in the villages of three leprosy hospitals in Taizhou, it provides a basis for further strengthening the care of leprosy as a vulnerable group.

Methods: During the period of 2016-2017, we investigated the leprosy-survived survivors in three leprosy hospitals in the Taizhou City area, which were registered in the history, and filled out the uniformly printed questionnaires, and took photos of patients with disability and disability certificates.

Results: There are 270 cases of leprosy cured survivors in the villages, with an average age of 73.86 years old, 55.56% and 40.37% of the total or partial loss of working ability, respectively; 258 cases (95.59%) have different degrees of disability And the majority of the needs of installing prosthetics, wheelchairs and protective shoes.

Conclusion: This vulnerable group of leprosy should receive great attention from all walks of life.

P-317

EPIDEMIOLOGY OF LEPROSY IN BANGKOK METROPOLITAN THAILAND AFTER SUCCESSFUL ELIMINATION OF LEPROSY AS A PUBLIC HEALTH FROM 2012-2018

Presenter: Rujira Tragoolpua

Rujira Tragoolpua[1] , Riam Lumnak[1], Nitirat Poonsawat[1]

[1]Institute for Urban Disease prevention and Control, Department of Disease Control, Ministry of Public Health Thailand

Objectives: The objectives of this study were to evaluate trends of changing of epidemiology of leprosy in Bangkok Metropolitan, The capital city of Thailand after successful elimination of leprosy as a public health problem towards sustainable elimination in 2012 up to 2018.

Methods: Method of study was retrospective descriptive research conducted by collecting and analyzing of data form available records and reports gathering in established information card. Overall reports revealed That 97.5 percent decreasing rate of prevalence rate from 0.8 per thousand in 1997 to 0.02 per 10,000 population were found. Reduce only 4 registered cases and 4 newsy detected cases with detection rate of 0.07 per 100,000 population were found without any new case with visible deformities and new case among children were also found in 2018.

Results: However 22 newsy detected cases with 18 cases were multibacillary leprosy were also found in 2018. In addition among total 50 districts of Bangkok Metropolitan, That were no registered in 36 districts, No newsy

detected cases in 45 districts and already free from leprosy in 36 regions.

That have recommended that more effectiveness health education campaign for butter health literacy together with more effective surveillance and screening of leprosy from existing skin clinics of public health service centers and hospitals in Bangkok should be strengthen.

Conclusion: Meanwhile, more effective community participation by establish Rajapracha Samasai volunteers should be helpful for newsy case finding of leprosy and look-after case will elderly and deformities in 50 districts of Bangkok in order to achieve the target of sustainable elimination and leprosy-free Thailand in 2023 as targeted by the World Health Organization published "Global Leprosy Strategy 2016-2020: Accelerating towards a leprosy-free world.".

P-354

ACTIVE SCREENING FOR LEPROSY IN HOUSEHOLD CONTACTS UNVEILS CLUSTERING AND YIELDS EARLY LEPROSY CASE DETECTION IN BIHAR, INDIA

Presenter: Nimer Ortuno-Gutierrez / Aashish Wagh

A. Wagh[1], N. Ortuno-Gutierrez[2], B.C. de Jong[3], S. Mugudalabetta[1], B. Pandey[4], J.H.Richardus[5], E. Hasker[3]

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Objectives: The Global Leprosy Strategy 2016-2020 recommends early case detection. Therefore, screening of contacts of leprosy patients is recommended. This is implemented passively in Bihar; where household members of leprosy patients are invited to a health facility for screening. In this study we implemented active household contacts screening. Our main goal was to enhance early case detection. We also aimed to document clustering of leprosy patients.

Methods: Two sub-districts (block) of Madhubani, Bihar with an average of 50 leprosy patients per year were included. An Android application allowing to record demographic data, clinical examination and household geographic coordinates was developed in ‘Open Data Kit Collect’ (ODK). We trained two community volunteers, supervised by a physiotherapist and a leprosy expert medical officer. They visited all new leprosy patients diagnosed in 2017 in their homes and line listed and examined their household contacts. For data collection we used the ODK app. We measured clustering at village level and numbers of new cases found per household screened. As denominator for incidence rates we used an existing dataset with village population estimates. Case households were plotted in Quantum GIS and analysis was performed using SaTScan and Stata 12 software.

Results: We report results of the first block in which home visits have been completed. In this block, 64 index leprosy patients were visited, and 334 contacts were listed. Cases were concentrated in 26 out of 94 villages. Out of 334 contacts identified, 164 (49%) were present and 163 accepted to be screened. Among those eight new leprosy patients were identified; none had visible deformities. Two clusters were identified, one made up of 33 villages with a total population of 153,268 (42% of total sub district population) and a relative risk (RR) of 3.6. The second cluster was made up of three villages with a total population of 11,419 and a RR of 4.9.

Conclusion: Active screening for leprosy of household contacts was well-accepted and had a high yield, and patients identified had no permanent disability. The app was useful for line listing all household contacts and mapping all households affected. In the smaller cluster the risk of leprosy was almost five time higher than average and it could be a rational candidate for door-to-door screening and/or post-exposure prophylaxis. Further improvement in targeting interventions could be achieved by attributing patients and populations to smaller units within villages.

P-414

LEPROSY RELAPSE IN BRAZIL: AN ANALYSIS USING RECLINK III.

Presenter: Mábia Milhomem Bastos

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Objectives: To analyze leprosy registers reported in the Notifiable Diseases Information System (SINAN) in Brazil in 2017.

Methods: We conducted a descriptive cross-sectional study using data resulting from a probabilistic linkage with the software Reclink III. This study used the SINAN database and two files were created: the reference file, composed of the diagnosed relapses in 2017 and the comparison file, constituted of all cases reported between 2001 and 2017. We performed a deduplication process aiming to analyze all the duplicated registers. The records were standardized to eliminate phonetic and spelling mistakes. Logical blocks were constructed, scores were calculated to determine the cut-off point for cases considered as true pairs and after manual review these pairs were identified. The cases were classified according to the following criteria:

1) Single record in the database 2) Previously record with the variable “type of output” different from “cure” 3) Previously record with time between diagnoses less than 5 years and with the variable “type of output” equal to “cure” 4) Previously record with time between diagnoses greater than that 5 years and with the variable “type of output” equal to “cure”.

Results: In 2017, 1709 relapses records were identified, of which 24 were duplications. After the individual analysis, we found 436 (26%) cases with a single entry in SINAN; 131 (8%) records with the variable type of output different from "cure"; 463 (27%) cases with interval between diagnoses less than 5 years and 679 (40%) registers that met the relapse definition criteria. Of the 463 registers with a diagnosis of less than 5 years, 356 (77%) were in the interval between 1 to 5 years and 101 (23%) were in the interval less than 1 year.

Conclusion: The analysis of relapses performed at the national level is an important tool for relapse surveillance. This instrument can be used to improve diagnostic accuracy and notification of cases, as well as, to support decision making and planning of actions to leprosy control.

P-415

IMPLANTATON OF HANSEN’S DISEASE CASES IN UNDER 15 YEARS OLD WITH LEVEL 2 OF PHYSICAL DISABILITY INVESTIGATION IN BRAZIL, AS A CRITICAL INCIDENT

Presenter: Margarida Rocha

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Objective: Describe the result from the implantation of the Surveillance System to Hansen’s disease cases in under 15 years old with level 2 of disability in Brazil in 2018, as a critical incident.

Methods: It is a descriptive study of the implantation of Surveillance System of Hansen's disease cases in under 15 years old with visible deformities, notified in Brazil, in 2018. We elaborated and agreed with an investigation protocol with health professionals from the 27 Federation Units and established a monthly monitoring flux of cases between Federal Government, State, and municipalities. We used as a source of data collection:

1) Complementary Hansen's disease in under 15 years old diagnose investigation protocol; 2) Critical Incident investigation form, based on WHO form; and 3) Simplified Neurological Evaluation form. To consolidate the data from the investigation and to issue the investigation reports from the cases we constructed an electronic form (FormSUS) structured in six-axis: a) new case and physical disability confirmation. b) causes of late diagnosis; c) Surveillance of contacts; d) epidemiological link; e) prevention and treatment of physical disabilities; and f) psychosocial aspects. To monitoring the notified cases we used Brazil's official system of injuries notification (SINAN)

Results: In 2018, Brazil diagnosed and investigated 61 cases of Hansen's disease in under 15 years old with level 2 disability. Of these, 23 (37,8%) confirmed level 2 of incapacity, 18 (29,5%) were reclassified as level 0 of 1 to disability; 3 (4,9%) showed misdiagnose and 17 (27,8%) still under investigation. Cases that after the investigation was discarded for the existence of visual deformities and they got a change on the field at the notification system. Were observed a reduction of 26% on the new cases of children with level 2 disability, comparing 2017 to 2018, where 54 new cases were diagnosed.

Conclusion: The surveillance system from cases in under 15 years old with visible deformities shows capable of monitoring and intervene immediately in the validation of the classification of physical disability, evidencing weaknesses and strengths in the diagnosis and follow-up of the cases. In addition, it is an effective strategy for a better approach to physical disabilities in this population group.

P-418

CLINICAL AND DEMOGRAPHIC PROFILE OF LEPROSY PATIENTS DIAGNOSED IN A TERTIARY GOVERNMENT HOSPITAL: A COMPARISON OF TWO COHORTS, 1999-2003 AND 2012-2016

Presenter: Katrina April Martin David

K. M. David, MD[1], P.O. Ramirez, MD[1], A. D. Ibanez, MD[1], M.M. Lavadia, MD, FPDS[1], M. B. Manlongat-Malahito, MD, FPDS[1]

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Objectives: To describe the demographic and clinical profile of Leprosy patients who consulted in EAMC from 2012-2016 and compare their characteristics among leprosy patients diagnosed in 1999-2003.

Methods: A retrospective descriptive study design was done at the Dermatology Outpatient from January 2012 to December 2016. A total of 194 charts were reviewed.

Results: For the 5-year period (2012 to 2016), there were 86 new patients diagnosed with Leprosy at the East Avenue Medical Center. There was an increasing trend in Leprosy patients observed from 2012 to 2015, reaching up to 30 cases in 2015. This was then followed by a decline to 25 cases in 2016. Most patients originate and currently reside in Metro Manila (74%), particularly in District II. Outside Metro Manila, most leprosy patients were found in Region III (n=9), followed by Region I (n=4) and Region IV-A (n=4).

The total number of cases were lower as compared to 1999-2003 data from the same institution (n=111), with an average of 22 cases per year (12). The average age was 35.27 ± 15.35 years old with a range from 9 to 81. A higher proportion of cases were seen among adult male patients 71% compared to female patients 29% having a ratio of 2:1. In the 1999-2003 cohort, it was reported that approximately 39 (35%) of the leprosy cases were 21-30

years old. In contrast, only 21 (24%) of cases of leprosy were diagnosed in 2012-2016 belonging to the same age group.

Majority of patients were multibacillary 67 (100%) and classified as BL to LL (38%) followed by LL (23%), then BB to BL (16%) and lastly indeterminate (11%). Slit skin smear (SSS) were positive for 54 (63%) leprosy cases out of 86 with low G6PD levels.

Conclusion: Majority of leprosy cases diagnosed in EAMC currently lives and originates in Metro Manila. A high proportion of these cases were lepromatous leprosy which was similar to the leprosy population in 1999-2003. Majority of the patients were multibacillary. This suggests that there is a high risk of further transmission of the disease due to the infectious nature of LL and multibacillary leprosy types. As leprosy entails long-term and frequent contact, knowledge of the province of origin is also important. Contact tracing should be performed to prevent further spread of the disease.

P-419

DISABILITIES GRADE IN LEPROSY: THE RISK OF WORSENING AFTER THE END OF MDT TREATMENT AND DISCHARGE THROUGH CURE

Presenter: Eliane Ignotti

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[1]Universidade do Estado de Mato Grosso – UNEMAT; [2]Universidade Federal de Mato Grosso – UFMT

Objective: To evaluate the risk factors related to progression of leprosy disability grade 15 years after the end of MDT treatment and discharge through cure.

Methods: Retrospective longitudinal study carried out in Cáceres, Mato Grosso, Brazil. The study population were considered all cases of leprosy discharged for cure, from January 1, 2000 to December 31, 2015. Trained health workers examined domiciliary all selected to define the current Grade of Disability. The Cox proportional hazards model was by trained health applied to estimate the risk of progression of physical disabilities after discharge by cure and related epidemiological and clinical factors. The person-time were months of contribution after the end of MDT. The progression of physical disabilities was performed using Survival Analysis and the Log Rank test to the significance level of 5%.

Results: During the follow up 672 patients were cured. Between them, 390 (62.2) former leprosy patients were evaluated and included in this study; 02 refuses, 40 deaths, 65 moved to other municipalities, and 130 were non-localized. The survival curve showed the probability of 67.9% (95% CI, 63.0-72.3) to remain without progression of the degree of physical disability post-discharge by cure after 15 years. The multibacillary patients presented a shorter time of progression of the degree of disabilities when compared with the paucibacillary. Regarding the risk factors, the clinical form, tuberculoid and dimorphous, was associated with the progression of the degree of physical disability post-cure, being the risk respectively 1.55 (95% CI, 1.14 – 2.10) and 1.40 (95% CI, 1.02 – 1.93).

Conclusion: Leprosy patients presents almost 40% of probability of worsening of disability degree 15 years after the end of treatment. Independently of clinical evolution during the MDT the multibacilary group presents high risk of worsening the disabilities.

ILC-4: EPIDEMIOLOGY and CONTROL:

4.2 Leprosy Control

P-012

ANALYSIS OF LEPROSY ENDEMIC AND ITS CONTROL IN HEBEI PROVINCE

Presenter: Wang Yanjun

Wang Yanjun

Hebei Dermatology Prevention And Control Hospital, People's Republic of China

Objectives: To analyze the trends of Leprosy epidemic and evaluate the effects of its control in HeBei.

Methods: The epidemiologic date were analyzed.

Results: There were 1596 Leprosy pationts detected in HeBei during 1952-2015. 1321 were cured, 270 died or dropped out,17 active patients. The incidence was 0.484 ／100000 in 1961. The incidence was 0.23／100000 during 1952-1961.The incidence was 0.0017 ／100000 during 2010-today. MDT was the first to use in 1988.

Conclusion: Several measures we taken for detecting and treating Patients effectively and the endemic and incidence decreased by a big margin as well.

P-020

EVALUATION OF LEPROSY CASE DETECTION CAMPAIGN 2018- IN THREE DISTRICTS OF KERALA STATE –INDIA, ASSESSING QUALITY OF THE CAMPAIGN, COMMUNITY PERCEPTION, AND POSSIBILITY OF CASES MISSED DETECTION

Presenter: Ryinmon Roy Lanong

Dr.Natarajan.Manimozhi[1], Dr.R.R.Lanong[1], Dr. Jose Varghese Manikkathan[1],Dr. Giovanni Gazzoli [1] , Dr. Padmalatha J[2].

AMICI DI RAOUL FOLLEREAU, Directorate of Health Services ,India

Objectives: To assess the quality of the campaign and case detection process conducted, determining if more cases are still hidden in the community and recommendations for long-term corrections to improve the campaign procedures in future.

Methods: A total of 6,251,587 houses visited, 24,015,409 households were enumerated/examined, 49,313 suspects detected and 189 cases confirmed as leprosy 15 cases with deformity from all the 8 LCDC districts in Kerala State from 5 to19th December 2018

Post Leprosy Case Detection Campaign (LCDC) Evaluation in 3 out of 8 districts of Kerala State was conducted in, Mallapuram, Thrissur, and Thiruvananthapuram, after campaign completion. 5 blocks from each district was randomly selected, 3 crowded Key sites identified, using a tool with questions was used to interview 20 persons from each site. A total of 718 respondents were interviewed and data analyzed.

Results: Five blocks each from Mallapuram, Thrissur, 2 blocks from Thiruvananthapuram was evaluated. Among the 718 respondents interviewed in all the three districts, 409(56%) informed teams had visited their homes, 210 (29%) said no one visited, and 99 (14%) do not know. Only 561(16%) out of 3,476 family members of the respondents were examined, while the rest were enquired for suspected skin lesions.

The campaign had focused to reach people living at construction sites, locations outside of recognized settlements, mobile population, including high risk areas / underserved population in the three districts. Most striking positive finding was that all the 718 respondents were well aware of the campaign and naming the campaign as “ASHWAMEDHAM” meaning fight leprosy and conquer- had a positive impact.

Conclusion: Observations, data analysis had shown a positive impact in the awareness, motivation among the community (respondents) interviewed indicating most of guidelines meticulously followed. Positive Political, bureaucratic, Celebrities, media, Health System at the State, district block and grassroots levels, and commitment to the campaign established.

Innovative initiatives been instituted towards the success of the campaign and case detection activities. The evaluation had shown that there are possibilities of cases missed detection in the community, since there was more emphasis on enquiry survey and less of actual examination of the population for suspected lesions.

Further details related to quality, and community perception to be presented and discussed.

P-034

THE EFFECT OF THE SYMPTOM SURVEILLANCE SYSTEM OF LEPROSY CASES DISCOVERY IN ZHEJIANG PROVINCE, CHINA

Presenter: Limei Wu

L.M.Wu, Q.Yao, Y.L.Shen, L.J.Fei, W.M.Kong, Y.F.Hu, Y.M.Wang

Zhejiang Provincial Institute of Dermatology

Objectives: To analyze the epidemiological characteristics of the new leprosy cases in Zhejiang province from 2011 to 2017, in order to understand the effect of the symptom surveillance system implemented in Leprosy cases discovery from the fourth quarter of 2011, and provide the scientific rationales for the government to develop control strategies.

Methods: The epidemiological data of the new leprosy cases in Zhejiang Province from 2011 to 2017 was collected from the National Leprosy Prevention Management Information System, and performed the descriptive and comparative analyses.

Results: 145 new leprosy cases were reported. The cases of male were 94, and the female’s were 51. The average age was 38.64±15.14, and 93.79% of them were detected through examination at dermatology clinics. 20 cases were with Grade 2 disabilities, and the rate of early detection was increased from 45.16% in 2011 to 86.67% in 2017 (the highest was 92.31% in 2016). theratio of grade 2 disability was declined from 22.58% in 2011 to 6.67% in 2017 (the lowest was 4.00% in 2014). Except Zhoushan City, new cases were reported in each City of Zhejiang Province, and 75.86% of the new cases were from other province of China. 91.53% of the new leprosy cases were detected by the symptom surveillance system from implementing.

Conclusion: The endemic situation of new leprosy cases declined steadily in Zhejiang Province from 2011 to 2017. The symptom surveillance system had achieved remarkable effectiveness in the early detection of leprosy cases, and it is an effective surveillance method in a low-population state of Leprosy. At the same time, how to

strengthen the early detection and standardize management of the migrating population will be one of the main work in Zhejiang Province.

P-035

A FIVE YEAR (2012-13 T0 2016-17) DATA ANALYSIS USING PROGRAMME EPIDEMIOLOGICAL CHILD CASE PROPORTION TO ASSESS POSSIBLE ACTIVE DISEASE TRANSMISSION IN THE DISTRICTS OF ASSAM, INDIA

Presenter: Ryinmon Roy Lanong

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AMICI DI RAOUL FOLLEREAU India

Objectives:
To assess and monitor the trend and progress of possible presence of active transmission of leprosy in the community, using available 5 years programme epidemiological data of Child Case Proportion at National and sub national, district wise levels in the state of Assam, with a population of 3.4 crores.

To determine suggestive action which may be required to control transmission among children.

Methods: Analysis of data submitted by the State and compiled data by the Central Leprosy Division.

Results: The State of Assam, during the period 2012-13 to 2016-17, detected 4581 new cases and the proportion of child case among the new cases, varies between 9.35% & 6.38%, which is less than the National average of 9.93% & 8.70%.

Similarly, the child case detection rate per 1 lakh population varies between 0.33 & 0.19, which is less than the National average of 1.07 & 0.86, and also this rate is showing a downward trend, which may be an indicator of gradual reduction of the disease trend in Assam.

In the high Endemic Districts of Assam viz. Dibrugarh, Tinsukia and Sivsagar, however, data shows an entirely different epidemiological picture during the same period. In these districts, the average proportion of child case among new cases varies between 15.54% & 9.96%, which is higher than the State and National level. Similarly, the average child case detection rate per 1 lakh population in the 3 (three) mentioned districts varies between 1.94 & 0.97, which is higher than the State and National rate.

In the district of Kokrajhar it is being noticed a sudden increase of child cases after four years gap. There are few more districts where child percentage is still high.

Conclusion: The above findings indicate that there is active transmission of the disease in the State of Assam, particularly in the high endemic districts. It also indicates that there is a need to intensify awareness about leprosy, improve the disease surveillance, upgrade the skill among health workers and side by side validate child cases to assess the skill of the staff for remedial action, if any. Strict vigilance, regular screenings of children, strict supervision during leprosy detection campaigns, and Post Exposure Prophylaxis (PEP) with Single dose rifampicin may improve the situation.

Further details and discussions will be presented.

P-077

EVALUATION THE EFFECTIVENESS OF LEPROSY ELIMINATION CAMPAIGN IN YUNNAN PROVINCE IN 2016-2018

Presenter: Teijun Shui

SHUI TIEJUN

Yunnan center for disease control and prevention

Objective: Through, evaluated the Effectiveness of leprosy elimination campaign(LEC) in Yunnan Province in 2016-2018, to assess the Strategy choice of leprosy control in high-endemic areas;

Methods: Collected epidemic data through the Leprosy Management Information System in China (LEPMIS) and collected work data through project management;

Results: LEC has been implemented in 51 middle- prevalence counties in Yunnan Province, a total of 210,000 villagers in the high- epidemic villages (1082) accepted physically examination by health workers, and 14576 people affected by leprosy , 21402 close contacts received physically exa**m**ination by Leprosy doctors. A total of 534 new cases were detected, of which level 2 disability rate decreased from 16.47% (2016) to 10.34% (2018). The number of current cases dropped from 738 (2016) to 476 (2018), counties that have not reached leprosy elimination decreased from 51 (2016) to 26 (2018), LEC achieved obviously results.

Conclusion: Implementation LEC in high-epidemic areas is able to early detective cases and it's still a good strategy choice to rapid reduce leprosy epidemic.

P-078

BACYL, POVERTY AND ETHICAL-POLITICAL SUFFERING: A HYBRID APPROACH IN HANSENIASIS CARE

Presenter: Maria Angela Trindade

Castiglioni MC[1], Lancman S[1], Trindade MAB[2]

[1]Departamento de Terapia Ocupacional da Faculdade de Medicina da Universidade de São Paulo, Institucional Affiliation of MC Castiglioni and S Lancman, [2]Hospital das Clinicas da Faculdade de Medicina da Universidade de São Paulo, and posgraduation of Instituto de Saúde da Secretaria de Estado da Saúde de São Paulo, Institucional affiliation of Trindade MAB

Objectives: Integral treatment with multi-professional team to leprosy patient occurs more frequently in Basic Unity or Specific Reference Center. Objective: To evaluation of new service multi-professional care in leprosy in the Dermatology service of a Tertiary - level School Hospital located in a Brazilian metropolis; a country considered endemic report this research.

Methods: Interviews were conducted with seven health professionals and management of within this area. The information obtained was used as a primary source and, from its content related to demographic and analytical data of the national panorama of Leprosy.

Results: The professionals were attentive to the signs and symptoms, adherence to pharmacological treatment, as well as its adverse effects. They also emphasized the process of stigmatization, the repercussions on interpersonal relations and how this bundle of elements reconfigured the life of the subject. They adopted the strategy of multidimensionality care through a multi-professional team. However, there were frequent changes in the composition of the team; conceptual differences and methodological divergences in their work. In their interviews, the professionals explained the need and difficulty of forming partnerships and establishing routing flows to the public health network.

Conclusion: Leprosy in Tertiary – level School Hospital in general the take care is makes in clinical dermatology only to diagnoses and treatment to bacillus dead and reactions control and physical rehabilitation. It was found that the set of actions are expanding the procedures recommended by the Ministry of Health, as they are involved in leaving the place of negligence, both leprosy and the actors involved.

The results found, due to the importance of the services in the area, allow us to understand the realities present in other places of the same nature, besides opening new possibilities for research, teach and patient Care Team.

P-081

ROLE OF GRASSROOTS LEVEL HEALTH CARE WORKERS IN LEPROSY PROGRAMME WITH PARTICULAR REFERENCE TO ACCREDITED SOCIAL HEALTH ACTIVISTS (ASHA) IN INDIA

Presenter: Vijaya Krishnan

Vijaya Krishnan Nair[i], Prabhakara Rao Vrudula[ii], Eduardo Selma Miguel[iii], Sivaramakrishna Pedapenki[iv]

[i] Fontilles, Hyderabad, India [ii] Gandhi Memorial Leprosy Foundation, India [iii] Fontilles, Spain [iv] National Environment and Education Development Society, India

Objectives:

- To identify the role of ASHA in early case detection of leprosy cases in India
- To identify key factors affecting involvement of ASHA in leprosy programme
- To suggest measures to improve grassroots level interventions for early case detection

Methods: The study was conducted in one of the high endemic districts of India - Vizianagaram in Andhra Pradesh. The following qualitative methods were used:

- In-depth interviews with Programme Managers at different levels,
- FGDs with ASHAs and Persons affected by leprosy and people at community level
- Case studies of ASHAs

Results: Previous studies on efficiency of ASHA workers in leprosy case detection show that their referrals contribute only a small percentage of the cases actually existing in the community. In the study district ASHAs contribute 31.1 % of all new cases for the study period of 3 years.

Following are the number of cases referred by ASHA out of the total new cases:
2013: 133 out of 395
2014: 139 out of 535 (active search in endemic pockets account for higher total)
2015: 128 out of 356

The participants of group discussions expressed the need to get reasonable financial rewards though they are committed to the health and well-being of the local community. “Currently we are involved in so many activities for nominal rewards and sometimes for nothing.” Incentives – however small the amount is - play a major role in participation of ASHAs in leprosy programme. ASHAs expect greater motivational support from health system and the programme for a reasonable allocation of their time for leprosy awareness and suspecting and referring cases.

Conclusion: They play an important role in treatment completion. ASHAs can take part in raising awareness and supporting self-care. But required skill development activities and human resources to coordinate leprosy programme at grassroots level remains a challenge.

In the wake of integration of leprosy services into the general health system and lack of enough trained paramedics, dependence on the grassroots level health workers is crucial for timely case detection. Dependence on ASHAs is

not a solution for delayed case detection. But training and motivation are very important for the grassroots level workers in supporting leprosy programme.

P-082

THE CAUSES OF DELAYED TREATMENT OF PEOPLE AFFECTED BY LEPROSY.

Presenter: Toungborn Autipol

Toungborn Auitpol

Rajprachasamasai Institute Department of Disease Control

Objectives: This study was conducted to investigate the causes of delayed treatment of people affected by leprosy.

Methods: The study areas were 11 provinces in 4 regions of Thailand. They were purposively selected under the criteria that there had been at least 1 people affected by leprosy with grade 2 disability or with the length of time between symptom onset and diagnosis more than 1 year. The number of 153 study populations consisted of 10 people affected by leprosy; and 143 relatives, health workers, community leaders and primary school students. Data collection was done by in-depth interview in people affected by leprosy, Focus Group Discussion in community leaders and free-listing in primary school students. Content analysis was used to analyze the qualitative data.
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Results: It was found that majority of the study populations were males, over 60 years, laborers, low income earners, not educated and illiteracy. They had not been aware of and ignored leprosy symptoms which had merely been skin lesions with no itch, no pain and had not interrupt daily life. In case of treatment seeking, they started by purchasing drug for self-treatment because of its more convenience, and less money and time spent than visiting a hospital where they will go only if being forced by deteriorated symptom or being suggested by other people.

The Majority of community members still stigmatize and were afraid of people affected by leprosy due to their disabilities although they share the same activities as people affected. Most of doctors and other health personnel were lack of knowledge and skill in leprosy screening and diagnose due to few experiences.

Conclusion: The causes of delayed treatment ,Patients have no knowledge and lack of awareness of leprosy, on top of that doctors and health personnel also lack knowledge, skills and awareness of leprosy operations. ; inaccessibility to leprosy related knowledge and unaware of leprosy early symptom, and inconvenience and difficulties in travelling for treatment of people affected and community members. It was suggested that plan should be established in tailor made fashion in order to encourage target group to seek early treatment, recent information technology should be used in tracing risk group particularly household contacts such as photographing skin lesions and sending to dermatologist for primary diagnosis that would help to reduce travelling time and budget of suspected or leprosy cases. Awareness raising should also be done to reduce stigma against leprosy among community members.

P-094

SPATIAL-TEMPORAL DYNAMICS OF LEPROSY IN WUHAN,CHINA,1950-2017

Presenter: Liang Chen

Liang Chen[1], Jian Chen[2], Quan Hu[1],
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Objectives: In the past 60 years, the number of registered leprosy patients decreased significantly in Wuhan, China.However, it remained unknown that how did the trend proceed. Thus, the aim of this study was to analyze spatial-temporal dynamics of leprosy in Wuhan from 1950 to 2017.

Methods: The data of leprosy patients from 1950 to 2017 in Wuhan city was downloaded from Leprosy Management Information System (LEPMIS) in China. By using Arcgis (Version 9.3) and Satscan (version 9.4), we analyzed the spatial-temporal dynamic of leprosy, including multibacillary and paucibacillary.

Results: 3655 leprosy patients, including 1201 subjects with multibacillary leprosy (32.9%) and 2454 subjects with paucibacillary leprosy (67.1%), were enrolled in this study, which showed significant decrease from 1950 to 2017, and markedly transformation of the majority type of leprosy from multibacillary to paucibacillary ($p<0.0001$) in Wuhan city. The spatial-temporal analysis of leprosy patients indicated that the distributions were changed gradually from clusters in the urban to scatters at the suburban. There was no cluster of leprosy patients since 2000 in Wuhan.

Conclusion: The results of this study indicated great changes occurred in Wuhan, which implied that, in the low epidemic area of leprosy in China, it was time to strengthen the construction of early symptoms monitoring system in current situation.

P-101

INVESTIGATION ON THE STATUS QUO OF LEPROSY HEALERS IN WANZHOU DISTRICT

Presenter: Hongjun Tan

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[1]Chongqing Wanzhou District skin disease prevention and treatment hospital, [2]Chongqing Wanzhou District Center for Disease Control and Prevention

Objectives: In this study, an investigation was conducted to analyze the living conditions and rehabilitation needs of leprosy healers in Wanzhou District, and provide evidence for the development of leprosy prevention and management strategies and measures.

Methods: Methods such as descriptive analysis of medical records, on-site questionnaires, physical examinations, interviews to collect information on the survival status of leprosy healers, and rehabilitation needs, were used.

Results: A total of 54 leprosy patients were investigated, including 67% of the elderly over 60 years old and 46.30% of the disabled. The patients were mostly disabled with hand and foot, claw-shaped hands and eyebrows. The total loss of self-care ability accounted for 24.07%. Part of the loss of labor force accounted for 42.59%. All leprosy healers feel social discrimination, and only 18.52% actively participate in social activities. No disability certificate was 20%, no medical insurance 3.70%, and no subsistence allowance 44.44%; rehabilitation needs were changed with dressing kit (75.93%) and protective kits (68.52%).

Conclusion: It is concluded that leprosy patients in Wanzhou District are mostly elderly, with a high proportion of disability, serious social discrimination, and high health management needs. In the future, it is necessary to focus on strengthening the health management of leprosy healers, for promoting their comprehensive rehabilitation of body and mind, and improving the ability of their return to society and self-care.

P-106

PCT, THE DURATION OF TREATMENT OBSERVED IN A LOW INCOME RURAL HEALTH ZONE (ZS). CASE OF THE IDJWI ZS, PROVINCE OF SOUTH KIVU IN THE DEMOCRATIC REPUBLIC OF CONGO

Presenter: Mulime Musafiri

MULUME MUSAFIRI

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Background: Leprosy is a neglected tropical disease but remains a major through of public health according to disabilities it causes. The DRC is one of the 10 countries most affected by leprosy worldwide. The Idjwi Health Zone (ZS) occupies the second largest position in South Kivu Province in terms of leprosy incidence for a decade. This ZS has not experienced armed conflict and has continued to benefit support from the The Leprosy Mission for more than twenty years. The prevalence of leprosy in this ZS was 0.9 / 10000 at 31/12/2017. However, good screening, we armed to know the observed time of treatment of patients under PCT.

Methods: A retrospective study of data from the registers of 21 health centers from 2008 to 2017.we analyzed the individual data of patients on treatment time as a variable to be explained in relation to sex, age, classification into PB or MB, the outcome of treatment (cured or deceased), disabilities at the beginning of treatment as independent variables. After a descriptive analysis, the Long-rank and Kaplan Meier tests were performed using the Software R.

Results: 227 new cases of leprosy under treatment from 2008 to 2017 were analyzed. The average age is 33 years old [4-76]; 62.1% in favor of women. The longest duration of treatment is 22 months [3-24] and 24 [6-22] respectively in MB and PB. We observe the lengthening of the duration of treatment in MB cures than in PB (HR: 0.14, p: 0.002). In contrast to sex (HR: 0, 99, p: 0.98); age: (HR: 1, p: 0.52); and disabilities at the start of treatment (HR: 1.02, 95% CI: p: 0.92) did not influence the duration of PCT treatment follow-up to the both (PB and MB).

Conclusion: The long period under PCT, accompanied by periods of interruption is more observed in the patients under PCT MB than in those under PCT PB. No cases of relapse were observed. Beyond the elements taken into this analysis, a study on other factors (position of ulcers on the body, distances between housing / health centers, patient activities and community support) should be considered in order to determine the factors influencing the duration of treatment of leprosy in rural areas.

P-117

EXPERIENCE REPORT ON THE DEVELOPMENT OF APPLICATION FOR MOBILE DEVICES ON HANSENIASIS

Presenter: Maria Angela Bianconcini Trindade

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Objective: To describe the development, elaboration, construction and review of a mobile application on leprosy in the health area through the evaluation of suspected dermatoneurological leprosy patients.

Methods: The process of building the application involved

1) Studies and selections of materials to compose the same.
2) Search Android and iOS platforms for existing leprosy apps.
3) Integrative review in databases.
4) 12-hour internship in the Clinical Dermatology of the Clinical Hospital of third service, HCFMUSP.
5) Running the prototype with the content intended for the application.
6) Review phases of the draft.
7) Selection of exclusive photos.
8) Participation of dermatologist physicians of the Clinical Dermatology and
9) The creation of exclusive videos.

It is a research on the mode of technological production from the method of Contextualized Instructional Design. Health professionals attended the project from the Western Health Coordination, in São Paulo, during a training event in leprosy, where it was previously presented and evaluated according to its functionality, usability and efficiency. Hired a junior company as researcher of the project, belonging to the Paulista State University, UNESP-Applied Technology Laboratory, Bauru campus.

Results: The application is available for download at the PlayStore and AppleStore, under the name of Hanseníase, in its beta version, and contains important informations for the tracking of symptomatic dermatoneurological leprosy.

Conclusion: The application will support the permanent education and daily update of health professionals on the subject, since this tool allows agility and ease in its manipulation. The intention of the development of this application was to facilitate the control of the disease when detecting dermatoneurological cases suspected of precocious form.

P-119

PRACTICAL TIPS AND STRATEGIES IN CONTACT TRACING AMONG LEPROSY HOUSEHOLDS IN CEBU, PHILIPPINES

Presenter: Junie Abellana

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Objectives: This study was aimed to evaluate the significance and the implications of time-tested strategies in tracing house contacts of people affected by leprosy (PALs) detected in a well-defined leprosy endemic community.

Methods: House contacts (HC) of consenting, newly diagnosed cases of PALs detected between 2011-2016 at the Leonard Wood (LWM) Leprosy Research Center in Cebu were actively monitored using time-tested tools and strategies as they were identified and enumerated by index cases. Contacts who consented for monitoring were interviewed and examined for signs of leprosy within 6 months of index case detection.

In the process, the following strategies were used in contact tracing – educational campaign, sustained rapport with PALs and family members, close coordination with government and community leaders, provision of transport allowance (clinic-based) or surveillance vehicle (field-setting), flexibility of clinic schedule, sketch and GPS mapping, mobile phones exclusively dedicated for case and contact monitoring, multivitamins and adherence to confidentiality guidelines. In this study, depending on funding support, consent and availability of house contacts, contact tracing was classified into 4 levels (Level 1- enumerated only; Level 2- interviewed only; Level 3- examined once; Level 4- examined repeatedly).

Results: Between 2011-2016, LWM clinic detected a total of 864 new cases, 92% of whom had their contacts examined, at an average of 4 contacts per index case. During this period, there were a total of 3,450 house contacts enumerated, 81% of which were clinically examined for signs of leprosy. The remaining 19% were either not available or refused examination.

Out of house contacts examined, a total of 51 new cases were detected representing 6% of the 864 cases detected within the study period. All were detected through Levels 3 & 4 contact tracing activities and were either PBs or early MBs without deformities and/or disabilities. None from Levels 1 & 2 self- reported for signs of leprosy.

Conclusion: Active case finding plays a major role in leprosy control. To achieve this goal, implementation of contact tracing is crucial in detecting early cases that would lead to stopping transmission and prevention of leprosy -related complications such as deformities, disabilities. Likewise, funding support is crucial in the implementation of contact tracing activities.

Furthermore, considering the long incubation period of leprosy, a comprehensive contact tracing activity over an extended period of time enhances the rate of case detection, particularly if combined with time-tested and practical strategies in contact tracing.

P-123

SELF SCREENING FORMAT USE TO PROMOTE LEPROSY EARLY CASE DETECTION

Presenter: Diah Fita Sari

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Objectives: To review the pilot use of self-screening format as a tool to detect early signs and symptoms of leprosy in Situbondo and Tuban (two leprosy high endemic districts in East Java).

Methods: Self-screening format distribution to community members from October to December 2017 in 3 endemic villages in 3 health centers area at Tuban district and 5 endemic villages in 10 health centers area at Situbondo district. The format is adapted from the self-screening format available from Leprosy Post Exposure Prophylaxis project in Sumenep district. Format is distributed by voluntary health workers at village (‘kader’) along with community education material containing information on skin patch awareness (‘hand-fan’). Each household receives one format which will be collected again by the ‘kader’ in the next 2-3 days after distribution. Persons

suspected with patch(es) according to the format are requested to come on an agreed schedule to be screened again for leprosy by health worker from health center.

Results: At Tuban district, 1018 format are distributed and 1014 are returned to 'kader'. There were 3513 family members screened according to the returned self-screening format. Among them, there are 417 persons with patch(es) referred to leprosy worker from health centers. There are 308 persons come for examination and among them 15 are positive with leprosy while 14 are further observed. At Situbondo, in 5 endemic villages, 19119 household receive distribution of self-screening format and 17215 format are returned to Kader. There are 4789 persons identified with patches according to the format and referred to health worker for further screening. Among them, 18 are positive leprosy as diagnosed by health center.

Conclusion: Although proportion of returned format does not indicate the capacity and quality of family members in doing skin patch screening, it appears that the self-screening format has gained active participation of community. In order for a screening program to be effective, support and trust from public are very important especially in voluntary screening method. In the post-elimination of leprosy phase in endemic district, sustaining effort on case finding in formerly known endemic area with a simple tool support the sustainability of disease control program. However, the effectiveness of this activity has to be further analyzed in comparison to routine contact examination and also considering its further impact on leprosy related stigma.

P-125

LEPROSY DIAGNOSIS COVERAGE IN BASIC HEALTH UNITS IN THE FIRST YEAR OF THE PROJECT INNOVATIVE APPROACHES TO INTENSIFY EFFORTS FOR A BRAZIL WITHOUT LEPROSY - BANGKOK DECLARATION SPECIAL FUND

Presenter: Mabia Milhomem Bastos

J. S. Silva[1], E. R. Oliveira[1], M. M. Bastos[1], C. R. F. Coriolano[1], V. L. G. Andrade[2]

[1]Secretary of Health Surveillance, General Coordination of Leprosy and Diseases in Elimination, Ministry of Health of Brazil, [2]Pan American Health Organization (PAHO) Brazil

Objectives: To evaluate the increase in the coverage of leprosy cases diagnosis in the basic health units (BHU) of 20 Brazilian municipalities after the training of Primary Care professionals carried out by the Innovative Approaches Project to intensify Efforts for a Brazil without Leprosy - Bangkok Declaration Special Fund (BDSF).

Methods: We conducted a descriptive study of the basic health units (BHU) diagnostic coverage of the 20 Brazilian municipalities included in the BDSF Project. The following inclusion criteria was used: BHU that had at least one professional trained in the year 2017 by the project. Of these UBS, were identified those who had not diagnosed leprosy cases in 2016 and presented at least one notification derived from the training performed by the Project. For the analysis, data from the Information System of Notification Diseases (SINAN) and from the National Register of Health Establishments (CNES) were used.

Results: The study verified that of the 911 UBS that participated in the BDSF Project in 2017 in the 20 municipalities, 414 (45.4%) had not diagnosed new leprosy cases in 2016, a year prior to the implementation of the Project. Of these, 134 (32.4%) started to diagnose at least one new case of leprosy.

Conclusion: The 32.4% increase in the number of UBS that started to diagnose new cases after the implementation of the BDSF Project, reinforces the importance of the Brazilian Ministry of Health proposal of strengthening the municipalities Primary Care. The qualification of UBS professionals allows the early cases diagnosis and, consequently, prevents the detection of patients with disability grade 2.

P-134

IMPORTANCE OF E- DATA CAPTURE, CURATION AND VISUALIZATION IN LEPROSY INFORMATION SYSTEM (LIS) - A RECENT LEPROSY STUDY BY LEPRA BANGLADESH

Presenter: Mijanur Rahman

Mijanur Rahman[1], David Pahan[1], Aprue Mong[1], Maartje Pronk [2]

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Objectives: Electronic or digital data collection is an increasingly common method for data collection in developing country context, however an innovative approach in leprosy field. At present the National Leprosy Program(NLP) in Bangladesh are using District Health Information System (DHIS) which is unit/center base compilation of leprosy information but not the patient centered data to see the leprosy status and changes in livelihood at individual level. Online data collection through mobile apps allow to capture any type of patient related information in a very effective way and improve data transfer to the central office to track and monitor activity progress. The present study aims to 1) describe the potential benefits associated with selected electronic data collection and visualization method and 2) to represent some leprosy results by using e-data collection method.

Methods: Recently, Lepra Bangladesh has conducted a follow up survey on 1200 leprosy patient out of entry survey 3000 using KOBO toolbox in mobile phone. An online survey form was developed, enumerators collected the data through mobile phone in offline and send the data getting online to lepra office. Using the KOBO toolbox, all the entry data is seen in a single worksheet, presented the data with modern graphics and ensure strong safeguard against data loss. They also use this method for KAP(Knowledge, Attitude and Practice) survey at beneficiary level.

Results: The study provided some outcome and output level indicator-based data like 88% of new cases presented with no or grade 1 disability (28% female and 72% male), prevalence rate in the targeted areas is 2/100000, 150 people treated for reaction and neuritis, working day loss for leprosy affected people is 75%, health cost per patient is 3.5% of total income and so on. The KAP survey provided the information like total 2300 community people have basic knowledge on leprosy(female 690, male 1610) which was 1565 in previous year and 2154 people with leprosy undertaking self-care practices for complication management which is increasing.

Conclusion: The digital data collection in leprosy field becoming very demanding as it has numerous advantages over the traditional process. Despite of having few limitations, the advantages is more in terms of an automated process for the gathering, manipulation, analysis and visualization of leprosy information. Finally in the era of leprosy elimination, the digital data collection and analysis will be a perfect fit for any organization to move forward for monitoring and evaluation activities.

P-135

PROGRESS SINCE LEPROSY ELIMINATION STATUS AND WAY FORWARD - EXPERIENCE FROM BANGLADESH

Presenter: Dipak Kumar Biswas

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Objectives: Long 20 years have already been passed since Bangladesh achieved the leprosy elimination status in1998 but there is a very little progress towards achieving the global leprosy goals. So, the objective of this article

is - to identify the possible causes of long lasting stagnancy of leprosy program and way forward for moving towards leprosy free world by breaking the stagnancy and bringing dynamism to move towards leprosy free Bangladesh.

Methods:
1. Analysis of last 10 years trend of leprosy case detection, disability grade 2 among new cases and new child leprosy cases in Bangladesh by reviewing national and NGO partners' reports.
2. Analysis of Govt. & NGOs' current activities and special initiatives for leprosy programs.
3. Review secondary documents like, reports of special Intensive 'Extended Contact Survey (IECS)' that was conducted in some high epidemic pockets in Bangladesh, reports on 6M MDT-MB study and review of other national & international documents.
4. Learning from field monitoring experiences

Results:
- There has been more or less a static situation in national leprosy program during the last 10 years: new case finding around 4000 per year, grade-2 disability among new leprosy cases fluctuates between 7% -11% and new child leprosy cases detection varies from 5% to 6%.
- Very few number of NGO staff are giving time for leprosy work and there is funding crisis for continuing adequate activities.
- Except for few NGOs there is no visible integration of leprosy program with other health activities.
- Some especial initiative like 'Intensive Extended Contact Survey (IECS)' resulted sudden increase of new leprosy case detection as happened in 2017 compare to 2016.
- Study on 6 month MDT is also found effective for MB patients.

Conclusion: The static situation is mainly due to the less priority on leprosy disease after elimination status, as a result, it lost its due attention from major stakeholders including donors. Considering the fact, innovative approach is required to break this stagnancy so that the leprosy program can be made effective with limited resources and within the existing health structure. A package of integrated TB & leprosy program with need based IECS, flexibility from TB donors like GF so that they allow TB staff to find out leprosy suspects and refer to TB-Leprosy clinic for diagnosis and try 6 month MDT for MB as recommended by the study which will also reduce programme cost.

P-136

IMPLANTATION OF SURVEILLANCE TO DRUG RESISTANCE IN HANSEN'S DISEASE IN BRAZIL

Presenter: Elaine Andrade

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Objective: To describe the implantation of the surveillance of drug resistance in Hansen's disease system in Brazil.

Methods: To support the implantation of the surveillance system were realized bibliography reviews on international and national literature, discussions with specialists in Hansen's Disease and from the laboratories field, and meetings with managers at the national, state and municipal level to agreements. We also made training directed at health professionals from the laboratory teams about the bacilloscopy test. Furthermore, it was elaborated a specific protocol, an electronic form to collect data.

Results: It was implanted a surveillance system to primary and secondary resistance to anti-Hansen's disease drugs (rifampicin, dapsone, and clofazimine), the system uses a database filled online capable of produce laboratory, clinical and epidemiological information and generate reports about the investigated cases. The surveillance network is composed by Municipal's and State's Reference Units responsible for the collection of biological material, by State's Central Laboratories (LACEN), responsible for the delivery of the biological material to the National Reference Laboratories there are realized the drug resistance investigation. Nowadays, the surveillance network has 52 reference units distributed by 27 Federative Units, across the country supported by three National Reference Laboratories. The Surveillance system is a continuum process and system of collection of biological material, processing, and analysis capabilities to monitor the circulation of Mycobacterium leprae's resistant strain through the identification of the mutation presence on genes associated to resistance by direct genomic sequencing.

Conclusion: The antimicrobial resistance is a worldwide preoccupation for the Hansen's disease control. It corroborates with Brazil's importance to organize a surveillance system well-structured that will make possible the production of information that supports the implantation of new strategies and will subsidize the incorporation of new medicines on Hansen's disease treatment.

P-141

REVISITING SKIN SMEAR EXAMINATION UNDER NATIONAL LEPROSY ERADICATION PROGRAMME – AN ESSENTIAL TOOL TO DIAGNOSE INFECTIOUS LEPROSY CASES FOR ACHIEVING LEPROSY ELIMINATION

Presenter: Rajeev Dudhalkar

Rajeev Dudhalkar[1], Vincent KA[1], Vishwanath Chavan[1] and Antony Samy[1]

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Objectives: With the integration of leprosy services into general health care (GHC) system, skin smear examination was made optional under National Leprosy Eradication Programme (NLEP) of India. This simple laboratory test is essential to diagnose 'infectious' type of leprosy by demonstrating presence of acid fast bacilli, which is one of the 3 cardinal signs of leprosy. It is also crucial to detect and treat infectious leprosy cases early in order to reduce transmission and achieve the goal of leprosy elimination. A study was conducted in Shahapur & Murbad blocks of Thane district, Maharashtra, India to correlate between clinical and bacterial status of leprosy suspects with symptoms of infectious leprosy referred by the GHC staff for diagnosis.

Methods: During April 2016 to March 2018, 89 suspects were referred by the PHC workers to LRC established within the GHC system under Leprosy Elimination Action Programme (LEAP) for skin smear examination to confirm diagnosis of infectious type of leprosy. Skin smears were collected and examined by trained technician at 'Skin Smear Laboratory' of ALERT-INDIA. Information was collected from the patient records and personal visits. Details such as clinical symptoms and bacteriological index and the source of referrals were analyzed.

Results: Of the 89 suspects done skin smear test, 49 (55%) were diagnosed as infectious type of leprosy (Bacteriological positive) of which, 16 (33%) cases had BI > 3+. 21 (43%) cases out of 60 cases clinically presented with skin patches but normal sensation were BI positive. While 28 (97%) cases out of 29 cases clinically presented with SOS skin and nodules were BI positive. 35 (52%) out of 67 suspects referred by PHC workers and ASHA were bacteriological positive. 10 (63%) out of 16 suspects who reported voluntarily were bacteriological positive.

Conclusion: The study confirms that a considerable number of suspects with multiple skin patches without sensory loss can be bacteriological positive that diagnose infectious type of leprosy. Training of the peripheral health staff of PHCs including ASHA led to more referral of suspects with 'early' signs and symptoms of infectious leprosy. Emphasis given on the symptoms of infectious leprosy in community awareness campaigns with appropriate IEC

materials developed by ALERT-INDIA led to detection of significant number of infectious leprosy cases. It is recommended that the skin smear examination can easily be done at microscopic laboratory facilities of RNTCP that already exists within GHC, as it is a simple procedure.

P-143

IMPACT ASSASMENT OF MINI LEPROSY ELIMINATION CAMPAIGN (MLEC) IN RUPANDEHI DISTRICT NEPAL

Presenter: Raj Kumar Paudel

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Objectives: In Nepal, approximately 3,000 new cases are diagnosed as leprosy annually and approx. 30,000 cases still have WHO Grade 2 disability since 1982. According to WHO, the Government of Nepal (GoN) declared leprosy as nationwide elimination phase in 2010 however 17 districts are still not in the elimination phase. In 2016,2017, the prevalence rate of new cases (n=3215) of leprosy was found 0.92 nationwide however higher prevalence rate (1.20) was accounted in Rupandehi district compared to national consensus. The aim of MLEC was early target case screening from high-risk community, support for standard leprosy treatment and improve leprosy awareness. Our objective was to analyze outcomes from this program in Rupandehi and compare to the national consensus.

Methods: Approximately 51% (n=520947) of total population from 10 (out of 16) municipalities of Rupandehi district were covered in the implementation of MLEC program in high endemic leprosy areas from 23 January - 10 February, 2018, implemented by TLMN and GoN. Health workers (n=149) from targeted areas were well-trained for the standard national protocol for proper screening of leprosy in suspected population. Those trained workers provided orientation to health volunteers (n=838) in their respective communities for door-to-door sampling and screening. Oriented health volunteers were mobilized to screen suspected population and referred to nearest government health institutions (n=55) for confirmatory diagnosis. The final confirmation of diagnosis was verified by the expert team (n=20).

Results: Health volunteers screened 1110 suspected cases from 10 municipalities and referred to nearest health institutions for leprosy diagnosis. In 1110 cases, 62 were diagnosed and leprosy confirmed by the expert team. Among confirmatory cases, MB and PB leprosy cases were detected as 51.6% and 48.4% respectively. Confirmed female leprosy cases were found 37% and children were 3.22%. WHO Grade2 disability was detected as 26% (n=16) among confirmatory leprosy cases which is around 9.5-fold higher than national census (2.71%, 2017).

Conclusion: Vital outcomes of this MLEC, WHO Grade 2 disability was found considerably high in the conformed cases in Rupandehi district compared to the respective national figure, signifies Rupandehi is still a high leprosy endemic district. Therefore, this campaign suggests that significant undiagnosed leprosy cases are still dwelling in many rural communities without access to proper diagnosis and standard treatment. Hence, the primary recommendation is such field based active screening campaign should be implemented in high endemic communities and districts in near future to detect the undiagnosed leprosy cases.

P-144

MINI LEPROSY ELIMINATION CAMPAIGN IS AN IMPORTANT METHOD TO DETECTE EARLY LEPROSY: AN EXPERIENCE TO RAISE AWARENESS IN WESTERN NEPAL

Presenter: Basudev Pandey

Dr. Basu Dev Pandey[1], Gopal Hari Pokheral[2], Mitha Ram Thapa[3] Nirmala Bam[4]

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Objective: Raise the leprosy awareness and detect unreported cases to bring under MDT by mobilizing Female Community Health Volunteers (FCHV) and enhancing knowledge/skill to health care providers.

Methodology: More than 78% population 323758 from 25 health institutions covered in Bardiya District during active campaign. Mobilized the media people, leprosy message from local radio, distributed 7000 pamphlets and 225 schools were use to raise the awareness before the campaign. Total 95 health workers oriented, mobilizing search team and confirm leprosy diagnosis. Total 734 FCHVs were mobilized for 5 days door to door visit. They referred 1754 leprosy suspected in health institutions to confirm diagnosis.

Findings: Total 1754 suspected leprosy were referred in health institution from door to door survey and 145 confirmed leprosy by the leprosy expert in the campaign. There were 36 old leprosy cases also returned in health institutions, among them 3 were defaulter for MDT. Among total detected cases 26% were MB leprosy and 74% were PB. Female proportions among detected cases were 45%, children 3% and disability grade II 3%. PB cases were detected significantly higher than national and district figures.

Conclusion/Recommendations: These interventions dig out the hidden leprosy cases within 5 days from community and raised awareness among general population significantly. High percentage (74%) of PB cases and WHO disability grade II (3%) & Grade I (8%) among newly detected cases were found. This result indicates that leprosy cases were detected early stage. Defaulter leprosy cases restarted MDT and counselled for regular treatment. Such kinds of campaign needed in high prevalent districts to sustain elimination on the way for Leprosy Free Nepal.

P-145

BEST PRACTICES IN INTENSIFYING ACTIVE CASE FINDING IN THE LOCALITY AND IN PROMOTING A SUSTAINABLE APPROACH THROUGH MODIFIED LEPROSY ELIMINATION CAMPAIGN PROJECT

Presenter: Calixto Trillanes III

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[1]Culion Foundation, Inc.

Objective: The project aimed to conduct active case finding among contacts of index cases of the past five years in the selected municipalities and cities. The project was expected to build the clinical skills of the key health workers. It was also expected to assist and support the monitoring, supervision and advocacy activities of similar active case finding efforts in other high leprosy burden (HLB) provinces in the Philippines.

Method: The project employed an innovative Participatory and Collaborative Action approach. It emphasizes collective inquiry and action on identified issues significant to stakeholders as participants. It integrates basic aspects of participation (integrating practice), collaboration (equitable stakeholder involvement), and action (engagement with experience). This approach aided in the provision of technical assistance for capability building and ACSM (advocacy, communication, and social mobilization). ACSM was applied through: advocacy (exploiting LGU involvement and commitment), communication (implementing effective information and education campaign

to broaden community awareness), and social mobilization (empowering community volunteers to actively participate and develop commitment and sense of ownership).

The identified service delivery areas were purposively selected against the reported leprosy data in the past five years (2012-2017). These were 7 cities and 7 municipalities in Region 8 and 4 other high leprosy burden provinces in the country. Primary beneficiaries of the project were the residents, who were financially constrained from availing themselves of healthcare services in identified sites. in Region 8. Secondary beneficiaries were the government and other stakeholders.

Results: The project formed Leprosy Health Teams (LHTs), who pursued active case-finding activities and Kilatis Kutis for 48 weeks within the six-month project period. It achieved 114 total number of cases (92 from Region 8 and 22 from select HLB provinces), all types (146.15% achievement against total set target of 78). The 38 cases found in Region 8 were from contacts with index cases (38 of 92, 41.3%). These were taken from 335 household contacts of 108 index cases, which were monitored and examined during the case finding activities that showed 11.3% turnout rate.

The project sites reported 246 cases in the past five years in the national level, thus, the achieved 92 cases during the MLEC project period marks a 37% increase in case notification. In the regional perspective, however, the total reported cases in the past five years is 684, thereby, posting a 13.45% (92 of 684) growth in the outcome of case notification.

Generally, all sites have shown a significant yield in their performance during the MLEC project period with an average additionality of 5 cases (range, -4 to 19) in the given semester. The computed average rate of additionality is 383.57% (range, -80% to 1,400%). Hurdles in the performance of intensive ACF activity, however, were brought by some limitations that they had that time, e.g., concurrent LGU programs, lean staffing and emergent priorities in the health center operations.

Conclusion: The MLEC project turned out successful and effective in contributing to the NLCP. Best practices include: (1) coordination with the public officials for their support to promote multi-disciplinary collaboration; (2) conduct of active case-finding through house-to-house visits for contact tracing, and integration of the ACF activity in current health programs through medical missions and community assemblies; (3) interpersonal counseling and education to unburden psychosocial suffering and stigmatization; (4) ACSM facilitating the passage of local policies to allocate funding for program sustainability and complementing actions by other supporting agencies/sectors, and (5) religious and accurate recording and reporting, and efficient monitoring and evaluation.

Program sustainability is addressed through the efforts to advocate with the LGUs, where local policies have been formulated to ink support to leprosy program in the locality. People empowerment is mobilized through active participation and cooperation of multi-sectoral alliance created as a functional network for referral and treatment management.

P-154

SURVEY OF CONTACTS WITH LEPROSY PATIENTS RELEASED FROM TREATMENT: AN ACTIVE CASE-FINDING PROGRAM TARGETING HOUSEHOLD AND NEIGHBORHOOD CONTACTS IN A LOW-ENDEMIC AREA OF CHINA

Presenter: Hong Liu

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Objectives: Early diagnosis remains the primary goals for leprosy management programs. The optimal approach of the present study was to determine whether active surveillance of contacts of leprosy patients could increase the identification of latent leprosy cases in the area with low numbers of leprosy patients.

Methods: This cross-sectional survey took place in 21 counties, conducted among leprosy patients released from treatment (RFT) and their contacts from Oct. 2014 to Aug. 2016.

Results: A total of 2,210 RFT patients and 9,742 contacts, including 7,877 household contacts (HHCs) and 1,865 contacts living in neighboring houses (neighbor contacts, NCs), were recruited. Among them, one relapsed and 13 newly diagnosed patients were identified with a detection rate of 0.12%, corresponding to 120 times the passive case detection rate. While the detection rate between the HHC and NC group was similar (1.14 ‰ vs 2.14 ‰, P= 0.287), without significant difference (P < 0.001). Analysis of family history of leprosy patients revealed clustering of newly diagnosed cases and association with residential coordinates of previously diagnosed multibacillary leprosy (MB) cases.

Conclusion: Active case finding program based on HHC and NC tracing could be a promising strategy for earlier detection of leprosy patients in low-endemic areas.

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ASHA BASED SURVEILLANCE FOR LEPROSY SUSPECTS (ABSULS): AN INNOVATION FOR ENHANCING ACTIVE CASE SEARCH OF LEPROSY AT COMMUNITY LEVEL

Presenter: Rupali Roy

Dr Rupali Roy[1], Dr Anil Kumar[2]

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Objectives:
1. To conduct active surveillance of leprosy suspects including NIL reporting form community
2. To prioritize leprosy case detection by Accredited Social Health Activist (ASHA)
3. To improve monitoring and supervision of leprosy cases detection activities at community level

Methods: Under the National Health Mission (NHM), 2005 ASHA (Accredited Social Health Activist) is introduced for every village with a population of 1000. As specified under NHM guidelines, ASHA is trained to work as an interface between the community and the public health system. She is the representative of the community to the health system and she is accountable for the health conditions of people of approximately two hundred households. In the ABSULS, ASHA is involved to detect & report suspect leprosy cases in the community.

In order to formulise this surveillance system the existing mechanism of NHM was utilised. In routine, Medical Officer In-charge of the Primary Health Centres (PHC) holds a regular monthly meeting which is attended by ASHAs. In these monthly meetings ASHAs is instructed to submit the data on suspects of leprosy identified & referred by her during previous month. In the format designed Sub-centre wise and is handed over to MO/PHC with her signature. The filled format is compiled at block, district and state level and finally submitted to Central Leprosy Division (CLD). The Medical officer is key person for confirmation of cases and treatment as per the guidelines given under NLEP without modification. The surveillance report submitted by ASHA and each administrative level is to be validated through regular monitoring visits by MPW, PHC MO, District Leprosy Officer (DLOs) & State Leprosy Officer (SLOs). Central Leprosy Division (CLD) officials during supervisory visits also validate information submitted by SLOs/ DLOs.

ABSULS is very high quality surveillance mechanism for leprosy suspect identification and referral, as it is active surveillance at village level. Data is validated at each level of surveillance by immediate supervisors.

Results: This innovation is implemented in 29 states and 3.8 crores suspects' cases of leprosy identified under ABSULS and around 2 lakhs suspects' cases are referred to Health Facility for confirmation (As on 30/11/18). Capacity building of large number of ASHA to identify suspect leprosy cases is one of the important outcomes.

Conclusion: ABSULS is high quality surveillance system which will enhance routine suspect identification; referral and confirmation and will lead to decrease in Grade 2 Disability, interruption of transmission at community level and decrease in prevalence further.

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IMPACT OF WAR ON LEPROSY TREND IN YEMEN

Presenter: Abdul Samid Al-Kubati

Abdul Samid Al-Kubati[1], Abdul Rahim Al-Samie[1], Yasin Al-Qubati[1]

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Introduction: In Yemen political unrest and civil war in the years 2015-2018 resulted 3 million internally displaced people(IDP) into crowded settlements with an increased risk of infection diseases spread, increased poverty with more than 22milion in need for food security, siege of areas, country destruction, dangerous and mobility restriction between governorates and districts ,destruction of NLEP infrastructure including cars, staff, computers and building, no local resources to support leprosy , this current war crisis affect the status of leprosy at the beginning in 2015 seriously in negative way: the active and passive detection became low , collapsed health services at all level and loss of experienced health staff in general ,so there was a need to sustain and strength the early case detection with less delay, less disability and proper treatment.This review aimed to analyze NLEP primary elimination efforts to detect and treat early leprosy cases during terrible war situation in Yemen.

Methods: The NLEP activities continued in this war situation targeting all endemic areas, implemented the activities using the leprosy network, mobile team , active examination of contacts , rapid skin surveys, adapting the situation , hotspots ,IDPs, innovative via social media, phone ,friends, flexible places for treatment follow up at their residents and reaching the outreach etc, capacity building, monitoring and supervision. Detected cases were registered, treated and data analyzed.

Results: 255,367,357 and 337 leprosy cases were annually detected and treated respectively during 4 years of the war (2015-2018) comparing to 299,392,382 and 413 detected cases in 4 pre-war years (2011-2014) .The situation at the end of 2018 was : Registered prevalence 430 , prevalence rate 0.15, detection 337 ,detection rate 1.2, proportion of disability grade II among new cases 5%, female proportion 37.4%, children proportion 15.4%,MB proportion 47.5% , G2D per million population 0,6 ,G2D among new children cases 0.

Conclusion: Leprosy at Yemen country level is almost in situation of stable slow decline. The NLEP success story in leprosy case detection is similar in war and pre-war time of the last 10 years , the annual case detection between 1- 2 , 65% active detection in war period and decreased disabilities indicate the important of active case detection and innovative at war time specially in groups of contacts, IDPs, neglected groups and outreach .

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FACTORS ASSOCIATED WITH NON-COMPLETION OF MDT IN LEPROSY IN A TERTIARY LEPROSY HOSPITAL FOR IN DELHI

Presenter: Rajeev Joy Nathan

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Objectives: To study the factors associated with non-completion of multi-drug therapy registered in a tertiary care leprosy hospital in New Delhi

Methods: This study has used the case-control study method. Cases were those who discontinued or defaulted MDT more than 3 months during their current therapy in the period 2015-18 and Controls were those completed the full course of MDT during the same period. These were identified from medical records to be included in the study. Equal number of controls were selected after matching for gender and clinical classification of disease.
The study was carried out in a tertiary hospital for leprosy care in New Delhi. Information for data collection through desk review included information on : date of diagnosis, patient's address, patients' name, gender, age, clinical form (RJ and WHO), therapeutic regimen, degree of disability assessed at diagnosis, status at registration (never treated, partially treated, referred etc.) The participants were then would then be contacted for an interview to collect information on socioeconomic, demographic factors, disease and treatment outcome factors. Simultaneously, controls were identified matching for their gender and clinical classification of the disease. Similar data was collected from controls to compare factors associated with the non-completion of MDT in leprosy. The data will be entered in the excel and analysed using SPSS. Descriptive statistics were describe the findings. Factors associated with the non-completion of MDT were studied using Chi-square test and logistic regression analysis. Alpha level of less than 0.05 will be consider statistically significant.

Results: Primary outcome will be the factors associated with non-completion of MDT such as demographic, socio-economic, disease and treatment related practices. Data collection is in progress and findings will be presented in the conference.

Conclusion: The findings will help to take the necessary precautions to be practiced by the physicians and the other professionals in tertiary hospital and urban settings to guide the patients towards prevention of defaulting on routine basis along with MDT implementation.

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CHARACTERISTICS OF NEWLY DETECTED CASES OF LEPROSY IN DISTRICTS WHERE PEP WAS IMPLEMENTED: A CASE-BASED STUDY FROM NEPAL

Presenter: Upasana Regmi

Upasana Regmi[1], Paritra Tamrakar[1], Himalaya Dev Sigdel[1], Wim van Brakel[2], Liesbeth Mieras[2], Nandlal Banstola[1]

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Objectives: To explore why new cases continue to appear in areas where single-dose rifampicin (SDR) is distributed as post-exposure prophylaxis (PEP) to contacts of leprosy patients. The purpose was to identify operational factors to improve the effectiveness of the PEP intervention.

Methods: The LPEP Project started in 3 districts in Nepal in 2015. (Former) cases of leprosy and their contacts were eligible if they met the inclusion criteria defined. Contacts of cases who had registered for multidrug therapy (MDT) from July 2013 onwards were screened for eligibility and invited to participate in LPEP. The term 'contact' refers to someone who has had prolonged or regular contact with an index case. A case-based survey was carried out of all leprosy cases newly diagnosed from January 2017 to December 2018 in the three LPEP districts. LPEP Supervisors collected detailed information using a structured questionnaire.

Results: The study included 677 newly detected cases (Jhapa (*n*=288), Morang (*n*=296) and Parsa (*n*=93)). Of these, 55% were multibacillary (MB) cases and 3.1% had already developed visible disabilities at the time of diagnosis. None of these cases reported having received PEP previously. The distribution of new cases of leprosy indicated a peak in incidence in the age group 16-30 years. Six hundred and two cases (89%) came from the population not meeting the inclusion criteria of LPEP. Of these, 60% (n=361) reported no contact history of any kind. Moreover, out of total cases covered in the study, 4.7% (*n*=32) were detected during PEP screening of contacts and 4.3% (*n*=29) arose from contacts who were either absent or met one of the exclusion criteria.

Conclusion: None of the new cases had taken SDR-PEP. A substantial proportion of new cases detected since the introduction of PEP had a history of contact with a patient registered before the period that was eligible for inclusion in LPEP. We recommend therefore that the eligibility period for inclusion of former leprosy cases in a PEP intervention be increased from 2-3 years to ten years. This might have prevented leprosy in a majority of these cases detected in this study. The fact that a majority of the new cases had no contact history indicates the need to better understand the population at risk of leprosy and introduce new approaches to define criteria for PEP eligibility that would include a larger proportion of them in a prophylaxis programme.

P-205

EARLY DETECTION OF LEPROSY IN CUDDALORE DISTRICT IN TAMIL NADU THROUGH DISABLED PEOPLE ORGANISATION AND VOLUNTEERS

Presenter: Manivannan Govindarajlu

G. Manivannan[1], Jaganathan[1] Tina Mendis[1]

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Objectives: To demonstrate the community action to early identification of new cases of leprosy in three blocks of Cuddalore district, Tamil Nadu.

Methods: The report is a part of a large community based disability management project based in Cuddalore district, Tamil Nadu. As part of the project activities, champions (those overcome the disease and disability) were identified and sensitized on signs and symptoms of leprosy and the importance of awareness about leprosy in the community and its relation with the early detection of leprosy. They were encouraged to plan their own activities to improve awareness in the community on leprosy and to take action to detect leprosy cases early. In partnership with local nursing colleges they conducted a Leprosy Case detection program in their respective villages and suspected cases were referred to the PHC's for confirmation and treatment. The treatment completion is followed-up after confirmation of diagnosis.

Results: As part of their action to combat leprosy, through the case detection program, 28 new leprosy cases were identified by the champions in the 3 blocks in Cuddalore district. Out of this 50% were children. Out of 28 new cases none of them had disability at diagnosis and 27 (96%) of them completed their treatment in a scheduled time period.

Conclusion: Building the capacity of Disabled People Organization's and volunteers on leprosy case identification helps to detect leprosy cases early, as evidenced in this project that none of the cases had disability at diagnosis. And since they were in the same community the people don't hesitate to come forward for diagnosis and resulting in good treatment completion rate.

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A THREE-PRONGED APPROACH TO A LEPROSY FREE INDIA: EARLY TREATMENT, CHEMOPROPHYLAXIS & IMMUNOPROPHYLAXIS

Presenter: Sujai Suneetha

Sujai Suneetha[1], Santoshdev P Rathod[2], P Narasimha Rao[3]

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Objective: Early detection of leprosy and treatment with multidrug therapy (MDT) has significantly brought down the prevalence of leprosy in India. However, the annual new case detection rate (NCDR) has remained unaltered. This suggests that leprosy eradication is not possible with just a single approach of MDT and there is a need to develop additional strategic options. Chemoprophylaxis using Single Dose Rifampicin (SDR) and immunoprophylaxis with *mycobacterium indicus pranni* (MIP) vaccine are two promising options that India has adopted. This paper examines the evidence for these additional options and analyses the benefits of a three-pronged approach to a leprosy-free India.

Methods: This is an expert opinion based on review of role of early treatment, chemoprophylaxis with SDR and immunoprophylaxis with MIP as a tool to achieve leprosy eradication.

Results: There is ample evidence to show that early diagnosis and prompt treatment leads to reduction in transmission of disease to close contacts. Immunotherapy is potent invigorator of immune responses endowed with both preventive and therapeutic properties. It accelerates the response to chemotherapy in slow responders. Chemoprophylaxis is also effective in about 55-60% of close contacts for prevention of clinical leprosy.

Conclusion: In order to achieve leprosy eradication in India, a strategy targeting different stages of disease that is reducing the disease burden by early treatment, accelerating the immune response by immunoprophylaxis and treatment of subclinical leprosy by chemoprophylaxis remains the way forward.

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INVOLVEMENT OF LOCAL COMMUNITY VOLUNTEERS IN LEPROSY CASE DETECTION ACTIVITY IN MUSAHAR COMMUNITY IN TWO BLOCKS OF EAST CHAMPARAN DISTRICT IN BIHAR

Presenter: Nimer Ortuno-Gutierrez

S. Mugudalabetta[1], N. Ortuno-Gutierrez[1] A.K. Pandey[1], B. Pandey[2], A. Wagh[1], N.Singh[1], C. Dwivedi[1], K. Padebettu[1]

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Objectives: Leprosy Case Detection Campaign is one of the strategies followed in India every year to detect leprosy cases in high endemic districts. One of the challenge for such campaigns is to reach underserved population like Musahar community in Bihar. The objective of the study is does community volunteers from same community helps to improve leprosy case detection in two blocks of East Champaran district in Bihar.

Methods: 31 out of 104 villages were identified in two blocks of Piprakothi and MotihariSadar in East Champaran district where Musahar community are living and they constitute 8.6% of the population in selected villages. One male and one female volunteers from the Musahar community were involved in 31 villages for leprosy case detection activity. The volunteers were trained in identification of leprosy suspects. The volunteers examined the whole body of persons and reportedleprosy suspects to local ASHA workers (Accredited Social Health Activist appointed by the Govt). A small incentive of Rs 50 (less than 1 USD) was paid to the volunteers every day during the survey. The survey was carried out for a week in 3 phases in 2018 to cover maximum population among the Musahar community in 31 villages since they migrate temporarily or their livelihood. Suspects were examined and leprosy was confirmed by the doctor and non-medical supervisor trained in leprosy. Leprosy cases were diagnosed based on the WHO criteria.

Results: Among total population of 441065 in two blocks 12593 (around 3%) of them belong to Musahar community. The leprosy case detection campaign organized by the NLEPin 2016 detected 30 new leprosy cases in two blocks and only 2 new leprosy cases were detected among Musahar community in 31 villages. In 2018, with the special intervention of involving local community volunteers from the same community, 259 new case were detectedof which 234 cases were detected among Musahar community in 31 villages. The MB proportion was 13%, child proportion was 34%, grade 2 disability was 3% and the female proportion was 50%. The new case detection during the campaign period in two blocks together was 6.8 new leprosy cases per 100000 population in 2016 and it was increased to 58.7 new leprosy cases per 100000 population with the intervention of involving local community volunteers.

Conclusion: Involvement of volunteers from the same community is highly effective in case detection especially among underserved population like Musahar community in Bihar.

P-230

THE CONTROL STRATEGY OF LEPROSY UNDER A LOW ENDEMIC SITUATION IN ZHEJIANG

Presenter: Qiang Yao

Yao Qiang[1], Kong Wen-ming[1], Shen Yun-liang[1], Wu Li-mei[1]

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Objectives: To evaluate the effect on leprosy control strategy and measures in Zhejiang province, and put forward some suggestions on existing problem and control demanding, this will provide reference for future policy making.

Methods: Leprosy is a significant public health issue. Zhejiang province achieved the goal of eliminating leprosy in 1995, and then the leprosy has been staying in a low prevalence state. Currently, the control target is elimination of leprosy harm. Zhejiang , following a series of international and domestic strategy and policy, have carried out comprehensive prevention and control, which contains symptom monitoring, staff training, deformity rehabilitation and so on.

Results: The excellent control system has been established, the rate of early detection is more than 80 percents, the disability severity of leprosy has been improved, and staff training is diversified development.

Conclusion: The challenge of achieving the target of a leprosy-free world is s huge, the future of leprosy control still needs the government’s strong commitment and support to fully implement strategy to control the incidence of leprosy.

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VALIDATION OF LEPROSY CASES NOTIFIED IN SOUTHERN NIGERIA IN 2018

Presenter: Chinwe Eze

Chinwe Eze
German Leprosy and Tuberculosis Relief Association, Nigeria

Background: The number of notified Leprosy cases in Nigeria has steadily declined over the years while the proportion of new Leprosy cases with WHO Grade 2 Disability (G2D) has been high at about 15%. In GLRA supported states, the decline in case notification mirrors the national trend but with a G2D rate that is almost double the national average. GLRA introduced a validation scheme in her supported States since 2015 to improve the quality of diagnosis. Thus, the rapid survey in Cross River and Ebonyi States in Southern Nigeria was undertaken primarily to validate the notified WHO G2D status of the patients as well as assess the degree of implementation of the validation scheme.

Methodology: A review of notified new leprosy cases was done between October and December 2018. Cross River and Ebonyi States which make up over 50% of the cases were conveniently targeted for the exercise. All patients registered from January – June 2018 were eligible for the review. Patients congregated in central locations in each state and were clinically assessed by two independent validators using a standardized questionnaire. The disability status as well as diagnosis of a case were confirmed if both validators concurred. Data was entered into Microsoft Excel and analyzed using Epi Info 7.0. Variables are summarized as counts, proportions and means.

Results: Of 132 registered/notified cases, 70(53%) were available for review, 30 in Cross River and 40 in Ebonyi. Mean age (SD) was 45.7 (±19.6). Thirty-eight (54%) were female and 5(7%) were children aged less than 15 years. All were registered as MB leprosy. 18(31%) had WHO G2D grading. Concordance among validators was 93% (65) of which 37(53%) were confirmed as leprosy, 17(26%) not leprosy and 11(17%) as “recycled” cases (old cases who had completed treatment, or defaulters who were re-registered as newly detected cases). Boki, Izzi and Afikpo North districts had 9(82%), 4(40%) and 3(43%) respectively of registered cases as either not leprosy or recycled. Of the confirmed leprosy cases, 12(32%) had G2D and 3(8%) were PB leprosy.

Conclusion: This review confirmed the high rate of G2D in the area and poor capacity of frontline health workers to diagnose leprosy. This calls for instituting mechanisms to diagnose leprosy early and validate diagnosed cases using set criteria. There is also a need to continuously build the capacity of frontline health workers in diagnosis of leprosy in the face of declining prevalence.

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OVERLAPPING OF LEPROSY IN HOME-LIVING NETWORKS: GENERATIONS INVOLVED, CASES DENSITY AND SOCIO DEMOGRAPHIC AND ECONOMIC PROFILES IN MUNICIPALITIES IN THE NORTH AND NORTHEAST REGIONS OF BRAZIL

Presenter: Reagan Nzundu Boigny

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Objectives: To analyze the occurrence of leprosy in different generations, the density of cases, and the sociodemographic profiles linked to home-contact networks (HCN) with overlapping of the disease in municipalities of North and Northeast Brazil.

Methods: This is a cross-sectional study, with primary and secondary data from new cases (NC) of leprosy reported in the reporting system of notification (SINAN) and resident in the study municipalities: Vitória da Conquista and Tremedal, Bahia State; Floriano, Piaui State; Cacoal and Rolim de Moura, Rondônia. A standardized instrument was applied to the NC and the review of data in medical records and at the base of the SINAN state. Data analysis included the occurrence of leprosy in different generations of families, the density of cases, and the sociodemographic profiles linked to HCN with overlapping of leprosy cases.

Results: A total of 233 leprosy cases were addressed, linked to 136 HCNs. In 53.2% (n=124) of the cases the disease reached two generations and in 20.2% (n=47) three generations. There was a statistically significant association between the involvement of two or more generations living in the municipalities of the state of Bahia (Prevalence Rate [PR] 1.36; 95% CI 1.10–1.67; p-value <0.001), in rural areas (PR 1.21; 95% CI 1.03–1.41, p-value=0.047), not having water distribution network (PR 1.26, 95% CI 1.08– 1.47; p-valor=0,042), and not have garbage collected (PR=1.29, 95% CI 1.12–1.48, p-value 0.018). The majority belong to HCN with more than three cases, with an average of 4.1 cases per HCN (standard deviation=3.3). We verified a greater occurrence of having ≥ 3 cases in the HCN, in cases enrolled in the Bolsa Família Program (PR 1.26, 95% CI 1.05–1.53, p-value=0.041), living in rural areas (PR 1.58; CI 95% 1,17–2,13; p-value=0.006), and not have garbage collected (PR 1.41, 95% CI: 1.19–1.66, p-value=0.004).

Conclusion: The involvement of different generations and the high density of leprosy cases in HCN was a reality in the hyperendemic contexts analyzed. A critical scenario of social vulnerability, intersectoral actions to address social inequalities, are essential for the control of leprosy. The recognition of overlapping of leprosy cases in an HCN, the number of generations affected, and the density of cases can be used as sentinel indicators of epidemiological and operational severity for surveillance. Likewise, it is recommended to prioritize HCN with an occurrence of ≥ 3 cases and with worse socioeconomic conditions.

P-252

PERIODIC ACTIVE SEARCH IN CAMPAIGN MODE IS A BOON TO LEPROSY CONTROLE

Presenter: Laxman Kumar Karmi

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Objectives: Though there is downward trend of new case detection, the substantial monthly registration by routine activity cannot be underestimated. It has been noticed that the periodic implementation of case detection campaign yielded a good number of cases. The objective is to establish that Periodic Case Detection Campaign is a necessary activity for Leprosy control.

Methods: We have implemented the active case detection campaign every year in different names since 1998.Leprosy case Detection Campaign and Intensive Case Detection campaign implemented in last 4 years. The detail data is preserved in different levels. Jharsuguda District being endemic is selected for the study. A retrospective Analysis of new case detection and important indicators is done.

Results: We have detected 283 cases in 2015-16, out of which 141 cases detected during the campaign only. Likewise in the subsequent years the campaign yielded good number of cases. (2016-17)-161 cases out of 298, (2017-18)-127 cases out of 279, (2018-19)-129 cases out of 261 during the active search. The indicators like Child%, MB% and G2D found at par with the annual new case detection.

Conclusion: The routine case detection is being strengthened by training, orientation programmes and on job trainings to health professionals and intensive IEC/IPC programmes to aware the community, but till than many cases are left out in the community. The cause may be bilateral, but the disease behaviour cannot be ignored in this regards. Leprosy is a disease with long incubation period and usually starts with a painless patch and silent neuritis, which is not a medical emergency to compel the person to seek medical attention. Whenever there is a programme with active search, such patients are detected. Once they are noticed by health personal they become apprehensive of the disease and come to the system.

So the periodic active search programmes with intensive IEC and IPC has a significant impact on the total new case detection. Implementation such type of periodic campaigns definitely have appreciable role to move towards "Zero Leprosy".

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LRC OUT-REACH CAMPS (LORC), A ZERO COST APPROACH TO DETECT NEW LEPROSY CASES; A COMPARATIVE STUDY BETWEEN LORC AND LCDC IN LEPROSY ENDEMIC TRIBAL BLOCKS IN RAIGAD DISTRICT OF MAHARASHTRA.

Presenter: Ashutosh Prabhavalkar

Ashutosh Prabhavalkar[1], Vincent K.[1], Antony Samy[1],

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Objective: Early case detection and treatment with MDT is the key to leprosy elimination. Routine surveillance activity for leprosy cases detection is much neglected programme component in the public health system. The deficit of case detection through routine surveillance is compensated with annual Leprosy Case Detection Campaigns (LCDC) under the national programme, through active search. Cases are also detected during various camp activities. ALERT-INDIA introduced LRC Out-Reach Camps (LORC) at PHCs for promoting DPMR services among persons affected by leprosy.

The comparative study assesses the effectiveness of two approaches, LRC Out-Reach Camps and Leprosy Case Detection Campaigns in terms of detection of new leprosy cases.

Methods: LCDC, based on active search methodology, is an annual campaign organised, under National Leprosy Eradication Programme (NLEP), exclusively for leprosy case detection. The search activity is conducted by a team of ASHA and a male volunteer during two weeks campaign.

LORC is a periodical DPMR service delivery camp at PHC level. The major services at LORC are diagnosis and treatment on lepra reactions, services for disability prevention and deformity care including physiotherapy, ulcer care in addition to supply of aids & appliances etc.

The paper presents comparative analysis of the outcome of two activities (LORCs- 46 and 3 annual LCDC rounds) conducted in last three years in 8 PHCs of 2 tribal blocks (Karjat and Sudhagad) in Raigad district and effectiveness is discussed.

Results:

- 118 new leprosy cases were detected during 46 periodical LORCs and 246 in 3 annual rounds of LCDCs in 8 PHCs. The Index of Suspicion was 35 and 12 in LORC and LCDC respectively.

- The child proportion was higher during LORC than LCDC; 28% and 20% respectively. On the contrary disability proportion was 0% in LORC and 3.7% during LCDC. No significant difference in MB and female proportion noticed.

- Average per day case detection rate during LORC was four fold high than in LCDC.
- Practically, the cost to detect new leprosy case during LORC is zero as the activity is basically planned and budgeted exclusively for DPMR services unlike in LCDC.

Conclusions: LRC Out-Reach Camps can serve as Zero Cost Approach to detect new leprosy cases while promoting accessibility to DPMR services at primary level health facilities, PHCs.

If promoted, through national programme, the huge resources spent on LCDC would be made available for DPMR activities like LORC at PHCs contributing to reduce leprosy burden, epidemiological and disability.

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CURRENT LEPROSY STATUS AND LESSONS FROM INITIATIVES OF CASE DETECTION IN TWO ENDEMIC POCKET DISTRICTS OF BANGLADESH: NILPHAMARI AND MOULVIBAZAR

Presenter: Sheikh Abdul Hadi

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Objectives: In Bangladesh the high burden of leprosy has been observed in some pocket areas of the country. Two districts Nilphamari and Moulvibazar together detected almost one fourth of all detected cases in the country during 2016 and 2017. In 2017 the leprosy burden in Nilphamari, the only endemic district in Bangladesh was 1.02/10,000 and in Moulvibazar district was 0.9/10,000 population. The current leprosy situation in Nilphamari and Moulvibazar have been analyzed in terms of how services are organized, who are the actors and what is the context indicating any gaps keeping in vision the national and global strategic goals to be achieved by 2030.

Methods: A mix method approach was undertaken for data collection including service data, observations, record review and interviews. Two survey teams visited three sub-district (upazila) MDT centres in the Nilphamari district and three tea estates of two sub-districts (upazila) in Moulvibazar district. All leprosy patients under treatment constituted the study population.

Results: NLP organizes leprosy services in partnership with The Leprosy Mission, Bangladesh in Nilphamari and with HEED Bangladesh in Moulvibazar. There are 6 MDT centers and one large tertiary care centre in Nilphamari. In Moulvibazar where there are many tea garden workers, leprosy services is administered through 07 MDT centers and one medical centre in each tea estate where HEED Bangladesh supplies MDT strips through their volunteers who get some financial incentives. In addition HEED trained up 197 health assistants and engaged them in case detection activities. In 2018, 67 new cases were detected among a population of 35945 from three tea states (PR 18.6/10,000). In Nilphamari, head of the health authority (Civil Surgeon) fixes target for new case detection and to reach this target, the local health authorities use extended contact survey in a regular interval as a result more hidden cases are detected. In 2018, 182 new cases (PR 1.96/10,000) were detected with 8 male and 6 female child cases.

Conclusions: These centers are run periodically once/twice a week and not geographically uniformly distributed. So, there are gaps in service provision, population coverage and availability of them at times when required. Extended contact survey seems to be best alternative when regular services are lacking or not functioning properly. Moreover, linkage between providers, among centers and referral for complication management is not visible or identified.

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LONGEVITY OF PERSONS WITH LEPROSY

Presenter: R. Santhosham

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Objectives: To determine the length of life of persons with leprosy.

Methods: A survey was conducted in 2008 in the area served by the Community Health department covering 6960 persons with any disability and also all persons with leprosy. A resurvey was conducted covering the same population during 2018. Age at death and cause of death (broad categories) were recorded along with other details for those who were dead.

Longevity was determined using the data on age at death of persons died during the period between first and second survey. Longevity of leprosy cases was compared with the leprosy persons with disability and also persons with general disability.

Moreover the records of a home for persons with leprosy, were analyzed to find out the length of life of the inmates.

Results: Preliminary analysis showed that the length of life of those with leprosy was longer than those with general disability. The length of life of those in the sheltered home was higher than the persons with leprosy in the community.

Conclusion: Persons with leprosy live longer. This may be because they get better medical care as they have access to health personnel.

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A COMPARISON OF THREE TYPES OF TARGETED, COMMUNITY-BASED HEALTH EDUCATION AIMED AT PROMOTING EARLY DETECTION

Presenter: G. Karthikeyan

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Objectives: The overall aim of the project was to compare three different community-based methods for early detection of leprosy, in the context of a general health care programme (in the absence of a vertical control programme).

Methods: The study was designed as a community intervention study where three strategies for early case detection of leprosy were applied to the whole community embedded within the National Leprosy Elimination Program (NLEP) of India, between September 2015 and August 2018. The communities here refer to the sub-district units of the Indian administrative structure called “Block”. The three interventions were ‘training local non-formal practitioners (NFHP)’, ‘giving health education and motivating newly diagnosed leprosy patients to bring suspects for confirmation of diagnosis (Index)’ and ‘increasing awareness in the community regarding early signs of leprosy (IEC)’. Six blocks were selected randomly for intervention and allocated two blocks to each of the three arms of intervention and two blocks as control i.e. three different groups of ten blocks from five intervention districts

were be subjected to three different intervention strategies and ten blocks as control (with null intervention). The pre-intervention (36 months) and post-intervention (24 months) case detection outcomes were compared with an interrupted time-series design to estimate the efficacy of the strategies. The case detection outcomes were obtained from the routine NLEP information system. The data was analyzed using R program. This project was supported by Leprosy Research Initiative.

Results: Post intervention, there was an increase in trends in the number of cases detected in all three intervention arms as compared to pre-intervention periods and control blocks. During the corresponding period, there was a decrease in trends in the number of cases with grade 2 disabilities at diagnosis, number of child cases among new cases, increasing trends in Paucibacillary (PB) cases and number of female cases among new cases in all three intervention arms as compared to control blocks. Between the interventions, overall impact was substantial in IEC intervention blocks as compared to other two interventions and the control blocks.

Conclusion: The increasing trends in new (cases) total and PB cases among new cases and decreasing trends in grade 2 disability during the corresponding period shows the early detection of new leprosy cases in the community. The yield in new case detected was higher in IEC intervention as compared to other two interventions and the control blocks.

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RODA-HANS PROJECT: LEPROSY HEALTH TRUCK

Presenter: Estefania Caires de Almeida

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Objectives: To train primary health care professionals in the diagnosis and clinical management of leprosy by collaborating specialists from the Health Ministery of Brazil, the German Leprosy Relief Association (DAHW Brasil) and Novartis Brasil (Truck Owner), with support participating states and municipalities.

Methods: The activities of the Project were carried out in three stages. The first included theoretical training, with a workload of 8 hours, one day before the arrival of the truck in the municipality. The second to the practical training, carried out during the care of the people in the truck. The care in the Truck was offered by health professionals of the municipal network, with the accomplishment of the dermato-neurological examination for diagnosis and health education activities, raising awareness of the signs and symptoms of the disease. The diagnosed cases started the treatment immediately and were directed to follow up at the reference health units of their home. The third step, carried out by DAHW Brasil, through specific virtual evaluation monitoring tools, available on the World Wide Web, aimed to evaluate the results of actions in what permeates the manifestation of the population about the activities promoted by the Project, offering other elements of analysis, than simply the number of visits and diagnoses performed during the period in which the Truck was in the municipality.

Results: The project took place between April and December / 2018 in 82 municipalities in five Brazilian states (Piauí, Rondônia, Mato Grosso, Goiás and Minas Gerais). About 1900 health professionals were trained, with approximately 10,400 consultations performed. 559 new cases were diagnosed, being 18 (3.2%) in children under 15 years. The measure of the impact of the action on the world computer network was tested in a pilot municipality (Sinop-MT), with an estimated population of about 120 thousand inhabitants, and showed a virtual "engagement" of 25,207 (21%) people in the total.

Conclusion: The results show the importance of establishing partnerships (governmental, private institutions and NGOs) to strengthen and advance coping with leprosy in Brazil. Our initiative has shown this by increasing the number of trained professionals, case detection, timely treatment and prevention of disabilities, as well as the provision of actions that promote the population's knowledge about the signs and symptoms of the disease. Therefore, these factors favor the control of leprosy and the confrontation of stigma and discrimination to people affected and their relatives.

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CAN WE ACHIEVE ELIMINATION OF LEPROSY TRANSMISSION IN LEPROSY LOW BURDEN COUNTRIES OF AFRICA?

Presenter: Alexandre Tiendrebeogo

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Objectives: Because of long incubation period of leprosy and given low burden of leprosy in some countries in the WHO African Region, the Regional NTD programme of WHO-AFRO held a meeting in 2018 with 9 leprosy low burden (LLB) countries. The overall objective was to provide technical guidance to these countries (Botswana, Eritrea, Eswatini, Gambia, Mauritius, Namibia, Seychelles, South Africa and Zimbabwe) to design and implement an efficient approach for preventing and detecting leprosy to stop leprosy transmission. Specific objectives of the meeting were to:

- Adopt new approaches for contact tracing, active case finding and treatment of leprosy, especially among household contacts of MB leprosy patients
- Promote the use of preventive multiple drug therapy for household contacts of MB leprosy patients
- Explore combination of these new approaches for leprosy with ongoing mass medicine administration (MMA) campaigns in the same countries
- Estimate the costs related to these new approaches and mobilize required resources for their implementation.

Methods: The methods proposed consisted of:
- Developing a plan of action with budget and mobilize funds and resources for implementation
- Implementing new approaches for contact tracing, active case finding and treatment of leprosy, especially among household contacts of MB leprosy patients, diagnosed during the latest five years
- Using preventive multiple drug therapy for household contacts of MB leprosy patients
- Combining above interventions with ongoing mass medicine administration (MMA) campaigns for PC-NTDs for cost-effectiveness

Results: Preliminary results: Out of the nine countries, only Mauritius was able to develop an efficient plan of action and mobilize funding (US$5,000 per year for 2 years) to carry proposed new interventions. During the 1st year of implementation: contact tracing was done for ... Leprosy cases diagnosed between 2014 and 2018. No new case of leprosy was found during contact tracing and XXX MB household contact received one MB MDT blister-pack to prevent the occurrence of leprosy clinical signs. For the first six-month follow up, no clinical signs of leprosy were reported among persons who received the MB MDT blister pack.

Conclusion: By now, the study is just starting in the targeted countries and with preliminary outcomes after six-month follow up in one Mauritius only, we cannot make any conclusion. We expect at the next International Leprosy Congress in 3 years to present more findings, recommendations and conclusions.

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THE VIEW OF PATIENT ABOUT LEPROSY

Presenter: Maria Angela Bianconcini Trindade

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To control of leprosy of 1920s until 1960s the Brazil adopted a policy of exclusion based on the creation of: leprosariums, preventoriums and dispensaries that brought compulsory hospitalization as a purpose, based that contact control would reduce the contamination, mainly of the healthy children of people affected by the disease. In addition to increasing discrimination and destroying several families, isolation didn't resolve disease control and contributed to increase prejudice and stigma in Brazil and in other countries. The exclusion of lepers also implied in the legal and political disqualification of these individuals. In the 1980s with the introduction of multidrug-therapy in Brazil, it was possible to glimpse the cure by the widespread provision in the public network of free diagnosis and treatment. To the long treatment is, essential that the services be understood as places of reception, allowing people to put their daily problems with the family, at work, with the neighbors, as well as in their projects and desires.

Objective: To understand the perspective of the person with leprosy on the experiences of the disease.

Methods: Twenty-four people were interviewed within six group interviews that were recorded and transcribed. Minutes before the beginning of each interview, audio-visual inductive material was used with the purpose of motivating discussions. The information obtained on the interviews were used as a primary source and analyzed according to Content Analysis techniques.

Results: The discursive material reveals a sharing experience through narratives of itself that touch on nodal points about leprosy care and stigmatization processes.

Conclusion: The discernment, based on personal experience, will shed light on the proposals of existing policies that are sectorial and prescriptive, thus exposing the need to involve aspects that are neglected in the treatment, as well as other forms of care. These findings are in line with the Program for National Control established in 2011 that in 2030 Brazil will have a society mobilized with low risk of suffering from leprosy, free stigma and prejudice, where all people affected have an equal opportunity to be diagnosed and treated early and no more cases occur in children. However, after almost four decades of free and effective treatment, leprosy predominates in the country and accounts for 92.3% of new cases in the Americas, which belong to the poorest sections of the population, living in poor housing, education, nutrition and underemployment.

P-331

LEPROSY CONTROL ACTIVITIES BY GOB HEALTH STAFFS 25 YEARS AFTER INTEGRATION

Presenter: Abu Sufian Chowdhury

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Objectives: Leprosy elimination activities through integration of the leprosy control services into general health services in Bangladesh were introduced as a policy of GOB in 1993. Aim of this study was to quantify the GOB health staff participation in leprosy control activities 25 years after planned integration into the general health care system.

Methods: A prospective cross-sectional observational study was conducted by obtaining data from eight Upazila Health Complex Leprosy Clinics of Rangpur district. Filling up of suspect registers, patient's leprosy cards, monthly and quarterly reporting files and results of interviewing new suspects in leprosy clinic were reviewed from July 2018 to December 2018 and analyzed by using SPSS. This is an area where a well-established leprosy NGO has been in operation since 1993, working to support the NLP by providing supplementary services.

Results: Data analysis shows a total of 384 leprosy suspects from suspect register; 103 patient's leprosy cards; 45 reports making from monthly and quarterly reporting files and interviewed 140 new suspects in prevention of disability clinic.

Activities	Filled up by GOB health staffs			
	No activities	1-30%	31-60%	>60%
Suspect register	0.9%	0.3%	1.4%	97.4%
Patient's leprosy card	47.1%		3.1%	49.8%

'No activities' by GOB health staffs during Patient's leprosy card fill-up:

General information of the Patient	2.9%	Slit Skin Smear Test for AFB	86.4%
Medical details	5.8%	Diagnosis	10.7%
Physical examination	11.7%	Treatment	11.7%
Sensory Test of Hand and Feet	98.1%	Treatment of Reaction	32.0%
Muscle test of Eyes, Hands and Feet	93.2%	Treatment and Care of Disability	70.9%
Nerve Examination	53.4%	Contact Survey	96.1%
Disability Examination	55.3%	Management after MDT Complication	100%

Activities done	MDT supplied by TLCA in non-clinic day
1-30%	12.2%
31-60%	25.6%
>60%	62.2%

We interviewed 140 new suspects in leprosy clinic; of whom 34% were referred, 29% from survey and 51% voluntarily reported to clinic. 23% suspects were referred by GOB health staffs. 21% suspects not heard about leprosy before and 79% heard about leprosy before through;

Advertisement	4.3%
GOB health staffs	4.3%
Leprosy Patients	27.9%
Extended Contact Survey	27.1%
Others	15.7%

Conclusion: Leprosy officially integrated into the general health care system since 1993, but still the GOB health staffs are dependent on NGO for doing Slit Skin Smear, Prevention of Disability management and disease prevention and control program (awareness program, contact survey, information dissemination).

P-360

VALIDATION OF STIGMA ASSESSMENT AND REDUCTION OF IMPACT (SARI) SCALE TO MEASURE STIGMA RELATED TO LEPROSY IN SRI LANKA

Presenter: Thushani Dabrera

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Objectives: There are multiple social determinants which impact upon leprosy occurrence and control, such as poverty, education, migration and stigma. Even if patients are cured stigmatization can continue to be an obstacle to the resumption of a normal life. Despite the achievements in leprosy control in the past decades in reducing the incidence and prevalence of the disease, it has proven very difficult to reduce stigma associated with this disease. There is no validated tool in the commonly used language (Sinhalese) available in Sri Lanka to assess stigma related to Leprosy. The Stigma Assessment and Reduction of Impact (SARI) scale will be validated to the Sinhalese language in the Puttlam district.

Methods: The cross-cultural validation will be covered in several phases. There will be discussions with the language experts, health personnel, patients and lay personnel to understand and discover Sinhalese terms which relates to the concept of stigma. The second phase will start with the translation and back translation of the scale to ensure that all concepts and terminology in the translated instrument have a similar meaning as in the original instrument. In the third phase, 15– 20 respondents affected by leprosy will be invited to test the instrument. The research assistants will administer the scale for the first time and a discussion will be held, during which the items will be checked one by one for coherence, understanding and terminology. Alternatives for unclear or difficult words will be discussed and selected. In the fourth phase, the revised version will be tested in a pilot study with people affected by leprosy. Lastly, the quantitative validation study will be conducted.

The sample size of 147 persons affected by leprosy was calculated to achieve adequate power for the various statistical calculations to determine the measurement equivalence.

Data will be entered into an Access database and analysed using SPSS version 20. The translated scale will be subjected to judgemental (face, content and consensual), and construct validity, internal consistency, floor and ceiling effect and interpretability. Ethical clearance was obtained from the Ethics Committee of North Western Provincial Directorate of Health Services.

Results: The study will be commencing from September, 2018. The report will be submitted by September, 2019.

Conclusion: Availability of a scale in the commonly used language to assess stigma among persons affected with leprosy in the community will provide us with an insight into the magnitude of the problem in Sri Lanka.

P-369

USING LEPROSY CASE MAPPING DATA TO PREDICT AREAS OF HIGHER DETECTION : A CASE STUDY FROM 2 DISTRICTS IN MOZAMBIQUE

Presenter: Armindo Jorge

A. Jorge[1], A.J. de Kruijff[1]

The Leprosy Mission Mozambique

Objectives: The North of Mozambique is still a high endemic area for Leprosy. The Cabo Delgado province for instance currently has a prevalence of over 2 cases per 10000 of the population. Funds for active case finding is limited though and often the activities organised do not target the most endemic areas or villages.

Recently the Health department in Mozambique has introduced a DHIS2 based health information system for Leprosy and some other NTDs in Mozambique. This system is also capable to register location of every new case diagnosed up to the village level. Retrospective data of all diagnosed cases for the past 10 years have been introduced for the Cabo Delgado province.

Our question was if we could use this data to help us predict where we could find a higher detection rate of leprosy relative to other areas or villages within the same district.

Methods: Two districts within the Cabo Delgado province was selected, one from a traditionally higher endemic area and one from a traditionally lower endemic area. The villages was divided into groups around every healthpost to roughly represent the catchment area for that health post. Other resources like selfcare groups and healthcare volunteers were also placed on the maps.

New case data from that district and surrounding districts was used to show the existing disease burden for those groups.

Teams were then assembled to visit the villages with active case finding campaigns and the data for new cases and suspected cases were captured.

Results: The results are still being analysed but we hope to at least capture some learning from the process to help us plan future interventions better, even if it is not possible to show clear predictable factors for a higher detection rate.

This small operational study could be suitable for a poster presentation.

Conclusion: We hope to draw some conclusions once all the data is analysed.

P-370

PROGRAMMATIC VULNERABILITY IN CONTACT SURVEILLANCE IN THE HOME-CONTACT NETWORKS: OVERLAPPING OF LEPROSY CASES

Presenter: Reagan Nzundu Boigny

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Objectives: This study aimed to analyze the institutional / programmatic vulnerability of health services in the development of care actions for leprosy cases and the surveillance of their contacts in municipalities of North and Northeast Brazil.

Methods: This is a cross-sectional study, with primary and secondary data from new cases (NC) of leprosy reported in the national system of notification (SINAN) and resident in the study municipalities: Vitória da Conquista and Tremedal, Bahia State; Floriano, Piaui State; Cacoal and Rolim de Moura, Rondônia. (HCN). After selection of reference cases reported in these municipalities between 2001 and 2014, contexts with case overlap in home contact networks (HCN) were identified. We analyze variables related to the institutional / programmatic vulnerability of health services in the development of care actions for leprosy cases and the surveillance of their contacts.

Results: It was verified that 66.1% of the interviewees belonged to HCN with three or more leprosy cases diagnosed. It was observed an association between this outcome of overlapping of cases, with the non-accomplishment of the dermatological examination of the contacts (PR=1.29, 95% CI 1.07–1.56, p-value=0.011), failure to perform neurological examination (PR=1.28, 95% CI 1.06–1.55, p-value=0.014), and the BCG application (PR=1.34, 95% CI 1.15–1.56, p-value=0.007). In 53.2% of cases (n=124), there were 2 or more generations of cases reached by leprosy, a significant outcome associated with non-dermatological examination (PR=1.32, 95% CI 1.1–1.59; p -value=0.004), and non-neurological examination (PR=1.31, 95% CI 1.09–1.57, p-value=0.057); non-BCG orientation (PR=1.36; 95% CI 1.16– 1.58, p-value=0.003), non-BCG vaccination (PR= 1.32, 95% CI 1.14–1.53, p-value=0.009), and a “worst” IntegraHans score (RR=1.33, 95% CI 1.10–1.61, p-value=0.008).

Conclusion: Operational failures in the surveillance process of leprosy contacts reinforce the character of programmatic vulnerability in these hyperendemic scenarios studied. In the municipalities analyzed, the decentralization of actions leprosy control has not yet been established as a practice in health services and, in the same way, the dialogic and inclusive nature of health communication. In addition to the coverage, it is fundamental to identify evidence-based strategies that allow for an increase in the resolution of these control actions, especially in HCN with overlapping leprosy.

P-371

OPERATIONAL PATTERNS FOR LEPROSY CONTROL IN THE NORTH AND NORTHEAST REGIONS OF BRAZIL: A NEW PROPOSAL FOR INTEGRATED EVALUATION, 2003–2017

Presenter: Anderson Fuentes Ferreira

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Objectives: Evaluate in an integrated way, operational indicators of leprosy monitoring and control in the North and Northeast regions from 2003 to 2017.

Methods: A mixed ecological, temporal and spatial study based on the integrated analysis of 10 operational indicators of leprosy monitoring and control by the IntegraHans Operational Score (IHOS) developed in this study. The National Notification of Injury Information System database (SINAN) was used. The score can range from 0 to 20, and the higher the value, the worse the operational context of the municipality and/or region.

Results: There were 343,888 new cases of leprosy in SINAN. The overall IHOS average for the whole period was 6.7, with a reduction of 7.7% until 2010. From this year, there was an increase of 5.1% up to 2017. The Northeast region showed averages of IHOS higher than the region throughout the period (6.8 and 6.3, respectively). Roraima and Rio Grande do Norte presented the highest averages of IHOS in the North and Northeast regions, respectively. There was a trend of stability of the IHOS for the period, with significant worsening as of 2010. The Northeast region presented a reduction in the IHOS trend, as well as the states of Amapá, Rio Grande do Norte, Pernambuco, Alagoas and Sergipe, even some showing higher mean IHOS. Municipalities with more than 100,000 inhabitants showed an increase in trends, while municipalities with social vulnerability "High" and "Very high", reduction.

Conclusion: The integrated approach of operational indicators by the IHOS has broadened the capacity to analyze the failures observed in the context of the two regions. The temporal patterns verified reveal the persistence of critical operational problems in the network of health care and surveillance of leprosy that complicate the control.

P-373

EFFECTIVENESS OF ACTIVE LEPROSY SCREENING AMONG CONTACT OF LEPROSY INDEX CASE IN LOWER SOUTH OF THAILAND

Presenter: Thanittha Ditsuwan

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Objectives: This study was aimed to identify newly leprosy case detected (NLCD) and primary leprosy case detected (PLCD) among contacts of new leprosy index case (NLIC) in 2017.

Methods: A cross-sectional study was conducted between July and September 2017. The effectiveness was defined as a number of NLCD and PLCD detected from contact of 10 NLICs in lower South of Thailand (Phatthani

province 6, Narathiwat province 2, Trang province 1, and Yala province 1). Data were collected using questionnaire during field work and descriptive statistics was to analyze data.

Results: Of 10 NLICs, 7 are male. Median age was 20 year-old (min 12, max 72). Three were children while 1 was grade II disable. Six NLICs were multibacillary leprosy. Median since of onset (SoS) was 57 month (min 12, max 120). During field work, 506 close contacts of NLCs (CCo-NLICs) were identified. 58 CCo-NLICs were household contacts (median 5 CCo-NLICs/1 NLIC), 406 were neighborhood contacts (median 42 CCo-NLICs/1 NLIC), and 42 were social contact (median 1 CCo-NLIC/1 NLIC). We found that 327 CCo-NLICs (64.6%) denied screening and physical examination (PE) while 179 (35.4%) received screening and PE. The coverage of screening and PE in household, neighboring, and social contacts was 68.9%, 32.3%, and 19.1% respectively. The screening results showed that 156 (87.2%) were leprosy free. We found 3 (1.7%) newly leprosy cases (2 were household contacts and 1 was neighboring contact) and 5 primary case were revealed (3 were neighboring contacts, 2 were social contacts). In CCo-NLCD, no disability was found and median SOS was reduced to 10 month (min 7, max 12).

Conclusion: Empirical evidence from our leprosy detecting platform demonstrated that active screening is necessary and suitable for leprosy control in lower South of Thailand. This new platform would increase health accessibility, decrease SoS, and reduce disability. The main community active screening target is household and neighborhood contacts.

P-374

THE DEVELOPMENT OF LEPROSY PREVENTION AND CONTROL SURVEILLANCE SYSTEM AMONG FOREIGN-BORN POPULATIONS ALONG THAI-MYANMAR BORER IN 5 DISTRICTS OF TAK PROVINCE IN THE NORTHERN REGION, THAILAND

Presenter: Wisut Saelim

Wisut Saelim[1], Nisa Pairayayutakul[1], Wanna Phusem[2]

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Objectives: This study was conducted to develop leprosy prevention and control surveillance system along Thai-Myanmar border and develop the cooperation between governmental and health related non-governmental organizations. Governmental organization consisted of health posts, sub-district health promotion hospitals and community hospitals. Health related non-governmental organization consisted of Premiere Urgency-Aide Medical International (PU-AMI) in immigrant centers of Ban-Mae-La in Ta-Song-Yang District, Ban-Oom-Pium in Poab-Pra District, and in Ban-Nu-Po in Oom-Pang District; and Mae-Tao Clinic in Mae-Sod District.

Methods: Three Training courses on leprosy screening, Slit Skin Smear, and leprosy treatment and diagnosis were conducted for 145 health workers, 17 lab-technicians and 25 physicians respectively. Leprosy prevention and control surveillance system was established. The system consisted of 1) screening system in foreign-born populations attending the skin clinics of health posts, sub-district health promotion hospitals, PU-AMI and Mae-Tao Clinic 2) referral system in which foreign-born suspected cases were referred to get diagnosis and treatment at hospitals in Ta-Song-Yang, Mae-La-Mat, Mae-Sod, Poab-Pra and Oom-Pang districts 3) Multidrug therapy or MDT logistic in which Raj Pracha Samasai Institute, the national leprosy programme, will deliver MDT to the mentioned hospitals via 2nd Regional Disease Prevention and Control after getting newly detected case report.

Results: After monitoring and evaluation of the cooperation in leprosy prevention, control and surveillance between governmental and non-governmental organizations in 5 bordered districts in Tak province; it was found that between 2015 and 2018, 23 leprosy cases were found among Myanmar-born populations.

Conclusion: It was suggested that in order to detect new leprosy cases in foreign-born populations along Thai-Myanmar border, it is needed to develop the cooperation between governmental and non-governmental organizations. Non-governmental organizations will be crucial network in organizing leprosy surveillance, prevention, and control system that will enable people affected by leprosy to attend standard treatment which will also help to interrupt leprosy transmission in community.

P-391

THE ROLE OF LEPROSY SUSPICIOUS SYMPTOM MONITORING SYSTEM IN EARLY DETECTION

Presenter: Yunliang Shen

SHEN Yun-liang, FEI Li-juan, WU Li-mei, KONG Wen-ming

Zhejiang Provincial Dermatology of Institution

Objective: To explore the mode for prevention and treatment of leprosy in the low prevalence state.

Method: According to the average delay of new leprosy patients, the rate of grade 2 disability, the misdiagnosis rate, the discoverable way and other indicators before and after operation of leprosy suspicious symptom monitoring system in Zhejiang province, analysis and evaluate the foundation of monitoring system in the early detection of work.

Results: After the operation of the monitoring system, cases which are found and confirmed in comprehensive medical institutions increased (χ^2= 26.13, p＜0.05), the average delay of new leprosy patients shortened from 37.34 months to 17.89 months, Upon examination (p＜0.05), so the difference is statistically significant; the rate of grade 2 disability shortened from 28.38% down to 12.50% (z=-6.44, p＜0.05); The misdiagnosis rate of confirmed cases shortened from 79.73% down to 26.56% (χ^2= 39.21, p＜0.05), the average number of misdiagnosis cut down from 2.6 times to 0.8 times.

Conclusion: The operation of leprosy suspicious symptom monitoring system is conducive to the early detection of cases,and reducing the incidence of disability, which is a new mode for prevention to popularize in the low prevalence state.

P-392

THE EFFECTIVENESS OF LEPROSY NEW CASE DETECTION USING LINE APPLICATION BY VILLAGE HEALTH VOLUNTEERS IN 9TH HEALTH REGION OF THAILAND

Presenter: Nutcha Prompunjai

Nutcha Prompunjai

Raj Pracha Samasai Institute, Department of Disease Control, Tiwanond Road, Muang District, Nonthaburi 11000 Thailand

Objective: This semi-experimental study was conducted to compare the proportion of leprosy suspected cases found by Village Health Volunteers (VHVs) in experimental and control areas.

Method: In experimental area; line application which was able to communicate in the form of message, picture and voice, was used as a tool in communication. The activities consisted of 1) introducing the goal, strategies and guideline to strengthen new case detection from the Department of Disease Control to the Provincial Public Health Office, District Health Office , and Sub-District Health Promotion Hospital (SDHPH) of leprosy prevalent area.

Training on 'Leprosy knowledge and technique to use line application' was organized to enable health officers of SDHPH to instruct their communities about leprosy knowledge and self-examination for skin and nerve damage symptoms. 2) leprosy new case detection was conducted by using line application to take the photo of suspected lesions and send to leprosy expert for primarily diagnosis. 3) monitoring and data feed-back integrated with routine supervision were conducted 3 months after the training. 4) All suspected cases were examined by researchers during Rapid Village Survey (RVS). The subjects were 160 and 150 Village Health Volunteers (VHVs) of experimental and control sub-districts respectively. Data before and after experiment was gathered by using questionnaires regarding knowledge, attitude, case detection behavior, leprosy related lesions, leprosy screening form, and data entry form of Rapid Village Survey (RVS). Frequency, Standard Deviation, Student t-test, Paired Sample t-test and Z-test were used in data analysis.

Results: It was found that after the experiment, the proportion of suspected cases found in the experimental and the control area was 48.57% and 33.33% respectively. The proportion of suspected cases found in the experimental area was greater than that of the control area with statistical significance ($p < 0.001$).

Conclusion: In order to strengthen new case detection under leprosy low situation, the authors suggested people involved to consider using line application in leprosy new case detection that would enhance VHVs' efficiency in performing new case detection activity.

ILC-4: EPIDEMIOLOGY and CONTROL:

4.3 Prevention - Prophylaxis

P-090

EXTENDED LEPROSY POST EXPOSURE PROPHYLAXIS (LPEP) PROGRAM WITH REGULAR LEPROSY CONTROL ACTIVITIES IN GOVERNMENT SETTINGS AT RUPANDHAI DISTRICT OF NEPAL

Presenter: Gopal Hari Pokhrel

Gopal Pokhrel,[1] Raj Kumar Paudel,[1] Santosh Dulal,[1] Tika Ram Adhikari,[2] Sangita Shrestha[3]

[1]The Leprosy Mission Nepal (TLMN), [2]District Public Health Office (DPHO) Rupandehi, Ministry of Health & population (MoH&P), [3]Partnership for New Life (PNL)

Objectives: Chemo prophylaxis in leprosy interrupts the disease transmission to close contacts as report of COLEP study from Bangladesh. Nepal government, MoH&P initiated LPEP for three years from 2015 as a pilot project in Jhapa, Morang & Parsa districts. Government has aimed to extend this program to other high endemic districts with regular leprosy control activities. LPEP program was carried out in Rupandehi district on 2018 by DPHO with technical support of TLM Nepal and PNL. **The objective of this study was to analyze the output of extended LPEP in Rupandehi District.**

Methods: Total 277 (85%) index cases enrolled for LPEP activities from 37 health institutions including urban and rural setting of Rupandehi district out of entire 327 index cases of 73 health institutions since 2016. Two years cumulative cases have to cover as index cases according to LPEP protocol of Nepal. Health workers from each health institutions were trained according to standard national protocol of LPEP implementation. Those trained workers gave orientation to health volunteers in their respective health institutions for screening of closes contacts and medication of single dose Rifampicin (SDR). Team of health workers visited all index cases to screen all close contacts and feed SDR those who were not excluded as per protocol with their verbal consent.

Results: There were 11,282 close contacts of enrolled index cases and around 11% (N=1239) were temporarily inclusion due to absence on visit, pregnancy and < 5 years of age and 3% (N=320) were not eligible for SDR due to exclusion criteria. Leprosy suspected cases were revealed 34 of screened population and 26.5% (N=9) cases were confirmed leprosy among suspected. Female affected by confirmed leprosy were found 67%, children < 15 years 33% and 33% multi bacillary among the new conformed cases. None of the confirmed leprosy cases were categorized with WHO grade 2 disability.

Conclusion: Leprosy detection rates were found considerably high in female and child rate compared to national figures, no grade 2 disability among conformed cases. The limitations of the study are 15% (N=50) of the index cases were left behind and 14% (1239) of the total contacts were temporarily excluded. The study hence suggests that LPEP activities are feasible for regular leprosy control program in prone endemic areas in cooperation with government and local partners. Indeed, total index cases needs to cover and health workers should get encouraged to minimize temporarily exclusion for effective implementation.

P-091

CONTROLLED CLINICAL TRIAL TO EVALUATE THE USE OF RIFAMPICINE IN COMBINATION WITH ANTIBIOTICS FOR POST-EXPOSURE CHEMOPROPHYLAXIS OF LEPROSY

Presenter: Ximena Illarramendi

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Objectives: To evaluate the pharmacokinetics and adverse reactions of the combination of rifampicin and other antibiotics for enhanced post-exposure chemoprophylaxis of leprosy PEP++

Methods: single center randomized phase I/II clinical trial is being conducted in contacts of patients affected by leprosy, funded by the Netherlands Leprosy Relief in collaboration with Fiocruz, Rio de Janeiro. A total of 24 healthy male adult contacts recruited from the contact surveillance programme of the Souza Araújo Outpatient Clinic will be invited to participate and asked for informed consent. The included volunteers will be sequentially assigned into two groups: (a) group 1 will receive single dose of 600mg oral rifampicin, 500 mg oral moxifloxacin and 600mg rifampicin plus moxifloxacin in a two-week interval; and (b) group 2 will receive clarithromycin instead of moxifloxacin. Blood samples will be drawn at different intervals during 24 hours. The primary outcome of this trial is the evaluation of the pharmacokinetics of the antibiotic combination. Secondary outcomes include drug-related side effects and pharmacogenetics evaluation of the association of genetic markers with the therapeutic response.

Results: Acceptance to invitation has been low (35%). Rejection has been mainly due to the volunteers work schedule. Three contacts were excluded due to the use of treatment for chronic diseases. Pharmacokinetics and pharmacogenetics studies are in course and will end in April 2019.

Conclusion: The combination of rifampicin with moxifloxacin or clarithromycin may be useful for post-exposure chemoprophylaxis against *Mycobacterium leprae*. We expect that healthy contacts of leprosy-affected patients present a low incidence of drug-related problems to the antibiotic combination.

P-167

A SINGLE DOSE OF RIFAMPICIN TO PREVENT LEPROSY: EXPLORING TWO CHALLENGES AND SUGGESTING NEXT STEPS

Presenter: Ruth Peters

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Objectives: Two challenges a post-exposure prophylaxis (PEP) program using single dose rifampicin (SDR) may face are incomplete health information that is retained by the contacts and the wish of index cases to conceal the illness. The objective of this presentation is to explore these two challenges in more depth and to discuss recommendations for practice and future research.

Methods: This study is a sub study of the Leprosy Post-Exposure Prophylaxis program. In this paper we report the findings of the qualitative part of the Perception study for which a cross-sectional study design was selected. Seventy-two semi-structured interviews and 5 focus group discussions were conducted after education about

SDR-PEP and SDR-PEP itself were offered to get insights into the perceptions towards leprosy and SDR-PEP in India, Nepal and Indonesia. The study population consisted of i) index patients, ii) contacts, iii) community members and iv) health professionals. The participants were selected purposively. A team of four social scientists analysed the data.

Results: The LPEP program was perceived positively by the participants. Three different ways of remembering or interpreting the information given by the health workers were identified. Some participants said that the 'red pill' will reduce the risk of developing leprosy, others believed that one will not develop leprosy if SDR-PEP is taken, and again others said that if you do not take the medicine you will get leprosy. Almost all index patients in this study had shared the diagnosis with their family, but in all three countries there were index patients who had not shared the diagnosis with potential contacts. Index patients were asked how they feel about disclosing their name. Most said they were okay with this (11 from 18), two had doubts or were not okay with disclosing and in five cases the answer was not clear. Data showed that a wish to conceal was often, but not always a symptom of stigma. Persons who (had previously) disclosed reported a variety of responses e.g., 'support', 'relaxed' response, feeling 'pity' and bullying.

Conclusion: Providing high quality health information and respecting the wish to conceal is important, not only for chemoprophylaxis programmes, but for other leprosy services. Health information should effectively be communicated and more research is needed on how to achieve this. Different approaches in which the identity of the index patient can be protected are currently piloted, but again more research is needed.

P-378

CHEMOPROPHYLAXIS FOR LEPROSY: COMPARING THE EFFECTIVENESS AND FEASIBILITY OF A SKIN CAMP INTERVENTION TO A HEALTH CENTRE-BASED INTERVENTION - THE PEP4LEP PROJECT

Presenter: Liesbeth Mieras

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Objectives: The PEP4LEP project 'Chemoprophylaxis for leprosy: comparing the effectiveness and feasibility of a skin camp intervention to a health centre-based intervention', will perform an implementation trial in Mozambique, Ethiopia and Tanzania. The aim of the trial is to contribute to interrupting the transmission of M. leprae by identifying the most effective and feasible method of screening people at risk of developing leprosy and administering chemoprophylaxis in Ethiopia, Mozambique and Tanzania. The primary objectives are: 1) To compare the effectiveness of a skin camp prophylaxis intervention to a health centre-based prophylaxis intervention in terms of the rate of leprosy patients detected and delay in case detection; 2) To compare the feasibility of the two chemoprophylaxis interventions in terms of cost effectiveness and acceptability.

Both interventions are based on the evidence that contacts of leprosy patients, household contacts as well as neighbours, have a higher risk of developing leprosy, and that single-dose rifampicin (SDR) has been proven to reduce the risk of developing leprosy by around 60% when given to contacts of leprosy patients as post-exposure prophylaxis (PEP).

Methods: The objectives will be achieved using a two-arm, cluster-randomized implementation trial design, comparing two interventions for screening contacts of leprosy patients and distribution SDR-PEP.

One intervention will be community based, using skin camps to screen around 100 contacts of leprosy patients and provide them with SDR-PEP when eligible. The other intervention will be health centre-based, inviting household contacts to be screened and given SDR-PEP when eligible. Both interventions will use a common skin diseases approach; other skin diseases, will also be diagnosed, treated if possible and referred to secondary care takers when needed. In this way, the project will contribute to health system strengthening in the area of diagnosis and treatment of dermatological conditions.

Results: After an implementation duration of three years, the interventions will be compared in terms of effectiveness by looking at the rate of leprosy patients detected and the delay in case detection. The feasibility of the two interventions will be evaluated by assessing the acceptability of the two interventions and by comparing cost-effectiveness.

Conclusion: Upscaling chemoprophylaxis for leprosy will have a major impact because it will contribute to interrupting the transmission of M. leprae. Through this study, the medical intervention of proven efficacy, contact screening and SDR-PEP administration, will be translated into the most feasible routine implementation.

P-396

INVESTIGATION ON AWARENESS RATE OF LEPROSY IN XUNYANG COUNTY

Presenter: Li Youzhi

li youzhi , liang qifeng

Xunyang county center for disease control and prevention in shaanxi province of china, People's Republic of China

Objective: Investigation on awareness rate of leprosy in xunyang county

Method: According to the central subsidies for local health literacy action project of leprosy points project implementation plan for promoting the Shanxi province in 2014 and leprosy control core survey scheme about the knowledge of leprosy requirement, the control core knowledge propaganda and it is carried out that the leprosy investigation from in December 2014 to April 2015. The object of investigation choose one town and one village from the Chengguan town and Shu river town, the number respectively was 100 people. The awareness rate of middle school students were detected by multi-stage sampling method, the student objects was the second grade students from the Xunyang high middle school ,the Chengguan town first junior high school and the Lvhe first junior high school, the number respectively was 50 people. The investigation on the awareness rate of leprosy close contacts the personnel who is mainly have close contact with the patients of present disease in the Shuhe and the Lvhe towns.

Results: There were 200, 200, 150 and 12 people from the four groups of towner, rural residents, middle school students and close contacts. The awareness rates of the four groups were 92.79%, 89.93%, 94.05% and 92.19%, respectively.

Conclusion: The core knowledge of leprosy prevention, control and health education have achieved the expected effect.

P-420

SINGLE DOSE RIFAPENTINE HAVE A GOOD PROTECTIVE EFFECT IN HOUSEHOLD CONTACTS OF LEPROSY PATIENTS IN LOW PREVALENCE AREAS OF LEPROSY IN CHINA

Presenter: Le Wang

Le Wang[1,2,3], Haiqin Jiang[1,2,3], Zhiming Chen[1,2,3], Ying Shi[1,2,3], Wenyue Zhang[1,2,3], Jun Yang[4], Li Xiong[4], Tiejun Shui[4], Jun He[4], Jinlan Li[5], Jie Liu[5], De Wang[5], Yong Ning[6], Yangying Liu [6], Hao Wang[6], Junhua Li[7], Yanfei Kuang[7], Bin Li[7], Jianping Shen[1,2], Liangbin Yan [1,2], Guocheng Zhang[1,2], Meiwen Yu[1,2,3], Hongsheng Wang[1,2,3], Xiangsheng Chen [1,2,3], Baoxi Wang[1,2,3] & Heng Gu[1,2,3].

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Objective: To determine the effectiveness of chemoprophylaxis using a single dose of rifapentine to prevent leprosy in household contacts(HHCs).

Methods: This prospective, community-based interventions, cluster randomised controlled trial had been conducted from 2015 to 2018 in four provinces with relatively high endemic of leprosy in southwest China. HHCs of patients diagnosed leprosy since 2010 were the focused investigated subjects. A single dose of rifapentine or rifampicin was given to HHCs in the trial groups, with follow-up for three years. The number of HHCs developing leprosy was recorded.

Results: 5175 eligible HHCs enrolled in the trail, and 21 new patients with leprosy were found during the follow-up. There were 17 in the control group (incidence rate 2.64 per 1000 person years at risk), 3 in the rifampicin group (0.69 per 1000 person years at risk) and 1 in the rifapentine group (0.31 per 1000 person years at risk). The reduction in incidence in the rifampicin and rifapentine group was 74% and 88%. Meanwhile, there was no severe adverse effect occurred.

Conclusion: A single dose of rifapentine is effective at preventing the development of leprosy in household contacts of leprosy patients in China.

P-421

LPEP: FRIEND OR A FOE?

Presenter: Niraj Parajuli

Parajuli N.
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Abstract:
Leprosy post-exposure prophylaxis is the use of single dose Rifampicin (commonly known as SDR) among the contacts of leprosy patient. It has been advocated for the last few years and is currently being implemented in certain countries including Nepal.

Recently, the project of LPEP has been completed in the three districts of Nepal. The preliminary findings of the pilot study has been quite remarkable.

So what is it?

I would like to break it through different perspective.

Dermatologist's perspective:

The single dose Rifampicin has shown to decrease the incidence of leprosy among the contacts of index case. In this regards, this wonderful single dose regimen would be a life line to bring new cases to the lowest and prevent transmission of the disease. Certainly, it would be beneficial to achieve the vision of leprosy free world.

Patient's perspective:

A single dose will protect them from developing leprosy. So, the contacts will be more than willing to take SDR rather than the disease which has still lot of stigma. Early reports from organizations working in the programs says that it has exceeded their expectation in reaching out to the contacts.

Lastly, from a doctors perspective (not dermatologist)

Physicians would be wary on the use (or rather misuse) of Rifampicin as prophylaxis among the contact in the healthy general population. There is a working definition of contacts which can be slightly modified according to the need of the country.

Debate:

LPEP came into the use more after the famous COLEP study. This study conducted in Bangladesh treated contacts with SDR and followed them upto 6 years. Now this is tried in certain countries of South Asia including Nepal.

This large cohort study was a well conducted study but I had few queries with this study which got reinforced after a viewpoint written by an expert.

There are few points that needs to be discussed in the forum

1) Contact description: I suppose the contact definition should be different even in the same country. A vast difference in rural and a densely populated metropolitan cannot be taken in the same way.

2) Duration of protection: SDR prevents leprosy for just 2 years with no change in later years. We all know the exact incubation period of leprosy is still in debate but ranges from 2- 20 years. So, should we not argue if the protection level is due to natural course of disease or some changes in person's immunity?

I was wondering what should be done in cases of dermatologists working with leprosy patients? Should we not try to find the transmission rates in health professional in institutes dedicated to leprosy (as far as I know from my verbal conversation there are none in Leprosy mission hospital in Nepal).

3) NNT: is it justifiable to use when NNT is almost 300 (exact 297 from COLEP). I strongly think that we should be judicial in use of Rifampicin in developing and under-developed country where tuberculosis(TB) is not just prevalent but rather multidrug- resistant TB is on the rise.

4) Drug: Rifampicin was introduced as a medicine for drug- resistant tuberculosis and introduced in late 50s for tuberculosis along with other drugs. It has been advised not to use the drug singly for long and it should be used in combination to prevent resistance.(This is single dose in many patients in a same setting). Interestingly, the SDR is only protective against single lesion leprosy and paucibacillary leprosy.

5) Anti-microbial resistance: There are not many cases of anti- microbial resistance to MDT till now. Recent data from Nepal shows an AMR of 1 per year over the last 3 years (from the cases referred to the specialized leprosy center). This number is very small but concerns arises if the similar resistance is noted in SDR, which is comparable to a patient taking it on a monthly basis. So considering the same NNT, then we need to be prepared if incase we

see similar number of resistance case to leprosy. Now this may not be much of a problem to me but this would be quite heart wrenching to my pulmonologist and internist colleagues treating tuberculosis.

There is an expert panel report regarding SDR which states the less likelihood of resistance with a single dose. I strongly think further studies should be conducted to verify this statement since we are advocating Rifampicin based on a single study and few ongoing trails.

I would like to share my views and conclude that more judicial approach might be necessary for implementation of SDR in a country especially with high burden of tuberculosis. Worst thing we expect is a rifampicin resistant.

ILC-4: EPIDEMIOLOGY and CONTROL:

4.4 Transmission and Diagnostics

P-011

THE STUDY OF M.LEPRAE SURVIVAL OUTSIDE OF THE HOST ORGANISM IN EXPERIMENT

Presenter: Michael Yushin

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Objectives: Despite the dominant view of M.leprae being the obligant parasite now, exist data published in literature about the possibility of this agent to survive outside of the host organism. The aim of this work was to study the possibility of M.leprae to survive outside of the host organism. It is known, that M.leprae is not cultivated in vitro. One of the methods of detection of viability of M.leprae is the model developed by C.C.Shepard.

Methods: 128 CBA mice were inoculated with suspension of M.leprae into hind footpad: 88 animals were used in experimental groups and 40 – in control. The suspension for inoculation was counting by the method of Shepard and McRae and divided into four parts. One part of suspension was used for inoculation of 40 control animals in the dose $1x10^4$. The second part was used for seeding on Lowenstein-Jensen medium to expel the contamination of suspension by cultivable mycobacteria. The third part of suspension was divided into three parts and kept during 7, 45 and 90 days at +4ºC consequently. After that, the number of M.leprae in suspension was counting again and inoculating by 47 mice. The fourth part of suspension was dried at room temperature during 24 hours in Petri dishes in sterile conditions. After that, biological material was removed from the dish washing down with saline solution. The number of M.leprae was counted and inoculated of 41 mice by method of C.C.Shepard. The animals were decapitated in various periods between 3 and 12 months. The number of M. leprae in the place of inoculation was counted by the method of C.C. Shepard, D.H. Mc.Rae.

Results: It was found that all experimental animals (in 100% of cases) in the place of inoculation showed multiplication of M. leprae. The number of M.leprae in footpads of mice after 8-12 months of experiment increased by 2-4 orders of magnitude, both in experimental and control groups. When seeding the medium Lowenstein-Jensen medium, growth of mycobacteria not identified.

Conclusion: Results show that M.leprae are possible to survive in environment outside of the host organism. The described property of M.leprae to keep viability after drying suggests the possibility of the existence of leprosy not only airborne, but also air-dust pathways of infection.

P-066

EVALUATION OF VARIOUS CYTOKINES RESPONSE AGAINST MYCOBACTERIUM AS NEW BIOMARKERS FOR LEPROSY

Presenter: Yuangang You

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Objective: We investigated the accuracy of host markers detected in *Mycobacterium leprae(M. leprae)*antigen-stimulated peripheral blood mononuclear cells (PBMCs) culture supernatant in the diagnosis of leprosy.

Method: A total of 76 subjects including patients with paucibacillary (PB) leprosy (n=17), multibacillary (MB) leprosy (n=19), healthy household contacts (HHC) (n=20)andendemic healthy controls (EC) (n=20) were enrolled to investigate the cytokine production profile by PBMCs after M. leprae stimulation evaluated by a beads-based multiplex assay system.

Results: In the 17 cytokines we evaluated, IL-4, IL-6, MCP-1, MIP-1β, G-CSF, GM-CSF, IFN-γ and TNF-α were identified as having significantly higher expression in MB patients compared to EC, and the level of TNF-α was significantly higher in MB patients compared to PB patients.The production of IL-6 and MCP-1 induced by M. leprae was significantly increased in PB patients compared to EC. The combination of IL-6 and MCP-1 accurately identified 88.2% of PB patients and 95.0% of healthy control.The M. leprae-stimulated TNF-α was the strongest discriminator between MB patients and healthy control with an AUC of 0.974. However, none of these biomarkers tested could discriminate PB patients from HHC, which suggest that antigen-specific responses of HHC are similar to PB patients.

Conclusion: Multiple cytokinesin response to M. lepraewere found in PB and MB patients. MCP-1 combined IL-6 has the potential to discriminate PB patients from EC, while TNF-α may serve as an indicator to distinguish MB patients from EC. Our findings may help to develop a diagnostic test for the early detection of leprosy.

P-107

CLINICAL CHARACTERISTICS LEPROSY CASES IN DEFINED RURAL AND URBAN AREA

Presenter: Yuli Arisanti

Yuli Arisanti, Ratna Tanjung[1]

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Objective: Leprosy has been a major public-health problem in many developing countries for centuries. According to WHO, Indonesia is one of high contributor to leprosy cases in the world after India and Brazil in 2014. Maluku, Maluku utara, Papua and West Papua provinces were declared as high endemic areas for leprosy. The prevalence of leprosy in Papua is 4.06 and West Papua 11.48 per 10,000 population. Each of province has rural and urban areas. This study aimed to find out the clinical characteristics of leprosy cases in the community and their differences in the two communities.

Methods: The population survey conducted from May 2017 to September 2018 and the defined rural areas, which included Teluk Bintuni, Raja Ampat, Morotai and Halmahera Barat and urban areas, which included Jayapura, Sorong and Manokwari. Survey we do by active case finding which is we go house to house survey. These was descriptive and cross-sectional study.

Results: We found 114 and 157 cases of leprosy in the rural and urban region, and child leprosy cases in rural 28, in urban 40. Most of the cases were multibacillary (82%). Smear positive with Bacteriology index of 1+ to 4+. Overall, we found some disabilities in hand and one disability in eyes.

Conclusion: The clinical characteristics of leprosy cases the community evidently indicate differential problem of community, recent active transmission, and highlight implications on individual patients and the community.

P-108

PROFILE OF ANTIBODY ANTI PHENOLIC GLYCOLIPID-1 (PGL-1) AND LEPROSY IDRI DIAGNOSTIC-1 NATURAL DISACCHARIDE OCTYL (LID1-NDO) IN ENDEMIC REGION EAST JAVA INDONESIA

Presenter: Iswahyudi Iswahyudi

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Objectives: Serological tests can important tools to assist in the diagnosis and can contribute to an earlier diagnosis of leprosy and have been used to assist leprosy disease management. The aim of this study was to Profile the antibody responses against phenolic glycolipid-1 (PGL-1), Leprosy IDRI Diagnostic-1 Natural Disaccharide Octyl (LID1-NDO) in leprosy patients, and household contacts of patients.

Methods: Sera sample from leprosy endemic region East Java (MB : 40, PB : 13, HHC : 40) and tested against IgM, IgG anti PGL-1 and LID1-NDO using the Enzyme-linked immunosorbent assays technique. The result of anti PGL-1 is stated in u/ml and in optical density (OD) for anti LID1-NDO.

Results: Seropositive Class IgM Anti-PGL-1 tests were more frequently positive than IgM anti LID1-NDO among MB (75 % : 70 %), PB (61,54% : 46,15%) and household contacts (37,5% : 15%). Class IgG anti LID1-NDO more frequently positive than IgG anti PGL-1 among MB (82,5%:17,5%), PB (69,23% : 15,38%) and household contacts (15% : 2,5%). Statistical analysis between LID1-NDO and PGL-1 (IgM, IgG) from PB, MB patient and Household contact is all significant correlation (p=0,000)

Conclusion: LID1-NDO is potential to be used in serological tests for leprosy diagnosis and monitoring, as it performs to a similar manner to PGL-1. Our data indicate that anti LID1–NDO responses were more effective for detected IgG and anti PGL-1 more effective for detected class IgM antibody.

P-128

PILOT STUDY TO ASSESS THE ACCURACY AND PRECISION OF PHENOLIC GLYCOLIPID-I OF *MYCOBACTERIUM LEPRAE* TEST KIT IN DIAGNOSING NEW LEPROSY CASES AMONG PATIENTS AT JOSE R. REYES MEMORIAL MEDICAL CENTER

Presenter: Matilde Krisha Montenegro

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Objectives: The study aims to assess the accuracy and precision of phenolic glycolipid-I antigen test or rapid test kit for *Mycobacterium leprae* in diagnosing new leprosy cases at the infectious disease unit of Jose R. Reyes

Memorial Medical Center Department of Dermatology and to identify the possible significant predictors that may affect the result of the test such as participant's age, gender, level of bacillary index at the time of diagnosis, leprosy spectrum as determined by histopathology results and treatment with multi-drug therapy (MDT) either paucibacillary or multibacillary.

Methods: The study was implemented using an analytical cross-sectional study design. New leprosy patients were recruited per day in a period of 3 months through convenience sampling design. Subject's serum was tested for the presence or absence of antibodies to phenolic glycolipid-I of *Mycobacterium leprae* using the rapid test for leprosy. Results were interpreted after ten minutes by visual inspection for staining of the antigen line. Visual readings on three ML ICA flow test kits per serum sample obtained were performed based on the recommended value assigned by subjective readings of 2 independent readers. Standard diagnostic tests such as acid fast smear (AFS) and skin punch biopsy were likewise done to all study participants.

Results: A total of 46 newly diagnosed leprosy patients were recruited as study participants. The study concludes that there is a significant linear relationship between the two sets of variables, (sex and leprosy spectrum) and (bacillary index and leprosy spectrum). ML-ICA flow test kit and independent readers are not a significant predictor of readings and that the only significant predictor of readings is leprosy spectrum.

Conclusion: The ML ICA flow test kit is both an accurate and precise screening diagnostic tool to rapidly identify cases of leprosy, most especially if there is a high index of clinical suspicion. Although the diagnosis of leprosy is still mainly based on clinical, bacteriological and histopathological examinations, considering the accuracy and precision of ML ICA flow test kit, it could be useful in geographically-challenged communities where most healthcare workers are not trained to detect leprosy. Additionally, of all the predictors analyzed in the study, only leprosy spectrum is significantly correlated with the results of the test kit.

P-130

MINIMUM REQUIREMENTS AND OPTIMAL TESTING STRATEGIES OF A DIAGNOSTIC TEST FOR LEPROSY AS A TOOL TOWARDS ZERO TRANSMISSION: A MODELING STUDY

Presenter: David Blok

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Objectives: The availability of a diagnostic test to detect subclinical leprosy cases is crucial to interrupt the transmission of *M. leprae*. In this study we assessed the minimum sensitivity level of such a (hypothetical) diagnostic test and the optimal testing strategy in order to effectively reduce the new case detection rate (NCDR) of leprosy.

Methods: We used the individual-based model SIMCOLEP, and based it on previous quantification using COLEP data, a cohort study of leprosy cases in Bangladesh. The baseline consisted of treatment with Multidrug therapy of clinically diagnosed leprosy cases, passive case detection and household contact tracing. We examined the use of a leprosy diagnostic test for subclinical leprosy in four strategies: testing in 1) household contacts, 2) household contacts with a 3-year follow-up, 3) a population survey with coverage 50%, and 4) a population survey (100%). For each strategy, we varied the test sensitivity between 50% and 100%. All analyses were conducted for a high, medium, and low (i.e. 25, 5 and 1 per 100,000) endemic setting over a period of 50 years.

Results: In all strategies, the use of a diagnostic test further reduces the NCDR of leprosy compared to the no test strategy. A substantial reduction could already be achieved at a test sensitivity as low as 50%. In a high endemic setting, a NCDR of 10 per 100,000 could be reached within 8±10 years in household contact testing, and 2±6 years

in a population testing. Testing in a population survey could also yield the highest number of prevented new cases, but requires a large number needed to test and treat. In contrast, household contact testing has a smaller impact on the NCDR but requires a substantially lower number needed to test and treat.

Conclusion: A diagnostic test for subclinical leprosy with a sensitivity of at least 50% could substantially reduce *M. leprae* transmission. To effectively reduce NCDR in the short run, a population survey is preferred over household contact tracing. However, this is only favorable in high endemic settings.

P-184

TRANSMISSION OF LEPROSY WITHIN HOUSEHOLDS: A 20 YEAR RETROSPECTIVE COMMUNITY DATA ANALYSIS.

Presenter: Ilse Horo

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Objectives: The main objective of the study was to decipher trends and patterns of transmission among household contacts of leprosy patients from the data procured at the community Health Department of Schieffelin Institute of Health, Research and Leprosy Centre, Vellore, from the year 1997-2017.

Methods: A 20 year retrospective data was collected from the computerized Known case Register which was established at this centre as early as 1964, wherein every known case of leprosy and contacts developing leprosy were systematically entered after due verification of the socio demographic and geographic details. The leprosy cases in the data server are representation of community; especially four block i.e. Katpadi, Pernambet, KV Kuppam and Gudiyatham. SPSS version 17 was used to analyze the data. Frequencies of each of these variables were determined using this software and cross tabs tables between Index cases and their CDL were tabulated within each of the variable to identify significance of these variables. Chi square tests were performed and p value was calculated.

Results: 67.2% of female contacts and 64.4% of male contacts got the disease from male index cases. The Chi square of 0.131 and the associated probability of 0.717, which is not significant, indicate that the transmission from index cases to contacts is not sex selective. It was interesting to find that 33.3% of the child contact cases had child contact cases. Large percentages of others had an adult contact cases. The chi square of 3.619 and p of 0.57 shows that the association attains 'near' significance but not absolute statistical significance. The Chi Square of 17.235 and p of 0.0074 indicates that there is an association between the BI of Index cases and BI of the Contacts developed leprosy. There is significant association between sex of the index case and the type of contact (Chi Square = 5.348 and p= 0.021). Genetic contact is significantly associated with male index cases and non-genetic contacts are associated with female index cases.

Conclusion: This pattern of prevalence would suggest that leprosy transmission is a function of opportunities for exposure as much as genetically determined susceptibility. It is imperative that, contact surveys and early diagnosis needs to be a priority even in low endemic areas.

P-195

DOES THE PRESENCE OF *MYCOBACTERIUM LEPRAE* IN A TROPICAL ENVIRONMENT MATCH ANIMAL RESERVOIR DISTRIBUTION?

Presenter: Roxane Schaub

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Objectives: Despite the specific dynamics of leprosy transmission remaining unclear, there is increasing evidence for the presence of viable human strains of *Mycobacterium leprae* in the environment of endemic regions, particularly in soil and water. Since the bacteria is hosted by nine-banded armadillos (*Dasypus novemcinctus*), we tested if *M. leprae* DNA could be detected in armadillo burrows. The aim is to characterize potential new sources of human infections, which would further our understanding of leprosy patterns and its transmission in natural settings.

Methods: Based on a survey of armadillo populations and burrow census carried out in 2 protected tropical forest areas in French Guiana, Réserve Naturelle Régionale Trésor (RNRT) and the Bagne des Annamites (BDA), a layer of sediment (0-1 cm depth) was collected at the entrance of each armadillo burrow in 30 mL tubes and stored in ice during transportation to the laboratory. Samples were kept at 4°C until DNA extraction (performed within 48 h). The RLEP gene region of *M. leprae* was targeted by a Taqman qPCR assay.

Results: A total of 50 samples were collected in armadillo burrows in RNRT and in BDA. Further armadillo burrow soil samples are due to be collected in other locations in French Guiana and analyzed. The prevalence and distribution of *M. leprae* will be presented across the 2 protected tropical forest areas and cross analyzed with armadillo population density data. qPCRs analyses are ongoing.

Conclusion: This is the first study exploring *M. leprae* presence in an animal reservoir's microhabitat (i.e. burrows). In the future, these finding should facilitate surveys of *M. leprae* in tropical areas which are inherently difficult to access, as sediment sampling would represent a more cost-effective measure of *M. leprae* endemic habitat whilst remaining a robust indirect evaluation of the animal reservoir contribution. However, significance *of M. leprae* strain viability in the environment and their pathogenicity with respect to transmission would need to be further explored.

P-233

NUTRITIONAL STATUS OF LEPROSY AFFECTED CHILDREN

Presenter: Sitala Devi Sharma

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Objectives:
-To assess the nutritional status of leprosy–affected children.
-To assess the level of knowledge about nutrition.

Methods: A cross-sectional epidemiological study will be carried out at Lalgadh Leprosy Hospital and Services Centre, a leprosy referral centre for Nepal. All new leprosy cases under 15 years of age who report at LLHSC

between January and June 2019, age and gender matched control group with other dermatological complications (e.g.: Fungal infections and scabies) and normal children who come with their parents will be enrolled in the study. A predetermined questionnaire will be used to record various factors to assess their health status, daily income, sources of food, clothes, water, place of sleeping and toilet, educational status, immunization status, bad habits, psychological problems etc. Blood will also be taken for hemoglobin estimation by the cyanmethemoglobin method. The body mass index (BMI) will be the main parameter to use in this study to decide chronic nutritional deficiency of the children (Stommel and Schoenborn 2009). The BMI will be calculated using the formula: 2 BMI = Weight (kg) / Height (mtr). Anthropometric measurements (weight and height) and MUAC will be taken to assess malnutrition among children. Stool will be collected from the participants to look for parasites and eggs.

Results: The results of the study will be available after the completion of the study and will be presented at the International Leprosy Congress in Manila.

Conclusion: The findings of the study will elucidate the association if any between poverty-related dietary intake and leprosy among children less than 15 years of age. This is done by determining the interaction between demographic, socioeconomic, and diet-related factors of poverty on several nutritional indicators, which encompasses children with leprosy and healthy controls in the Nepali population. The findings of the study will help the Government of Nepal and LLHSC to develop new strategies in the prevention, control and elimination of leprosy among children.

P-235

FOCAL TRANSMISSION OF *MYCOBACTERIUM LEPRAE* INFECTION IN LEPROSY FAMILIES OF ENDEMIC REGION IN INDIA

Presenter: Ravindra Purushottam Turankar

R.P. Turankar[1], V. Singh[1], V. K. Pathak[1], M. Ahuja[1], I. Singh[1], M. Lavania[1], J. Darlong[2], S. Kumar[3] and U. Sengupta[1].

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Objectives: Leprosy is a chronic infectious disease caused by the intracellular parasite, *Mycobacterium leprae*. Various mechanisms of transmission have been suggested for leprosy. The transmission of leprosy occurs by contact between leprosy cases and healthy persons especially in the household situations. Presence of *M. leprae* in nose indicating its nasal carriage and environmental sources have been proposed for disease transmission by several workers. The objective of the present study was to find out the focal transmission of viable *M. leprae* from clinical and environmental sources to healthy individuals in household environment.

Methods: Informed consents were obtained from 100 leprosy patients and their 293 household contacts (HCs). The samples such as slit skin smears (SSS), nasal swabs and saliva were collected from patients and their household contacts residing in villages of Purulia (West Bengal) and Champa (Chattisgarh). In addition, environmental (soil and water) samples were also collected from the residing areas of the community. PGL-1 antibody levels in saliva from cases and HCs were determined by ND-O-HSA ELISA. PCR and Real time PCR were performed in SSSs, nasal swabs and environmental samples followed by genotyping of *M. leprae* to trace the transmission link in leprosy

Results: Real time *16S rRNA* PCR positivity was noted in 74% SSSs of leprosy patients and 10% of HCs. It was further noted that RT-PCR with *16S rRNA* gene positivity was 19% in soil as compared to 12% of water samples. Follow-up of the HCs in leprosy families in these endemic regions showed development of disease in HCs within a duration of 3 months to 5 years. Further, genotyping of *M. leprae* showed that SNP type 1 of *M. leprae* is circulating in the endemic region with majority being SNP subtype 1D.

ELISA using antibody responses to ND-O-BSA showed high levels of antibody in cases, HCs and non-contacts of endemic region indicating that all subjects were exposed to *M. leprae* infection.

Conclusion: This strongly indicates that viable *M. leprae* from patients and environmental sources might be playing as a source of infection to HCs who were also positive for viable *M. leprae* in their nose.

P-240

SOCIAL AND ENVIRONMENTAL CONDITIONS RELATED TO *M. LEPRAE* INFECTION AMONG CHILDREN AND ADOLESCENTS IN COLOMBIA

Presenter: Malcolm Duthie

Héctor Serrano-Coll[1], Hugo Rene Mora[1], Juan Camilo Beltrán[1], Malcolm S. Duthie[2], and Nora Cardona-Castro[1]

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Objectives: Leprosy is is still considered a public health issue and in Colombia 7-10% of new cases are found in children, indicating both active transmission and social inequality. We hypothesized that seropositivite titers of anti-Natural Octyl Disaccharide-Leprosy IDRI Diagnostic (NDO-LID) (a combination of *Mycobacterium leprae* antigens) would demonstrate relationships with social and environmental aspects, and that these would be associated with a higher frequency of *M. leprae* infection among children and adolescents in Colombia.

Methods: An observational cross-sectional study was conducted with a sample frame of 82 children and adolescents (younger than 18 years of age) who had household contact with leprosy patients diagnosed in the last 5 years. Data were analyzed through bivariate analysis made by applying a Pearson x^2 test for qualitative variables, and quantitative variables were analyzed using a student t-test or Mann-Whitney U test, depending on the distribution of these variables. Multivariate analysis was performed using a multiple regression and multinomial logistic approach.

Results: A bivariate analysis demonstrated that antibody titers against NDO-LID differed significantly in children and adolescents with a low socioeconomic status that had: 1. lived in vulnerable areas of the Uraba Antioquia-Choco shared region; 2. eaten armadillo meat; 3. extended exposure of over 10 years to a leprosy case and; 4. not received BCG immunoprophylaxis. In support, a multivariate analysis also showed that residing in the Uraba region, having prolonged exposure to a leprosy patient and a history of armadillo meat consumption are social and environmental aspects that exhibit strong association with a higher frequency of *M. leprae* infection.

Conclusion: *M. leprae* transmission persists among young Colombians, and this is associated with social and environmental conditions. An intensification of efforts to identify new leprosy cases in vulnerable and forgotten populations where *M. leprae* transmission continues therefore appears necessary.

P-243

COMBINATION OF DERMATONEUROLOGICAL AND BLOOD PARAMETERS TO OPTIMIZE LEPROSY DIAGNOSIS BY ARTIFICIAL INTELLIGENCE

Presenter: Marcio Souza

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Introduction: Leprosy is an infectious disease caused by *Mycobacterium leprae* and approximately 200,000 new cases are registered each year around the world. Brazil is one of the countries most affected by the disease and Governador Valadares-MG has been presenting high detection of new cases over the years, making it an ideal place to study epidemiological interactions and determine clinical standards for the diagnosis of this disease. Since the diagnosis remains based on the observation of clinically relevant manifestations, it becomes necessary to seek new forms of diagnosis that may assist the professional. In this sense, the construction of a diagnostic support method through artificial intelligence aims to include a greater number of variables in the study, making it more robust in order to avoid misdiagnosis by less experienced clinicians.

Objectives: To develop a computer system with greater precision in supporting the diagnosis of leprosy; to contribute to the improvement of the public health service in the city of Governador Valadares-MG, Brazil.

Methods: Dermatoneurological exam and blood collection were realized from all participants (124 healthy and 63 sick patients) to model the diagnosis of leprosy through *Random Forest* algorithm. The physicians of the research team evaluated the thermal, tactile and painful sensitivity of each patient suspected of being infected. In addition, they minutely recorded the number and type of blemishes, papules and lesions of each patient. The typical results of a whole blood test were performed by an impartial and independent laboratory. A pre-processing of the collected data was performed in order to remove outliers and make imputations of missing values. All the modeling and data treatment was realized using R software, version 3.5.2.

Results: The final binary (sick/healthy) *Random Forest* classification model, using 10,000 trees, presented OOB (*Out Of Bag*) estimate of error rate median equal to 10.7% (lower: 8.7%; higher: 20.1%), with sensibility equals to 82.5% and specificity equals to 92.7%. The presence or absence of hypochromic areas, as well as spots, were the most important variables of the model, totaling 46.9% of fit of the model. Variables related to red blood cells and platelets add, together, a further 23.1% to this fit.

Conclusion: Advanced programming methods can, and should, build heavily towards the eradication of leprosy. Such methods have low cost and are perfectly reproducible even on mobile devices.

P-250

ACTIVE SCREENING OF ASYMPTOMATIC HOUSEHOLD CONTACTS OF NEWLY DIAGNOSED LEPROSY PATIENTS BY A NOVEL *MYCOBACTERIUM LEPRAE* MARKER- A CLINICO-LABORATORY STUDY.

Presenter: Christiana Immanuel

Christiana Immanuel[1], Sushma Tatipally[1], Michael Sukumar[1], Ramanuja Chary[1], Aparna Srikantam[1]

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Objective: To screen healthy house hold contacts of newly diagnosed leprosy patients in an endemic village in India by nasal swab PCR.

Methods: All residents (n= 1914) of a difficult to reach village on Telangana and Maharashtra state border, India were actively screened through house to house survey for clinical signs of leprosy. 31 cases (PB-23; MB-8) were newly diagnosed and put on MDT. Nasal swabs were collected from 114 healthy house hold contacts (who were clinically confirmed asymptomatic for leprosy) of the 31 index cases. DNA was extracted by standard protocols and PCR was performed for the amplification of a specific 372 bp LS22 DNA fragment for the detection of *M.leprae*.

Results: 31 (1.6%) out of 1914 residents were found to be new leprosy cases. Of the 114 asymptomatic household contacts screened, 54 (47.3%) were positive for nasal swab PCR.44 /93 (47.3%) of PB contacts and 10/21(47.6%) of MB contacts were positive. The PCR results indicate the presence of *M. leprae* in the nasal cavity of healthy house hold contacts of both PB and MB cases. All the nasal swab positive contacts are being followed up for subsequent clinical signs of leprosy if any.

Conclusion: About half of the house hold contacts screened demonstrated the presence of *M. leprae* DNA. It is interesting to find *M. leprae* positive nasal swabs of household contacts of PB patients are almost equal to that of MB contacts. *M. leprae* LS22 seems to be a promising marker for PCR based test. LS22 PCR using nasal swab as source of DNA could be possibly developed as a molecular test for identifying high risk household contacts of leprosy patients.

P-279

STUDY OF FINGER PRINT PATTERNS IN LEPROSY

Presenter: Abdul Samid Al-Kubati

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Introduction and Objectives: Dermatoglyphic is the study of epidermal ridge configuration on finger tips, palms and soles. Leprosy is an infectious disease due to Mycobacterium Leprae. Few report of dermatoglyphic patterns studies in patients with leprosy have shown that fingerprint patterns were also affected in leprosy. The aim of this study is to identify the effect role of leprosy on fingerprint patters and to determine whether the fingerprint patterns have future role in identifying persons at risk of leprosy for preventive measurements.

Methods: A prospective case control study on 50 patients complaining from leprosy and 50 control group was conducted within 11 months period in order to study the patient fingerprint patterns.

Results: In this study, male (74%) consisted high rate than female (26%) and majority of patients at age group ≥ 54 years old. The whorls and loop patterns were high in control group than cases with 36.3% and 48.9% respectively, while arch pattern was high in case group than control with 29.6% in case group. Arch patterns were high in little, ring and thumb fingers, while loop patterns were high in ring, index and thumb fingers than control one.

Conclusion: The findings of this study showed that loop patterns were affected by leprosy with decrease in whorl patterns in those patients, there was an increase in the arch patterns of individuals with leprosy and this was highly significant when compared to the control group in which the whorls pattern was higher, the dermatoglyphic future of this study may be used as suggestive diagnostic tool to identify the patients with leprosy and to find out persons who are at possible risk for future infection with leprosy by study the patterns of finger print.

P-327

MINIMALLY INVASIVE SAMPLING FOR LEPROMATOUS LEPROSY

Presenter: Sofie Braet

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Objectives: Current WHO guidelines for the diagnosis of leprosy rely entirely on clinical findings, without microbiological confirmation. Since the decrease in the burden of the disease in the last century, clinicians lost their acumen in recognizing leprosy. This leads to under recognition of leprosy and diagnostic insecurity, resulting in greater need for laboratory confirmation. The most often used laboratory confirmations are slit skin smears and skin biopsies, which are both invasive. The Comlep study (R2Stop funded) is a cross-sectional cohort study conducted in the Comoros on the hyperendemic island of Anjouan. In this study, both invasive and minimally invasive sampling are performed.

Methods: From July 2017 until January 2018, 302 leprosy patients provided informed consent for sampling (nasal swab, fingerstick blood, skin biopsy). The skin biopsy suspensions and the nasal swabs were treated with an inhouse lysis buffer followed by DNA extraction using the Maxwell 16 FFPE Tissue LEV DNA Purification Kit. Bacterial load determination was done with the RLEP qPCR. IgM antibodies against PGL-I were detected in fingerstick blood using an IgM-specific quantitative lateral flow assay based on upconverting phosphor technology (UCP-LFA). BI was determined by Ziehl-Neelsen staining of SSSs.

Results: For 138/145 MB and 114/157 PB patients sampling was complete (due to either a single lesion in the face or selective refusal). At the moment of sampling 203 leprosy patients started/completed treatment and 49 of the patients were untreated. The untreated group has higher values than the treated group for both the anti-PGL-I test and the amount of bacilli in the biopsy, however the differences were not significant. All negative controls (sampling and extraction) tested RLEP qPCR negative. Out of the 252 skin biopsies, 189 (75.0%) were positive for *M. leprae* with the RLEP qPCR (111/138 MB samples (80.5%), 78/114 PB samples (68.4%)). For 161/252 (63.5%) fingerstick blood samples tested positive for anti-PGL-I (100/138 MB samples and 61/114 PB samples (53.5%)). For the BI-negative MB patients 40 out of 70 (57.1%) tested anti-PGL-I positive. Of the 58 BI-positive MB patients, all but two tested positive for anti-PGL-I (96.5%), and 36 had *M. leprae* DNA in nasal swab, of whom 34 had a clinical presentation at the lepromatous spectrum.

Conclusion: Improved approaches for microbiological confirmation of *M. leprae* with less invasive sampling are desired. Patients with a positive nasal swab as well as anti-PGL-I antibodies tend to suffer from lepromatous leprosy.

P-337

COHORT STUDY OF LEPROSY PATIENTS AND THEIR HOUSEHOLD CONTACTS FOR THEIR ASSOCIATION WITH INTESTINAL PARASITE INFECTION IN ENDEMIC REGION OF PURULIA (WEST BENGAL) AND CHAMPA (CHHATTISGARH).

Presenter: Utpal Sengupta

R.P. Turankar[1], V. Singh[1], V. K. Pathak[1], M. Ahuja[1], I. Singh[1], M. Lavania[1], J. Darlong[2], S. Kumar[3] and U. Sengupta[1].
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Objective: Leprosy transmission is still continuing and is maintaining a steady prevalence rate (<1/10,000) in most of the developing countries. India accounts for 63% of total leprosy cases reported worldwide. Intestinal

parasitic infection is one of the major health problems in all the developing countries. Helminthic infection has been claimed to play a role in the development or susceptibility towards leprosy. The present study was conducted to find out whether the presence of helminthic parasite makes individuals susceptible to leprosy in an endemic population

Methods: A total of 369 stools samples were collected from 96 patients and 273 household contacts from endemic villages of Purulia and Champa. The samples were screened for the presence of intestinal parasites as per standard parasitological simple direct saline mount and floatation method.

Results: Intestinal parasites were detected in 107 (35%) stool samples, out of which 35 (37%) were from leprosy patients and 72(26%) were from household contacts. The presence of intestinal helminths was more prevalent among leprosy patients when compared to household contacts. However, a two-tailed P value of 0.1276 was not found to be statistically significant. Further, household contacts were followed up at 6 months' intervals for the development of sign and symptoms of leprosy upto 4 years. It was noted that 30 contacts developed leprosy disease but out of these only three contacts had helminthic parasite infection earlier.

Conclusion: Study indicates that intestinal parasite infection has no role to play for the development of leprosy.

P-345

COMPARISON OF MICROBIOLOGICAL DIAGNOSIS OF MULTIBACILLARY LEPROSY BETWEEN TWO METHODS: SLIT SKIN SMEAR AND NASAL BLOW

Presenter: Nurul Laili Nahlia

Nurul Laili Nahlia[1], Dhelya Widasmara[1], Santosa Basuki[1]

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Objectives: Most people (95%) are immune against *Mycobacterium leprae* infection, while the rest 5% could be infected. From those infected, about 30% are getting sick. The bacilli are transmitted via respiratory route through speak, cough, and sneeze. Individuals who are in close association with leprosy patients, particularly their household contacts, have a greater chance of acquiring the infection. Hence, it is very important to evaluate active transmission in leprosy patient. Morphologically intact bacilli on nasal mucous showed true index of infectivity and they are said to be not infectious when *M. leprae* undetected. Nasal blow is a comfortable way to obtain the nasal specimen, and staining with Ziehl-Neelsen method is much easy and cost-effective.

Methods: We evaluate the results of nasal blow obtained from a father and his first son who's diagnosed with multibacillary leprosy. The father had a history of leprosy medication for the last 25 years. Nasal secrets was blown onto a plastic wrap and then placed on a glass slide using cotton-wool swab which has slightly moistened with normal saline and held by forceps. The samples were fixated and clearly labelled before then placed carefully in slide boxes for transport to the laboratory. All samples were subsequently stained with acid-fast staining.

Results: Microscopic examination of the nasal specimen showed bacterial index (BI) of +2 and morphological index (MI) of 100% in the father, while BI of +1 and MI 100% from slit skin smear. In addition, microscopic examination of slit skin smear and nasal specimen showed BI of +1 and MI 100% in the son. They were given multidrug therapy (MDT) of multibacillary leprosy. Three months after starting therapy, no acid-fast bacilli found in the nasal specimen, while slit skin smear examination showed BI of +1 and MI 0% in both patients.

Conclusions: Bacterial index of the nasal blow was comparable with those collected from slit skin smear. The presence of acid-fast bacilli in the nasal specimen indicates that there were any active transmissions between household contacts, and MDT could stop it. In summary, examination of a nasal blow is beneficial to determine the

active transmission of *M. leprae* between household contacts in an easy and cost-effective way and could be used as a tool for community screening and case finding.

P-357

COMPARING LEPROSY RAPID TEST KIT RESULT WITH ELISA ANTI PGL-1 AMONG HOUSEHOLD CONTACTS OF LEPROSY PATIENTS IN DISTRICTS OF PASURUAN, EAST JAVA – INDONESIA

Presenter: Prita Prametya Kirana

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Objectives: The Post Exposure Prophylaxis ++ (PEP ++) is a project funded by Netherland Leprosy Relief (NLR) in collaboration with the Health Ministry of Indonesia (Kemenkes) with the general objective of stopping the transmission of leprosy in Indonesia by screening household contacts for leprosy. This acts as a preventative measure to decrease the number of new leprosy cases not only in Indonesia but also on a global scale. This report compares the result of IDRI Kit reading against the conventional method of ELISA anti PGL-1 for early detection of leprosy in household contacts of leprosy patients.

Methods: 413 blood samples were collected from the household contacts of 20 leprosy patients registered by the local health authorities from 4 different districts (kecamatan) in Pasuruan, East Java-Indonesia. The samples were collected in May 2017 and were taken to the Leprosy Laboratory of Institute of Tropical Diseases at Airlangga University, Surabaya in June 2017. These samples were then tested for positivity using two parameters; IDRI Kit reading result and concentrations of PGL-1 detected by ELISA reader in u/mL. The seropositivity rates of each parameter were then compared and analyzed.

Results: Out of 413 samples, 398 samples underwent serological testing against the two parameters as mentioned in the research method. The overall seropositivity rate against PGL-1 is 34.6%. The overall positive readings of IDRI kit varied from 21 positive results when examined without instruments, to 29 positive results when read using immunochromatographer. Only three positive IDRI Kit readings were found among the group of household contacts with both IgG and IgM titer against PGL-1 above the cutoff (n = 22, cut off = 260 u/mL for IgG; 245 u/mL for IgM), one of which shows consistent positive result of all parameters (IDRI Kit reading with and without instrument, IgG and IgM titer against PGL-1).

Conclusion: The use of an immunochromatographer increases the accuracy of the IDRI Kit result although this might be an issue of convenience as the rapid test kit aims to simplify the screening process of sublinical leprosy cases.

P-363

HOUSEHOLD CONTACT SURVEILLANCE: LOW RISK FOR NEWCOMERS TO HOUSEHOLD.

Presenter: Abu Sufian Chowdhury

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Objectives: As part of a larger study of household contact examinations, we assessed risk to people who came to live in leprosy-affected households after diagnosis and treatment of the index case (newcomers).

Methods: With their informed consent, we extracted data from clinic record cards of index cases which pertained to household contact examinations performed during routine surveillance period (RSP). In a cross-sectional survey, each household was revisited once at some time after the RSP (up to 21 years after index case diagnosis). Lists of household members were updated and all HHCs who consented were re-examined.

Results: We enrolled 9538 index cases and, at the time of their diagnoses, there were 38762 Household Contacts (HHCs) enumerated. At a later review of the households, we found that 8460 individuals had joined since diagnosis of index case (mean of 0.89/household). Amongst them a high proportion (66.74%) were babies born into the household. Most of these newcomers were examined and found healthy. Only 13 individuals were diagnosed as new cases of leprosy (0.15%). All were PB cases without disability at diagnosis. Amongst these,10 were diagnosed with short detection delay (<12months) more than 10 years after index case diagnosis. We note that 10/13 were blood relatives of the index case.

Conclusion: The risk of developing leprosy is low for incomers joining leprosy-affected households after diagnosis and treatment of the index case. It is likely those who became cases were infected by someone else, possibly from outside the household.

P-404

IMMUNOLOGICALLY CONFIRM THE DAPSONE HYPERSENSITIVITY SYNDROME BY IN VIVO AND IN VITRO TESTS

Presenter: Lele Sun

Lele Sun[1], Hong Liu[1], Furen Zhang[1]

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Objectives: The aim of the study was to prove whether in vivo and in vitro tests are promising for the diagnosis of dapsone hypersensitivity syndrome (DHS).

Methods: 16 patients with DHS and 6 healthy controls were recruited. In vivo patch testing was performed with dapsone at a range of concentrations and read at 48 hours and 72 hours. Kinetics of multiple cytokines in supernatant of peripheral blood mononuclear cells (PBMCs) stimulated by dapsone or dapsone hydroxylamine were measured using electrochemiluminescense (ECL) on a platform from MesoScale Discovery (MSD). The release of drug specific cytokines (IFN-γ and IL-5) was measured using a novel modified ELISpot. The proliferation of T cells to drugs in vitro was measured using LTT.

Results: Cytokine profiles analyses showed that IFN-γ, IL-5 and IL-13 production stimulated by drugs arise at 4 days and peak at 8 days in patients, which was absent in control subjects. In 16 patients with DHS, 7 (43.75%), 12 (75%) and 10 (62.5%) patients were positive on patch testing, IFN-γ/IL-5 ELISpot and LTT, respectively. When combination of in vivo and in vitro tests, the sensitivity increased to 93.75% (15/16) with the specifity of 100%.

Conclusion: We demonstrate cytokine profiles serve as a promising tool for exploring the biomarkers of DHS, and combination of in vivo and in vitro tests could increase the sensitivity in diagnosing DHS.

P-412

DATA SCIENCE FOR EARLY LEPROSY DETECTION

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Introduction and Objective: Leprosy is a disease, which to a great extent remains unnoticed and underdiagnosed, until it wreaks irreparable damage on patients' organisms. As there are few (if any) diagnostic tests for early stage leprosy, it is only after patients suffer nerve damage, that disease is usually noticed. Treating patients too early wastes valuable resources and contributes to the spread of antimicrobial resistance, treating too late leads to irrevocable damage, anguish and reduced treatment outcomes. Here we propose a computational, data-driven method to change the *status quo.*

Method: Success of personalized medicine (c.f. Deep Patient, Miotto et al, 2016) shows that even given a set of low-effort and low-cost measurements it is possible do diagnose complex diseases in their early stages. Here we propose an analogous approach for early stage detection of leprosy. It shall fulfill two functions (a) diagnosing currently underdiagnosed patient populations, allowing them to get treatment earlier and (b) diagnosing clean-cut cases, thus relieving them from subsequent diagnostics, thus freeing the resources for other patients' use.

Results: This approach will not need to have new data collected, as there is an abundance of information already collected in clinical and field records of regions where leprosy is endemic. I posit, that clinical, epidemiological and demographic data, coupled with physical examination, patients' history and pictures (where available) hold sufficient information to yield accurate statistical models, while remaining easy to acquire. While many of the available records are sparse, the sheer abundance shall allow to detect non-trivial relationships, leading to higher clinical decision accuracy. Recent successes of deep learning approaches show, that this class of methods can potentially yield astounding results, given sufficient data for method parametrization (training).

Conclusion and Recommendation: Implementation of such a method is simple and there is a large body of knowledge to facilitate it. The issue lies in acquiring sufficient body of data for it to generalize to multiple sites, ethnicities and social strata. This is therefore a call to action for clinical service providers to join forces with the computational community to enable creation of an accurate, ever improving method for early stage leprosy detection, that would potentially improve treatment times and reduce the numbers of underdiagnosed patients.

ILC-4: EPIDEMIOLOGY and CONTROL:

4.5 Leprosy and Other Skin NTDs / Neglected Tropical Diseases

P-021

POWER OF COMBINE APPROACHES IN DISIABILITY PREVENTION – LEPRA EXEPERIMENT IN BIHAR, INDIA

Presenter: Rajni Singh

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Purpose: To improve the functional ability of individual having foot disability in order to reduce stigma & discrimination from the community.

Methods: Leprosy has known for its stigma and no one want to join with them. LEPRA has started Integrated Prevention of Disability (IPOD) camps at Primary Health Centre 2009. A format has designed to capture all information of patients and all the affected persons are assessed individually. Information Education Communication (IEC) campaign were drives for propaganda about camp. IPOD Kit, customized protective Footwear has been given to all affected person. We adopted "Satisfied customer approach model" which was very well taken by the beneficiaries. Self-Support Group has formed with 20-25 members as per their convenience.

Results: More than 39675 (Elephantiasis) and 785 (leprosy) affected person has been trained for morbidity techniques. Both disabled groups have merged very well, and more than 230 self- support group has formed. Functional ability has improved, and stigma has reduced among each other's.

Conclusions: We found the techniques of IPOD were well accepted by community, monitored by their own self-support group and sustainable. This model can be replicated at larger scale. The advocacy at policy make level(govt.) will be helpful to reach at larger population.

P-251

HIGH PREVALENCE OF LEPROSY DURING SKIN SURVEY IN THE MUZAFFARPUR HDSS, BIHAR, INDIA

Presenter: Paritosh Malaviya

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Objectives: The Muzaffarpur HDSS is a health and demographic surveillance site in Muzaffarpur district of Bihar, India. The area is made up of 50 villages with a total population of approximately 100,000 and used to be endemic for visceral leishmaniasis (VL). Since 2007 more than 300 VL cases were reported but in 2018 annual incidence was down to one case only. There is a risk for resurgence of VL, in particular because of waning immunity in the population and the occurrence of post kala azar dermal leishmaniasis or PKDL, a sequel of VL that very much

resembles early stages of leprosy. The officially reported prevalence of leprosy in the area was 1.01/10,000 in 201617. We conducted a skin survey to document the prevalence of PKDL and leprosy.

Methods: We selected 27 villages with a documented population of just over 50,000 from which 298 VL cases had been reported since 2007. We conducted door-to -door screening for skin problems. All household members were enumerated, those present were screened for skin lesions. Geographic coordinates of all households visited were already available. Patients with skin lesions were referred to skin camps that were organized upon completion of door- to-door screening at village level. Suspect PKDL and leprosy cases were followed up actively. During the skin camps leprosy as well as VL/PKDL experts were present.

Results: The teams were able to screen 26,463 individuals out of 26,929 that were present. The remainder were temporarily absent. Approximately 10% had skin lesions, mostly due to fungal infections (1,017), eczema (130) and scabies (60). Altogether only 3 PKDL cases were found, two among known old VL cases. Leprosy was far more prevalent, 59 cases requiring treatment were indentified, equivalent to a prevalence of 22.1 per 10,000. Leprosy was strongly clustered with incidence rate ratios of 8.8 (95% CI 3.8 -20.6) for household members to 3.6 (95% CI 1.6-8.2) for neigbors living within 25 meters of a case, using those at more than 50 meters as reference group.

Conclusion: PKDL appears to be rare but there is a very high hidden prevalence of leprosy in the Muzaffarpur HDSS area. In all probability this will be similar for many parts of rural Bihar. An integrated approach to skin diseases is required. Given the high degree of clustering observed for leprosy it would be meaningful to screen not just household members but also othres living nearby.

P-338

EXPLORING AND ESTIMATING THE SYNDEMIC RELATIONSHIP BETWEEN LEPROSY AND OTHER NEGLECTED TROPICAL DISEASES AT VILLAGE LEVEL

Presenter: Suresh Munuswamy

Suresh Munuswamy [1], Shyamala Anand [2], Jayaram Parasa [3], Steffi Sam[1], Priyadarsini Suresh[1], Robin Lizzy Sunny[1], Rony Sunny[1], Angeleena Singh[1], Sushmita Paul[1]

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[3] LEPRA Society, Telangana, India

Objectives: (1) To estimate individual and village level disease prevalence of Neglected Tropical Diseases (NTDs); (2) To estimate the co relation between the prevalence of NTDs in affected villages; (3) Graphically visualize the inter relationship for easier understanding. (37)

Methods: 78 contiguous villages in a known leprosy endemic block of Vizianagaram district, Andhra Pradesh, India were selected for this study begun in 2018. A questionnaire universal screening survey was administered for all 11233 households to record the presence of leprosy and other Neglected Tropical Diseases as well as other relevant information. Geo tagged photographs of the front of all homes were taken with due permission from survey participants, to improve process reliability and accuracy of input data. Interrelation of disease prevalence at individual level has been shown with chord charts and inter relation at village level has been shown by calculating Pearson's coefficients. (103)

Results: At individual level there is some interrelationship between NTDs whereas at village level, the "syndemic" co-occurrence of NTDs is highly significant. In almost all villages with disease, multiple NTDs are present. (59)

Conclusion: The reality of leprosy in India is that even in high endemic areas, people affected by leprosy live scattered in communities and their numbers are small in relation to the general population. Leprosy exclusive interventions therefore are not perceived as cost effective or cost efficient. NTDs as a group on the other hand,

many of which like leprosy have potential to cause disability, exhibit considerable overlap in geographical and individual prevalence and have been referred to as “syndemic” diseases, affecting the health of populations within the context of persistent social and economic inequalities. Integrated mapping and integrated management of syndemic conditions has been proposed as a cost-effective strategy. Quantifying the syndemic relationship at village level can help in strengthening development integrated and localized interventions for populations affected by or at risk of leprosy and other NTDs. (136)

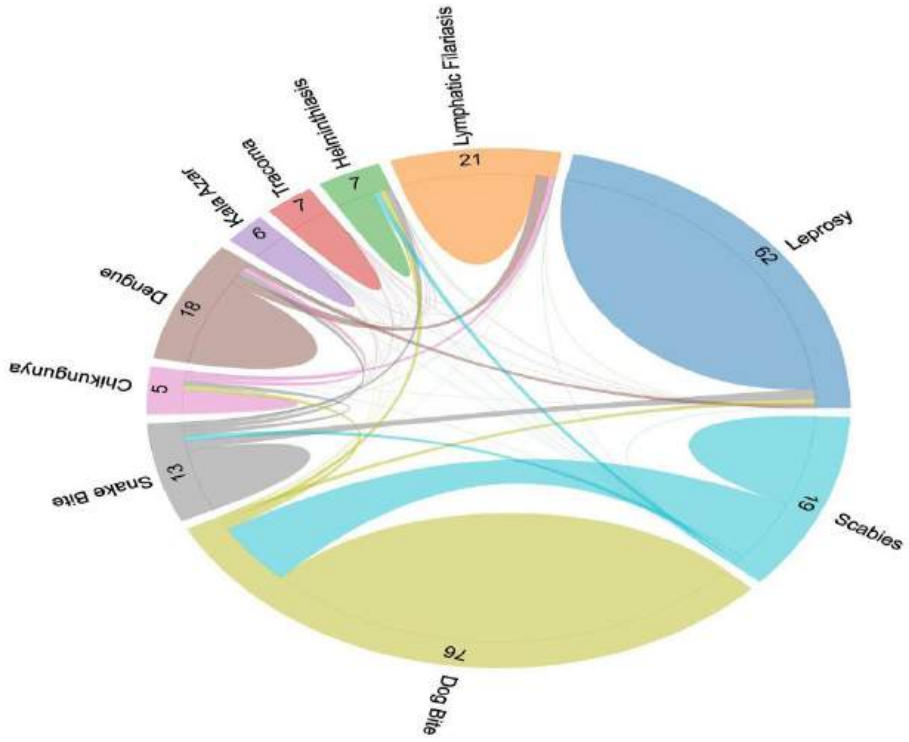

Figure 1: Disease interrelationship at individual level has been shown as chord charts.

Table 1: Pearson coefficient of association between diseases at village level

Disease	Leprosy	Lymphatic Filariasis	Soil Transmitted Helminthiasis	Trachoma	Kala Azar	Dengue	Chikungunya	Snake Bite	Dog Bite	Scabies
Leprosy	1.00	0.30	0.30	0.48	0.25	0.31	0.53	0.41	0.26	0.18
Lymphatic Filariasis	0.30	1.00	0.50	0.56	0.53	0.29	0.45	0.43	0.44	0.25
Soil Transmitted Helminthiasis	0.30	0.50	1.00	0.71	0.85	0.64	0.61	0.60	0.59	0.74
Trachoma	0.48	0.56	0.71	1.00	0.60	0.51	0.89	0.47	0.48	0.49
Kala Azar	0.25	0.53	0.85	0.60	1.00	0.58	0.52	0.55	0.54	0.73
Dengue	0.31	0.29	0.64	0.51	0.58	1.00	0.57	0.58	0.41	0.57
Chikungunya	0.53	0.45	0.61	0.89	0.52	0.57	1.00	0.54	0.53	0.56
Snake Bite	0.41	0.43	0.60	0.47	0.55	0.58	0.54	1.00	0.66	0.53
Dog Bite	0.26	0.44	0.59	0.48	0.54	0.41	0.53	0.66	1.00	0.61
Scabies	0.18	0.25	0.74	0.49	0.73	0.57	0.56	0.53	0.61	1.00

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P-342

IMPACT OF EARTHQUAKE AND NATURAL DISASTERS TO NEGLECTED TROPICAL DISEASE: HOW TELEMEDICINE HELP IN THIS MATTERS

Presenter: Joshi Shambhu

S. Joshi
Community Health and Environmental Society Nepal, KTM, Nepal

Objectives: To investigate the incidence of neglected tropical diseases, dermatoses by classifying, collecting and analyzing in natural disaster.

Methods: After the devastating Earthquake, we did free health camps in different earthquake hit area. Dermatologist, medical officer, Nurses and paramedics were involved in treatment and management. Consent was taken. All registered patients data were analysed with EPI info and SPPS v17 program.

Results: Most of the places were rural areas. Out of 670 patients, males were 33% and female were 67%. From neonates to elder patients and pregnant women to disable patients also came for treatment. The prevalence of dermatoses was surveyed and divided into six categories including 10 kinds of diseases, in which Infections and infestations including Insect bites, pyoderma, chicken pox, fungal infections (superficial cutaneous infections including tinea versicolor) and scabies (30%),skin abrasions and contusions(24.1%),contact dermatitis(19.5%) and pigmentary disorders(9.5%) and Psychological and autoimmune disease like atopic dermatitis, lupus erythematosus, psoriasis, vitiligo, neurotic pruritus and immunobullous disorders (6.9%) and others (10%). Malaria, Scabies, Tuberculosis, Kala-azar and Leprosy cases also seen.

In post-earthquake period, overall proportion of skin patients increased when compared with similar per-earthquake period in other countries.

Conclusion: Increasing in the overall disease pattern is poor hygiene, lack of sanitation, waste management, proper medication and trained and skilled medical personnel non availability at that area was prime factor. Psychosocial counselling and prevention, infection control, net distribution, vaccination, first aid kit and hand wash hygiene was crucial to minimize the disease pattern and stress level among patients. Mobile Teledermatology is best method with low cost for management and follow up with remote area patients.

Dermatoses and neglected tropical diseases are disaster-prone disease, we should strengthen the prevention of skin diseases and health education in the post-disaster medical relief system. Government and non-government organizations should do further teaching, training, follow up and awareness programs to the all the schools' children, community people and leaders about the methods of how to cope with disaster.

Nepal is an earthquake prone zone, on 25th April 2015 devastating earthquake of 7.9 Richter scale was occurred which was biggest after 80 years, its epicenter was in Gorkha and Sindhupalchowk of central Nepal. It killed nearly 10,000 people and thousands of people were left homeless. It had direct Effects of Wounds following trauma and its infections and indirect Effects were due to destruction of physical infrastructure and because of psycho-emotional

factors. Earthquake of 2015 was a great learning experience for every Nepalese citizen and many dermatological conditions were seen of that areas. There were hundreds of aftershocks that continued for more than 9 months.

P-384

REEMERGENCE DU PIAN AU BENIN : A PROPOS DE 4 CAS CONFIRMES DANS LA COMMUNE DE ZE

Presenter: Adjimon Gilbert Ayelo

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Objectif: Dans le cadre de la mise en œuvre de la stratégie mondiale d'éradication du Pian, la surveillance du pian au Bénin a été réactivée depuis l'année 2012. Après deux enquêtes de prévalence infructueuses en 2012 et 2013, le PNLLUB a adopté, depuis 2016 les campagnes de consultations foraines comme stratégie de dépistage intégré des maladies tropicales négligées (MTN) à prise en charge de cas. Les derniers cas de pian ont été documentés en 1982 dans les communes de Dangbo, Bonou et Adjohoun au Sud Est du Bénin. La présente étude reporte 4 cas de pian dépistés dans la commune de Zè lors de la campagne de consultations foraines en 2018.

Méthodes: Du 31 Octobre au 19 Décembre 2018, une campagne de consultation foraine pour le dépistage des MTN à prise en charge des cas a été organisée dans 15 arrondissements du département de l'Atlantique par le Centre de Dépistage et de Traitement de l'Ulcère de Buruli d'Allada. Les populations étaient au préalable informées de l'activité. Toute personne ayant une lésion cutanée et qui s'était volontairement présentée à l'équipe de consultation foraine, était examinée selon les règles de déontologie médicale. Tous les enfants de moins de 15 ans ont bénéficié systématiquement du test de diagnostic rapide (TDR) du pian. Ceux positifs étaient testés avec le DPP® Syphilis Screen & Confirm Assay

Résultats: Sur 779 enfants de moins de 15ans présentant des lésions cutanées et testés, 8 étaient positifs au TDR dont 4 confirmés par le DPP®. Ces derniers étaient âgés de 4-8 ans, 3 étaient de sexe masculin, 2 présentaient des papillomes et 2 avaient de multiples ulcères. Les cas provenaient des villages/Arrondissement de Gandaho/Dodji Bata (3 cas) et Agonzounkpa/Dawé (1 cas). Le délai moyen d'évolution des lésions était de 120 ± 34 jours. Tous les cas ont reçu une dose unique de 30mg/kg d'Azithromycine. Ils étaient revus 2 et 4 semaines après et étaient tous guéris.

Conclusion: Ces cas confirment l'endémicité du pian au Bénin et appellent une investigation poussée pour faire l'état des lieux sur la prévalence de la maladie et planifier les actions à mener pour son eradication.

P-387

BURULI ULCER PROSPECTION IN FOUR REGIONS OF BURKINA FASO

Presenter: Amina Nomtondo Ouédraogo

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Introduction: Buruli ulcer, a neglected tropical disease, caused by Mycobacterium ulcerans is characterized by the destruction of skin and soft tissues with extensive ulcerations. The extent of this disease in 4 neighboring countries of Burkina Faso, suggests that this disease could exist in Burkina Faso. Hence the interest of this study whose purpose is to assess the existence of Buruli ulcer in the border districts with Côte d'Ivoire, Ghana, in the irrigated areas of Bagré and Kompienga.

Methods: This was a single-pass, descriptive, cross-sectional study that ran for 9 days from April 10th to 18th, 2018 in four regions of Burkina Faso. The case search was conducted in schools and in the community. Children aged 5 to 14 years and those with clinical lesions suggestive of Buruli ulcer in the community were the targets of the study.

Results: A total of 3688 people were examined including 3236 school children and 452 people in the community. Eighteen people had suspicious lesions of Buruli ulcer with a clinical prevalence of 0.48%. The average age of the subjects was 32.5 years with extremes ranging from 2 to 62 years. Children under 15 years of age numbered 5. There were 11 females and 7 males.

The sex ratio was 0.63.

Three cases of osteomyelitis were reported. The analysis (PCR) for Buruli ulcer carried out on swabbing lesions of 18 people was negative excluding Buruli ulcer in this part of Burkina Faso.

Conclusion: This study, although preliminary, allows us to refute the idea of the existence of indigenous cases in these areas of Burkina Faso where the ecosystem is favorable to the disease.

P-403

THE DIFFICULT DIAGNOSIS OF EARLY IMPLICATIONS FOR DISEASE CONTROL

Presenter: Mauricio Nobre

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Objective: To present a series of multibacillary leprosy cases with few clinical manifestations, but with a high bacillary load, discussing the difficulties that these cases present for the effectiveness of disease control measures in the community.

Methods: The cases presented were diagnosed between 2013 and 2017 in Giselda Trigueiro Hospital, a Leprosy Control Reference Center of the State of Rio Grande do Norte, Brazil. They were studied from detailed dermato-neurological exams as well as bacterial and histopathological exams.

Results: Seven cases of multibacillary leprosy, all with very discrete clinical manifestations, but with very high bacilloscopic index (ranging from 3.6 to 6+) and conclusive histopathological exams of borderline-lepromatous (BL) or lepromatous leprosy (LL), are presented. All of the patients were male, with ages between 14 and 94 years (median= 63 years), and zero degrees of physical disability. The authors discuss the possible mechanism of immunological tolerance involved in the response to *Mycobacterium leprae* in these cases and highlight the difficulties for disease control presented by such peculiar manifestation of leprosy.

Conclusion: Specific strategies for the active search and detection of multibacillary leprosy cases with discrete signs and symptoms are needed to allow for the interruption of the transmission of bacillus in the community.

ILC-4: EPIDEMIOLOGY and CONTROL:

4.6 Cross-Cutting Issues: Wound Care, WASH and Integration

P-127

EVALUATION AND ANALYSIS OF HIGH RISK FACTORS FOR PRESSURE ULCERS IN LEPROSY CASES

Presenter: Ren Xin

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Objectives: To investigate and evaluate the high risk factors of pressure ulcer of leprosy cases by using Norton Pressure ulcer Risk Assessment Scale, and to analyze and evaluate results, so as to provide basis and help for guiding our hospital to carry out preventive measures.

Methods: 188 patients in our Sanatorium were investigated, recorded, evaluated, scored, and analyzed with Norton and Braden Pressure Ulcer High Risk Factor Scale. According to the lowest score of 6 points and the highest score of 24 points, the criteria were as follows: No risk was found for (> 19 points), and pressure ulcer was liable for (< 18 points). Among them, 16-18 points are low risk, 13-15 points are moderate risk, 10-12 points are high risk and < 9 points are high risk.

Results: 92 patients in our hospital were at high risk of pressure ulcer, the susceptibility rate was 48.9%; 7 patients had 13 parts of pressure ulcer, the incidence rate was 3.7%; 35 patients had leprosy-specific pressure ulcer (sole, heel, ankle), the incidence rate was 18.6%; 6 patients had 12 parts of scar after healing of pressure ulcer. The high risk factors of pressure ulcer in leprosy inpatients mainly include nutritional status, physical condition, flexibility, age and activity ability.

Conclusion: The incidence and susceptibility rate of pressure ulcer in leprosy hospital patients are higher than those of general patients. We should pay more attention to the patients with high risk of pressure ulcer.

P-176

LIVING WITH LEPROSY ULCERS: A MIXED METHOD ANALYSIS OF PATIENT PERSPECTIVES AND TREATMENT OUTCOMES

Presenter: Dilip Shrestha

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Objectives: Since multidrug therapy for leprosy became widely available and utilised, prevalence rates have fallen dramatically worldwide. Most of the remaining morbidity attributed to leprosy is due to plantar ulcers. 20% of people affected by leprosy (PALs) develop an ulcer, making them the most common complication of leprosy. Long

inpatient stays are required for satisfactory resolution and ulcers often recur repeatedly. Patients' opinions, experiences and challenges with regards to leprosy ulcers and their treatment are not well documented.

Methods: The fieldwork for this mixed methods study took place at Anandaban Hospital, a specialist leprosy hospital in Nepal. A medical chart review of all admissions from January to December 2017 for leprosy ulcer treatment was undertaken, alongside 22 individual semi-structured interviews and three focus group discussions among male and female patients aged 18-65.

Results: 267 individual patients (70.4% male) received ulcer treatment at Anandaban Hospital in 2017, some with multiple admissions. The mean duration of stay per admission was 39.1 days (R=1-213 days) and the mean cumulative duration of stay per patient was 48.9 days (R=1-284 days). Lower limb ulcers (89.0% of all ulcers) required longer inpatient stays than upper limb ulcers (7.6%; with 3.4% of ulcers unclassified) before healing (hazard ratio = 0.55, 95% confidence intervals 0.31-0.97). The youngest males (aged <25) had the longest admissions. For bacterial index (BI), BI negative males were 47% more likely to be discharged than those with a reading of ≥3; however, BI negative females were 61% less likely to be discharged. Analyses identified no other disease-related factors in association with ulcer healing. The subjective experience of having an ulcer was enhanced through treatment received and adherence to self-care. Health beliefs and barriers to treatment, the chronic nature of the physical impairment, loss of income, felt and enacted stigma resulting in exclusion from community and/or family relationships were all raised as negative aspects of having an ulcer.

Conclusion: This study demonstrates that developing an ulcer has an impact on PALs' physical, psychological and social well-being. Ulcers take a long time to heal, although some possible variables have been identified which after further research may help clinicians predict which patients will require longer treatment durations, and tailor such treatment appropriately. Care must be taken to consider the many profound and sometimes unexpected ways in which ulcers influence the daily lives of PALs, and how these could be mitigated.

P-220

CHANGE IN BEHAVIOUR OF MEMBERS OF SELF-HELP GROUP IN PARSA DISTRICT OF NEPAL IN USE OF TOILETS AND HAND WASHING

Presenter: Sakalananda Shrestha

Sakalananda Shrestha

The Leprosy Mission Nepal

Objectives: This study aims to measure change in behavior of members of self-help groups formed with assistance of Participatory Action for Community Empowerment and Development (PACED) in Parsa district of Nepal.

Methods: 307 individuals participated into 24 groups in Parsa district. Initial information was collected from them with simple questionnaire. For about six month occasional morning visited village to observe to monitor community behavior of six villages. Second information was recorded one and half year later from same individuals with same questionnaire. In between that time period two talks on importance of toilets and hand washing were organized to all 307 members. Of them 284 participants were evaluated in this study.

Results: At beginning 15 percent members had toilets which increased to 61% in four years. It is obviously reduced in open defecation. Of 284 respondents, 100 percent reported that they wash hands after use of toilets. The response is not same on other options for hand washing like – before meal preparation, before feeding and after cleaning contaminated.

Conclusion: Preliminary result indicates that intervention of project on hygiene and sanitation has positive effect.

P-276

INTEGRATED LEPROSY AND MALARIA SERVICES TARGETING MOBILE POPULATIONS IN MINING AREAS IN THE INTERIOR OF SURINAME

Presenter: Juanita Malmberg

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Objectives: Suriname is in the process of eliminating leprosy with a prevalence rate of 0.51 / 10.000 for 2017. To reach this goal (≤ 1 case / 10.000), the Leprosy Program is focusing efforts on service delivery. Mainly rural and interior districts are above the elimination threshold. Mobile populations represent the majority of new cases detected between 2016 and 2017 (Maroon/Creole population: 72%; mobile migrants: 15%). There is no health system structure for mobile populations residing in mining areas, except for that of the Malaria Program built on small clinics and a team of outreach workers. This paper describes the integration of leprosy services in the Malaria Program for mobile populations.

Methods: PAHO and the Leprosy Program developed leprosy standard operating procedures for the Malaria Program for health education, screening and a coordination mechanism for case management. Health education, screening and treatment distribution are done in the interior by outreach workers. Referral to the central dermatology clinic is in place for diagnosis, treatment initiation, leprosy reactions and determining 'status cured'. Personnel of both programs were trained in a 2-day workshop. A 2-day pilot was held at the Malaria Program clinic in a mobile migrant 'resting site' in district Marowijne to evaluate personnel skills, field procedures, materials and acceptability of the target populations. Mobile and migrant populations were approached for group and individual health education sessions, upon which they were invited to participate in screening.

Results: In total 13 outreach workers were trained of which 4 were randomly selected to participate in the pilot. Health education sessions reached 90 (45%) of present population in the time-frame of the pilot. Of these, 18 (20%) requested to be screened yielding 1 suspect. Health education and screening took average 14 and 10 minutes, respectively. Proficiency of personnel and duration of procedures depended on practice and inclusion of additional testing for disability and leprosy reactions. Mobile migrants showed interest in learning about leprosy and were receptive of screening. However, participation in screening depended on waiting time between education and screening.

Conclusion: With proper guidance, training and program collaboration, integrated leprosy and malaria services can be offered to mobile populations. Practice, time-efficient screening procedures and a field design that facilitates group sessions for health education and screening will improve participation of target populations. As lab-testing confirmed a negative leprosy diagnosis for the suspect, follow up coordination of case management could not be piloted.

P-306

FACTORS AFFECTING THE HEALING OF PLANTAR ULCERS IN LEPROSY PATIENTS ATTENDING REFERRAL CENTRE IN RURAL DISTRICTS OF MAHARASHTRA

Presenter: Kamlesh Chavan

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Objectives: Disability prevention is one of the top priorities in leprosy elimination programme. Plantar ulcer and foot deformities are commonly seen in leprosy patients causing considerable physical disability. Often plantar ulcers become chronic due to established nerve function loss and several other factors that can be prevented with conventional management. The study was to assess the factors contributing to non-healing and recurrences of plantar ulcers among multi-bacillary leprosy patients.

Methods: 107 people with plantar ulcers registered at referral centres in Dhule and Jalgoan districts of Maharashtra during January 2015 to December 2018 under MH-POID Project supported by Swiss Emmaus India were evaluated to identify the factors for delay in wound healing, practice of feet care, site of ulcer, concomitant deformities and bone changes. Of which, 72% of cases were male and 75% belong to productive age group between 30 to 60 years of age. Majority of the cases (74%) were engaged in farming labour that requires extensive usage of foot for their livelihood. All cases were given conventional wound dressing along with MCR footwear during their visit to referral centre. Patients were taught and advised to practice self-care regularly at home.

Results: A total of 169 plantar ulcers in 107 MB leprosy cases were assessed, of which 134 (79%) ulcers occurred on forefoot and toes and only 15 (9%) on heel. 124 (73%) plantar ulcers healed completely with an average duration of 15 months (Mean □ 36 months) of which 16 (13%) had reoccurred. Out of 45 (27%) ulcers that not healed, 32% of the cases did not follow self care practice and regular dressings. Another 25% of plantar ulcers did not heal due to extensive and sustained pressure to their feet during farming work and 11% were due to secondary infection.

Conclusion: Prior to this project, majority of the patients (92%) were unaware of the precautionary measures to be undertaken for the treatment of plantar ulcers. Physical labour was found to be a predisposing factor due to sustained pressure. Practice of self care was extremely poor among these patients. Patients were not using protective footwear regularly, since they found it inconvenient and a barrier to work in the field, which was probably responsible for the non-healing of plantar ulcers. It is recommended that the management of plantar ulcers should be occupation specific and proper counseling is required that can enhance the healing process and minimize foot damage.

P-324

LIMITED ACCESS TO SAFE WATER AND SANITATION IS ASSOCIATED WITH LEPROSY IN NORTH GONDAR, ETHIOPIA

Presenter: Jessica Fairley

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Objectives: Access to safe water, sanitation, and hygiene (WASH) is a critical element of preventing the spread of many neglected tropical diseases (NTDs). While leprosy is thought to be primarily transmitted through nasal

secretions from infected individuals, mounting evidence demonstrates the presence of potentially viable *Mycobacterium. leprae* in soil and water samples. However, few epidemiologic studies have looked at the association between unsafe WASH and leprosy risk. The aim of this project was to describe WASH exposures among cases of leprosy versus controls in the North Gondar district of Ethiopia, an area endemic to leprosy as well as other NTDs.

Methods: Cases of recently diagnosed leprosy and controls without leprosy were recruited from health districts from the region and were tested for *Schistosoma mansoni* with a point-of-care test detecting urinary cathodic antigen. All participants also answered a survey with demographic and validated WASH questions.Descriptive statistics were tabulated and chi-square tests calculated for each WASH exposure with leprosy as the outcome.

Results: Eighty-one people were enrolled with a median age of 33 and 61% were male. The majority of the 40 cases of leprosy had multibacillary disease (90%) and *S. mansoni* infection was detected in 26% of participants. WASH factors associated with leprosy on univariate analysis included lack of in-home or in-yard access to washing water (OR=2.94, 90% CI 1.19, 7.3), lack of handwashing (aOR =4.5 1.17, open defecation (OR=4.24, 90% CI: 1.52, 11.78). While not statistically significant, the likelihood of schistosoma-leprosy co-infection was higher in communities near Lake Tana (OR = 3.49, 90% CI: 0.93, 13.1) versus farther away (OR = 0.29, 90% CI: 0.08, 1.07).

Conclusion: While these factors, especially open defecation, may be surrogate markers for other poverty-related factors, the water and hygiene associations deserve further study given the likelihood of environmental reservoirs of *M. leprae.* Additional analyses, including creating a composite WASH risk variable, are underway and may further clarify these associations. Finally, taking these pilot results to inform larger studies on leprosy transmission as well as leprosy control programs could lead to innovative strategies to reduce disease in endemic areas and increase our understanding of the interplay of leprosy and conditions of poverty.

P-333

CHANGING FOOD HABITS: A COMMUNITY-BASED SPECIAL NUTRITION PROJECT IMPLEMENTED THROUGH SELF HELP GROUPS IN BANGLADESH.

Presenter: David Pahan

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Introduction: Bangladesh National Leprosy Program (NLP) has reported increased rates of new leprosy cases from the north-west region. Some of these areas are considered as low socioeconomic areas in Bangladesh. Nutritional support for the high-risk group is recommended to reduce the risk of leprosy development (Sabiena, 2011). Self-Help Group members believed that nutritious food must be expensive. This intervention aimed to encourage the use of inexpensive nutritious diets.

Objectives: To understand & improve the food habits for better nutrition among people affected by leprosy & their family members

Methods: The study was done in Bogura District. We have conducted Knowledge, Attitudes and Practices (KAP) survey among the 1,001 Self-Help Group (SHG) members targeted by the intervention package. After randomization, a total of 408 members were interviewed at baseline and 313 after 18 months at the end line. The sample included 45% people affected by leprosy, 5% people affected by Lymphatic Filariasis, 11% of people with general disability and 39% of people with acute poverty status. The survey tested participant's beliefs and habits relating to nutritious food and a balanced diet.

The surveys were conducted by trained Lepra Bangladesh staffs and data was collected using Kobo software with mobile phones.

The intervention packages consisted of orientation on inexpensive nutritious food & balanced diet, and cooking demonstration. Total 12 women from the Self-Help Groups volunteered to work as “Nutrition Representative” for the project. They played an active role in health education related to nutrition and also encouraged their group members to practice homestead gardening to supplement their diet with healthy vegetables.

Results: At baseline, only 8% of SHG members recognized “Khichuri” (mixed diet of rice, pulses, vegetables etc.) as a balanced diet but after the intervention, it increases to 93.6%. Only 46.8% of women knew about the benefits of exclusive breastfeeding up to 6 months and it increased to 99.4%. Only 14% people knew about the food elements (Carbohydrate, Protein, Fat, Vitamins & Minerals etc.) which should be included for a healthy diet, but it rose to 71% at the end of the project. Daily consumption of green vegetables increases from 2.9% to 78.9%.

80% of the respondents believed that healthy foods are quite expensive and 81% that cooking healthy food was time-consuming. Thanks to the cooking demonstrations, only 3% of respondents now believe that healthy food is quite expensive and only 2% still think it takes longer to prepare.

Conclusion: Knowledge on balanced diet increased 12 times, on breastfeeding two-folds and food elements five times during the end of the project. The change in diet is especially noticeable when looking at the increase in consumption of green vegetables. We assume that changing food habits through increasing nutritional status could reduce leprosy development among leprosy affected community.

ILC-5: DISABILITY and IMPAIRMENT:

5.1 Nerve Function and Impairments

P-003

ANALYSIS OF DISABILITIES AMONG NEWLY-DETECTED LEPROSY CASES IN SHAANXI PROVINCE

Presenter: Wangen Yang

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Objectives: By analyzing the status of leprosy disabilities in Shaanxi Province from 2012 to 2017, the occurrence regularity between disability and leprosy diagnosis can be found.

Methods: Dataset of new-onset leprosy patients in Shaanxi Province were collected from leprosy management information system in China (LEPMIS) and analyzed by WPS Office 2007 software.

Results: Among the 70 new leprosy patients in Shaanxi Province, grade 1 disability accounts for 42.86%, and grade 2 disability accounts for 40.00%. A total of 351 peripheral nerves are damaged, in the newly-detected leprosy cases, of which 26% are phrenic nerves, 25% are ulnar nerves, 19.00% are common peroneal nerves, 12.00% are median nerve damage, 12.00% are auricular nerves, 4.00% are facial nerves, and 2.00% are spinal nerve damage. The grade 2 disability of hand, foot and the eye is 17 cases, 13 cases, and 11 cases respectively.

Conclusion: (1) The peripheral nerves with severe damage caused by leprosy are tibial nerve, ulnar nerve and common peroneal nerves in turn. (2) Early diagnosis and treatment (within 18 months of disease) is the fundamental way to prevent damage of leprosy.

P-099

THE DISORDER OF THE MOTOR NEURONS OF THE SPINAL CORD AND FACIAL NERVE IN LEPROSY

Presenter: Vladimir Belopasov

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Leprosy Research Institute, Russia

Objectives: To determine the state of the neuromuscular apparatus in leprosy patients at various stages of the peripheral nervous system lesion.

Methods: 132 leprosy subsided leprosy patients were examined.

Results: In patients with sensory neuropathies, local amyotrophy, spontaneous activity such as fasciculations and with reflex muscle tension was recorded not only in denervated muscles, but clinically in intact. Compared with sensory mononeuropathy, hypertrophy of peripheral nerve trunks, the identified differences are statistically

significant. The cause of increased excitability of motoneurons is the increasing flow of afferent impulses emanating from the affected sensory nerve fibers and endings. In patients with monoparesis and paralysis, axonal-demyelinating neuropathies, in addition to signs of "irritation", changes were recorded in 14.4% cases, reflecting the partial death of motoneurons (anterior horn type of EMG). In patients with a prolonged progress of the disease, the presence of activation of the process, reactive states of type 1 and 2, progression of motor disturbances, development of contractures, mutilations (40 patients), potentials of the fasciculation were determined in the shoulder muscles, flexors and extensors of the fingers, sural muscles. In the muscles of the forearms, hands, legs, and feet, along with the symptom complex typical to peripheral motor nerve damage, an activity was revealed that reflects the dysfunction of the segmental apparatus of the spinal cord. The number of anterohorn type EMG was 17%, of the “mixed” (neuritic with the presence of fasciculations, rhythmic activity at rest and with synergies) -18.2%. On the face, signs indicating dysfunction of nuclear motoneurons are noted in the orbicular muscles of the eye, mouth, frontal, and zygomatic muscles (8.8%). The presence of "bioelectric silence" in the paretic muscles, the absence of conductive function along the motor fibers of the peripheral nerves, the branches of the facial nerve indicates the complete destruction of the motor neuron.

Conclusion: The identification of patterns of irritation, alternation and death of the anterior apparatus of the spinal cord and the motor nucleus of the facial nerve in patients with EMG during a long and / or unfavourable progress of the disease indicates an upward development of the pathological process in the peripheral nerves in the direction of the spinal cord, which is coordinated with pathomorfological data. Degenerative changes that grow in peripheral nerves become the main cause of dysfunction and death of motor neurons at the level of spinal cervical, lumbar segments and nuclei of the brainstem.

P-156

HIGH DENSITY LIPOPROTEIDS AND APOLIPOPROTEIN A1 IN LEPROSY

Presenter: Valentin Naumov

V.Z. Naumov, L.V.Saroyants

Leprosy Research Institute, Astrakhan, Russia

Objectives: High-density lipoproteins (HDL) are not only a lipid transporter, but also perform functions are associated with innate immunity. HDL of lepromatous patients are involved in blocking innate immunity against M. leprae through the TLR 1, 2 receptors. The aim of the study is to determine the value of HDL and apolipoprotein A1 (ApoA1) in patients with lepromatous leprosy.

Methods: The levels of HDL and ApoA1 were determined kits by “HUMAN” (Germany). The results were analyzed on a photometer “HUMALYZER 3000”. Twenty patients with lepromatous leprosy aged 50 to 85 years were examined. In one patient, an active leprosy process was observed, in the rest patients had not signs of the activity of a specific process on the skin. All patients showed signs of acute or subacute course of peripheral polyneuropathy, accompanied by thickening of individual peripheral nerve trunks, impaired sensitivity, deformities, amyotrophy and varying degrees of pain. In half the cases, polyneuropathy was complicated by trophic ulcers of the feet. Almost all patients were characterized by comorbidities in the form of atherosclerosis, in some cases manifested in myocardial ischemia and varying degrees of severity of encephalopathy.

Results: We have practically revealed no correlation between the age of patients and the levels of HDL and Apo A1, as well as a connection of these indicators with the severity of cardiovascular pathology. At the same time, the highest concentrations of these parameters were observed in patients with leprosy with active leprosy process. Equally high rates were observed in patients with marked exacerbation of leprosy neuropathies and plantar ulcers. A statistically significant ($P < 0.05$) positive correlation was found between the concentrations of HDL and Apo A1.

Conclusion: In some patients who have undergone a course of specific anti-leprosy chemotherapy, M. leprae remains in Schwann cells of the nerve trunks for a long time. Such long-term persistence of M. leprae under certain aggravating circumstances leads to an exacerbation of leprosy neuropathies. It is in such cases that ApoA1 with associated HDL can exert their functions as membrane translocators of mycobacterial antigenic substations into cellular compartment with the launch of an inflammatory cascade, which is associated with an increase the levels of this parameters in circulating blood.

P-170

ANALYSIS OF THE EFFECT OF LEPROSY CORRECTION SURGERY IN YUNNAN PROVINCE

Presenter: Li Xiong

Xiongli[#1],longheng [#2],zhangli[#2],zhangchunyu[#2],yangjun[#1]

[#1]Yunnan center for disease control and prevention, [#2] Wenshan Institute of dermatology diseases prevention and cure

Objective: To evaluate the effect of leprosy disability rehabilitation surgery and to explore measures to improve the quality of leprosy disability rehabilitation surgery.

Method: Random selection of 176 disabled patients in the last 10 years and an evaluation of their 328 corrective procedures.

Results: The excellent and good rate of surgery was 74.09%, and the patient satisfaction rate was 96.7%.

Conclusion: Early detection and standardized treatment are the most effective measures to prevent the occurrence of disability. Surgical correction can improve the production and living ability of patients with disability, and should be carried out as soon as possible.

P-218

PROFILE OF LEPROSY PATIENTS WITH PLANTAR ULCER AT LEPROSY HOSPITAL PULAU SICANANG, BELAWAN IN 2012

Presenter: Ramona Dumasari Lubis

R.D. LUBIS

Department of Dermatology and Venereology, Faculty of Medicine, Universitas Sumatera Utara, Indonesia

Objectives: Knowing the profile and characteristic of leprosy patients with plantar ulcer at Leprosy Hospital Pulau Sicanang, Belawan in 2012.

Methods: This is a descriptive observational study with cross sectional design and consecutive sampling method. All leprosy patients with plantar ulcer who sought consult at Leprosy Hospital Pulau Sicanang, Belawan in 2012 were included in the study.

Results: All 36 leprosy patients with plantar ulcer who enrolled in this study have age range from 22 – 86 years old with slight male predominance, 60.11% uneducated and also 75% unemployed. Majority of the patients were multibacillary (MB) with proportion 66.67%, compared to paucibacillary (PB) in 33.33%. Only 30.56% have family history of leprosy but most of them are newly diagnosed cases (58.33%) and had history of reaction (61.11%). In most patients, the plantar ulcer was induced by sharp objects in 41.67% cases, have lasted for more than 10 years (63.89%) and 75% have recurrence of this disability. The plantar ulcers are predominantly found on big toe region

(27.42%), followed by central toe region (24.19%) and metatarsal head region (19.36%) with bilateral distribution in 38.89% cases. Most of the patients only used saline compress with sterile gauze in treating the ulcers and only 22.22% were using topical antibiotics. However, the compliance rate of the patients were quite high with 86.11% regularly followed-up to our leprosy center.

Conclusion: Plantar ulcer still remains as a big problem in leprosy patients especially the MB type due to the stigma that attached and high rate of recurrence. Early detection and proper treatment are necessary to prevent this unwanted disability.

P-223

THE SUCCESS TREATMENT WITH PREDNISOLONE AND SURGICAL NERVE DECOMPRESSION IN ACUTE NEURITIS OF LEPROSY PATIENT

Presenter: Pairayayutakul Nisa

Pairayayutakul Nisa
Bangkok Skin Clinic, Rajchapracha Samasai Institute, Thailand

Objective: Leprosy continues to be a major concern in delveloping countries, despite of the small numbers of people affected by it, but also because of the occurrence of deformities in a proportion of patients. I reported an interesting case of leprosy with acute neuritis of multiple nerves involvement that had been successful treatment with prednisolone and surgical nerve decompression.

Methods: A 27 years old male, single, worker from Chiangrai province, northern part of Thailand. He was diagnosed as Borderline lepromatous leprosy at provincial hospital in 2014 and was treated with MDT-MB for 15 months. While he had experience in recurrent ENL for several times, so he was referred to my office in Feb 2, 2016.

Results: Physical examination, he had Bilateral asymmetrical multiple ill-defined shinny hyperpigmented nodules and plaques on face, both earlobes, trunk and both extremities, Bilateral asymmetrical small multiple erythematous papules on upper back and chest, Bilateral multiple mild tender subcutaneous nodules on both extremities, Single large dry hyperpigmented patch on anterior surface of right lower leg. He also had right foot drop and enlarged ulnar nerves on both sides. SSS were BI 3.50, MI solid form 0%, beaded form 75%, granular form 25%. WHO disability grading E00H00F20. Here, at first visit he was diagnosed as Borderline lepromatous leprosy with chronic recurrent ENL and silent neuritis of right common peroneal nerve. He was continue treated with MDT-MB for 9 months, high dose Clofazimine and standard regimen of prednisolone for chronic recurrent ENL in several months and prednisolone also had to be given for silent neuritis of right common peroneal nerve, the result was satisfaction. Later he complained new severe painful on left ulnar nerve that not respond to conventional regimen of prednisolone. As the consultation was done and sent him for surgical nerve decompression that was dramatically respond, the patient was no pain at all.

Conclusion: Because of prolong prednisolone usages in this patient, occurrence of several complications such as Hypertension, Diabetes mellitus, Posterior subcapsular cataract, Osteopenia. At finally he was so very happy and in good quality of life as a monk in his hometown.

P-236

PROFILE OF NERVE FUNCTION IMPAIRMENT IN NEW LEPROSY CASES AND ASSOCIATED RISK FACTORS

Presenter: Mamta Arora

Mamta Arora
National Jalma Institute Of Leprosy & OMD, India

Objectives:
1. Study of NFI profile in relation to disease profile in new patients with leprosy.
2. To identify predictive risk factors associated with development and progression of the NFI.

Methodology: In this clinical study newly diagnosed all leprosy cases of age-group 10-60 years were included. Clinical charting and Tests for NFI were done.**Sensory- Motor assessment** of Skin lesions, **eyes, upper and lower extremities.** Thermal, vibration and cold sensation testing was done for peripheral nerves. . **Sensory and Motor Nerve Conduction studies** was done for ulnar, median, lateral popliteal and posterior tibial nerves.Patients were treated with MDT.

Results: Total 125 cases were recruited 40 BB ,65 BL/L& 20 are TT/BT. 60 cases presented with NFI and 41 cases improved on treatment.

No. of Nerves Clinically enlarged	with No NFI	with NFI
Total	300	144
Associated with Impaired SNCV	224(74%)	112(78%)
Associated with Impaired MNCV	176(58%)	134(93%)
Associated with Impaired Vibration sensation	129(43%)	96(66%)
Associated with Impaired Thermal sensation	164(54%)	101(70%)
Associated with Impaired Cold sensation	23(7%)	43(30%)

Impairment in Monofilament tests and SNCV and MNCV Parameters were more in cases with Grade I or Grade II disability than in cases with no NFI.

Cases with GdII NFI are having impaired Amplitude, Latency and Velocity all together. They have **absent** vibration and warmth sensation testing and **impaired**cold sensory testing

As patients develop Grade II NFI there is deterioration of Motor NCV parameters and with improvement of NFI with treatment there is increase in Amplitude and velocity in MNCV.

Cases-125				Sensory loss by MF		Impaired SNCV		**Impaired MNCV**		Impaired **V**ibration/**W**armth/ **C**old sensation		
No. of cases with Nerves enlarged		**Neuritis**	**Nerve Grade III**	**At onset**	**Later**	**At onset**	**Later**	**At onset**	**Later**	**V**	**W**	**C**
Ulnar	**93**		2	50	6	66	18	79	12	33	28	7
Ulnar With NFI	58	9	7	82	5	57	1	**49All (L,A,V)parameters Impaired**	22	52	52	21
Dev.NFI Later	**2**		1		1	2			**2**			
Median	56		1	26	5	45	9	34	10	22	10	-
Median with NFI	33			29		28	3	10**(L,A,VImpaired**	5	25	25	4
Dev.NFI Later	1			3		5			5			
Radial	82		4	69	3	71	3	1 RR		36	40	
Radial with NFI	14			3		10				4	4	
LP	124		2	53	10	101	8	29**All (L,A,V) Impaired**	21	17	32	4
LP with NFI	30		1	26		29	2	**30/LAV impair**		12	17	15
PT	87	1	1	43	4	3	4	34	9	34	58	18
PT with NFI	31	2	1	29		1	1	34	6	14	15	3

Conclusion: Impaired WCV /NCV may predict NFI.

P-290

MORPHOLOGICAL ASPECTS OF PERIPHERAL NERVES CORRELATED TO THE ENDEMICITY FACTOR AND LEPROSY CONTACT

Presenter: Glauber Voltan

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Objectives: To search for morphological data of peripheral nerves by ultrasonography in healthy individuals and in the home and prison contacts of leprosy patients characterizing them by regional (high/low) endemicity and serology (APGL-1).

Methods: We used portable ultrasound-US, linear transducer (5.0-16.0 MHz). We evaluated bilaterally the cross seccional areas (CSAs) of peripheral nerves median (M), ulnar-tunnel (UT) and pre-tunnel (UPT), and Common Fibular head (CF) and tibial (T). After, the differences between left and right points (asymmetry-DIF), and to detect focal alterations for the ulnar and common fibular nerves the index of the difference between tunnel (T) and pre-

tunnel (PT) CSA values were calculated. Thirty-two prisoner contacts (PHC), 20 household contacts (Low-HHCs) from low endemic Brazilian region (SE), and 53 High-HHCs from high endemic regions (N and NE), randomly selected during training campaigns by Leprosy Reference Center of HCFMRP/USP and municipalities. Clinical evaluation was performed by leprologists. Blood samples were collected for anti-PGL1 (APGL1) and peripheral nerves ultrasound (US) performed by specialist physician. These contact data were compared with data from 49 health described by Frade (2013).

Results: The peripheral nerve CSAs values of HVs were the lowest in all groups in M, UPT, UT and FC. Only in UT was similar between HVs and PHC. The CSAs of all nerves in PHC group were lower than HHCs from the same low endemic region (Low-HHC) as well than High-HHC in M, UT, UPT, and CF nerves, while no difference in tibial points. The groups of HHC, independently of endemicity, did not present difference of nerve CSAs in all points, except in FC with lower values in High-HHC group surprisingly. Between Low and High-HHC groups, there was no difference of asymmetry and neither focal impairment measures. The asymmetry (∆) was bigger in all points of High-HHC group than HVs. The ∆UTPT of PHC group presented lower values than both HHC groups and HVs. The APGL1 ELISA-index did not show differences among groups.

Conclusion: Intra-domiciliary contact implied significant morphological changes in the nerves, making them thicker, independent of regional endemicity, different from prison contacts and healthy individuals, which may indicate initial signs of neural involvement in a subclinical disease phase in these individuals, requiring prospective future studies. The same applies to asymmetry in view of the differences between HHC and HVs. Focality seems to be also a change more related to type of contact (HHC) than with the pattern of region endemicity.

P-292

WHO DISABILITY GRADES AND LEVELS OF DIFFICULTY IN DIFFERENT AREAS OF FUNCTIONING AMONG PERSON AFFECTED BY LEPROSY IN INDIA

Presenter: Mathanraj David

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Objectives: To study the WHO disability grades and levels of difficulty in different areas of functioning among person affected by leprosy in India during the period from 2016 to 2017.

Methods: Cross sectional study Design using the standardized Washington Group questionnaire and WHO Disability grades. Data was analyzed for a total of 379 persons affected by leprosy. This study is outcome of baseline survey carried out during 2016 to 2017 for the CREATE (CSOs for Resource mobilization, Empowerment, Advocacy, Training & Employment) Project.

Results: Out of the total 379 persons affected by leprosy who participated in the study 311(82%) belonged to Grade II, 38 (10%) belonged to Grade I and 30 (8%) to Grade 0. The Levels of difficulties was divided into 4 categories as No Difficulty, Some difficulty, lot of difficulty and unable to do. The areas of difficulties were compared with WHO disability grades. Most of them faced difficulty in walking 64.9% and self care 55.7% and less in memory 37.2%, vision 28.5%, hearing 16.4% and communication 12.9%. The level of difficulty for walking was 29% some difficulty, 32.2% lot of difficulty and 3.2% unable to do, for WHO Disability grades and significant at $P<0.01$. The level of difficulty for Self care, 32.2% Some difficulty, 22.4% lot of difficulty and 1.1% unable to do for WHO Disability grades and significant at $P<0.01$.

Conclusion: The study concludes that WHO disability grades and areas of difficulties are highly significant for Walking (Mobility) and self care (washing and dressing) tasks. This study also gives us the insight about other areas of difficulties faced by person affected by leprosy which needs to be considered for necessary interventions and empowerment programs.

P-294

NERVE FUNCTION IMPAIRMENT (NFI) AMONG PEOPLE AFFECTED BY LEPROSY TREATED AT A LEPROSY REFERRAL CENTRE IN INDIA

Presenter: Michael Sukumar Pallapati

Michael Sukumar Pallapati[1], Zakaraiah Jaladi[1], Aparna Srikantam[1]

[1] LEPRA Society-Blue Peter Public Health and Research Centre, Cherlapally, Hyderabad 501301, India

Objective: To observe the Nerve function impairment among people affected by leprosy being treated at LEPRA Society- Blue Peter Public Health and Research Centre a leprosy referral centre.

Methods: This is a retrospective study undertaken at LEPRA Society- Blue Peter Public Health and Research centre leprosy referral centre. After the diagnosis of leprosy, the people affected by leprosy undergo clinical examination, and nerve function assessment done at base line and periodically. This record based study looked at status of nerve function impairment (NFI) the case records of all leprosy patients registered during 2014-2018.

Results: Out of total 717 records studied, 256 were from patients who were newly diagnosed with leprosy and remaining 461 were from the patients who have undergone MDT previously (RFT) and reporting to the center for various leprosy related consequences. 90/717(12.5 %) were found to have NFI with 11% in new and 13.4 % in RFT group. 82% of newly diagnosed leprosy cases were presented with NFI at the time of diagnosis. Ulnar (96%) nerve impairment has been found to be the most common incidence followed by lateral popliteal (43%), posterior tibial (52%), median (18%) and radial (7%) nerves.

Conclusion: Study findings indicate the necessity of nerve function assessment in all leprosy patients on a routine basis. Periodic assessments shall help in monitoring the condition.

P-316

DISABILITY CONTRIBUTES TO THE LIMITATION OF ACTIVITY IN LEPROSY PATIENTS IN SITANALA LEPROSY VILLAGE, INDONESIA

Presenter: Melani Marissa

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Objectives: to investigate the relationship among sociodemographic variables, duration of illness, types of leprosy, comorbidities, and WHO disability grading system for leprosy with daily activity limitations in people with leprosy who have completed the multidrug therapy using the Screening of Activity of Limitation and Safety Awareness (SALSA) scale.

Methods: Cross-sectional survey was conducted in Sitanala leprosy village, Tangerang, Indonesia in April 2018. Sociodemographic data and leprosy baseline characteristics were obtained from leprosy patients who have completed the multidrug therapy. WHO disability grading system was used to assess the impairment and the SALSA scale was used to measure the limitations to perform daily functional activities.

Results: A total of 221 people was affected by leprosy and completed the multidrug therapy in April 2018. According to WHO disability grading measurement 37 (17.4%) people had eye disability, 189 (87.5%) people had hand disability, and 199 (92.9%) people had feet disability. Based on SALSA scale score 42 (19.0%) people do not had functional limitations, 141 (64.0%) people had mild-to-moderate functional limitations, and 37 (16.8%) people had severe-to-very severe functional limitations. There is no association between activity limitation with sociodemographic characteristics (gender, job status, age during survey, income, education, marital status) duration of illness, types of leprosy , comorbidities, and eye disability. Hands and feet disability were associated with the limitation of activity (p-value 0.0004 and 0.01 respectively). In addition, severe disability of hands and feet (grade 2) have more risk to functional activity limitation (OR 4.21 and 6.69) than people who had no hands and feet disability.

Conclusion: Using a simple questionnaire method like SALSA scale, we have demonstrated that severe disability is correlated with the presence of functional activity limitation. In addition, SALSA scale can be applied and to provide the data on limitations to perform daily functional activities in leprosy patients with disability. In the future, SALSA scale can assist health care provider in designing appropriate intervention to leprosy patients with limited functional activities.

ILC-5: DISABILITY and IMPAIRMENT:

5.2 Prevention of Disability

P-010

IMPACT OF SELF HELP GROUPS IN REDUCING RECURRENT ULCERS IN LEPROSY

Presenter: Mamesh Kumar

Mamesh Kumar[1] Shrestha[1], Kiran Jha[1]

[1] Nepal Leprosy Trust, Lalgadh Leprosy Hospital & Services Center (LLHSC)

Objectives: This study is done as a follow up of a project (Stigma Elimination (STEP) undertaken in 4 districts in southern Nepal, which suggested that belonging to Self Help Groups (SHGs) helps reduce the burden of disability, including ulcers among leprosy patients in resource poor settings. Based on the evidences of this successful self-help group initiative in reducing ulcers, this study was planned with the objective to compare the recurrence of plantar ulcers in leprosy patients belonging to Self Help Groups (SHGs) and those who do not belong to SHGS, in Dhanusha district, in southern Nepal, to assess whether belonging to SHGs has any effect on recurrence of plantar ulcers.

Methods: This study has a retrospective approach, and uses secondary data of patients who were admitted in the In Patient Department (IPD)of Lalgadh Leprosy Hospital & Services Center (LLHSC). The records of all patients from Dhanusha District, both from SHGs and not from SHGs, who were admitted for ulcer management between January 1st 2013 and December 31st 2017 will be extracted from the Medical Records Department and analyzed to study the frequency of recurrence of ulcers following their hospital admission for the management of ulcers.

Results: The results of the study will be available within 6 months and if this abstract is accepted will be shared at the 20th International Leprosy Congress, in September.

Conclusion: The conclusions will be presented after the results are available.

P-028

PSYCHOLOGICAL DISTRESS, LEVEL OF MINDFULNESS AND ITS IMPACT ON THE DAILY QUALITY OF LIFE OF NEWLY-DIAGNOSED AND IN REACTION HANSEN'S DISEASE PATIENTS: A CROSS-SECTIONAL STUDY IN A TERTIARY GOVERNMENT HOSPITAL

Presenter: Kyla Janika Nerva

K.M. Nerva[1], E.C. Ty[1], M.T. Torres[1], M.M. Malahito[1]

[1]East Avenue Medical Center – Department of Dermatology, Quezon City, Philippines

Objectives: To study the effect of the level of mindfulness, depression and anxiety scores on newly diagnosed and in reaction Hansen's Disease to their quality of life

Methods: This cross-sectional study will have a total of 40 respondents to detect a simple correlation of r = 0.6. The patients will be equally divided into two groups: 1) in-reaction and 2) newly diagnosed. This study will be done at East Avenue Medical Center Dermatology Out-Patient Department. After informed consent respondents will

answer three questionnaires on the following outcome measures: *five facet mindfulness, hospital anxiety and depression, and dermatology life quality index*. Descriptive-analytic methods will be employed to analyze the demographic of the respondents. Analysis per demographic will be done per group using Independent T-test and One-Way Analysis of Variance for normal quantitative data and Chi-square test for frequency data. Pearson's Correlation analysis will be utilized to assess the relationship of the outcome measures from each other. For the analysis on each of the primary outcome measures between the two groups, Independent T-test will be used.

Results: The study is currently underway and is expected to be completed by June 2019. As of January 2019, 45% of the required sample size and data have been collected. The mean age is 34 years old with 77% of the respondents being male.

Conclusion: Hansen's Disease is a chronic slowly progressive infectious disease caused by *Mycobacterium leprae* with a predilection both for the skin and peripheral nerves. It is a potentially disfiguring disease especially when left untreated. Despite elimination campaigns, it remains to be prevalent in the Philippines and deemed to be high relative to other countries in the Western Pacific Region. Numerous studies suggest an increase incidence in psychiatric disorders with emphasis on depression and anxiety in people suffering from skin diseases. Specifically, the prevalence of psychiatric disorders among people with Hansen's disease has greatly increased to date with depression as the most common identified disorder. As such, quality of life assessment can indicate the necessity of psychotherapeutic measures for the patient. One of the emerging concepts in psychotherapeutic interventions is mindfulness which has been touted to improve mental and psychiatric faculties. Thus, results from this study may be a jump off point of a potential experimental research assessing the effect of mindfulness-based intervention on the psychological well-being of Hansen's Disease patients.

P-036

ACCEPTANCE OF KARIGIRI MICRO CELLULAR RUBBER (MCR) FOOTWEAR AMONG THE LEPROSY PATIENTS

Presenter: Priyanka Madhavan

Priyanka Madhavan[1], Sathish Paul[1], Richard Joseph[1]

[1]Schieffelin Institute of Health – Research & Leprosy Centre, Karigiri, Tamil Nadu 632106, India.

Objectives: Identify driving factors affecting the influence of acceptance and non-acceptance of MCR footwear among the leprosy patients

Methods: A cross sectional study was conducted to identify the reasons for the acceptance of Karigiri Micro Cellular Rubber (MCR) footwear on leprosy patients attending physiotherapy department of SIHRLC Karigiri since 2017. The data was collated using a pre designed questionnaire on the use of MCR footwear by a qualified physiotherapist

Results: Preliminary analysis covered 107 cases (28% females 72% males), their mean age was 52.2 (SD=13.6) minimum age 23 and maximum age 77. Mean duration of leprosy was 14.4 years (SD=13.7) all were MB. 63.3% of these patients were using the MCR footwear provided from the institute. In the sample, n= 60 (58.8%) were wearing MCR footwear and n=47 (40.2%) ordinary footwear.

Of those wearing MCR footwear, n=22 (36.6%) were using as it was advised by health professionals. Patients motivation were also evident in n=21 (35%) to heal their ulcers and n=8 (13.3%) to protect their anaesthetic feet from developing ulcers. N=11 (18.2%) used MCR footwear as it gave them comfort and n=3 (5%) as it was given free to them.

Of those refusing MCR footwear, 20 (50 %) was because of the appearance (lack of appealing designs), 7 (17.5) because of stigma of wearing the institutional footwear and 1 (2.5 %) were not able to maintain the provided footwear. Few of the patients n=14 (35%) were not able to provide any valid response.

Conclusion: To persuade the use of MCR footwear by leprosy affected patients, doctors and health personals highlight the advantage pertaining mainly to the health benefits. Efforts should be taken to upgrade the designs of the footwear. MCR footwear with appealing designs and colour on par with available market footwear would increase the adherence and the acceptance of the MCR footwear among leprosy affected patients.

P-079

PREVENTION OF DISABILITIES & REHABILITATION OF LEPROSY AFFECTED

Presenter: Sunil Kumar Gupta

Dr. Sunil Kumar Gupta
Hind Institute of Medical sciences, India

Objectives: Leprosy result into a wide range of deformity and disability that impact on quality of life. The aims are prevention of impairment and rehabilitation of leprosy affected individual in the community.

Methods: Sensitization of doctors (dermatologists), health care workers, leprosy patients and their close relatives and also the general public by regular organization of continuous medical education program in different states of India and also through social media

Results: There was positive change in attitude and communication regarding leprosy and leprosy patient that will help in the eradication of disease in future.

Conclusion: Leprosy still needs attention by the WHO and by endemic country to prevent disability in leprosy and to rehabilitate them..

P-093

PROTOCOL ON POSSIBLE USAGE OF IONOTOPHORESIS STEROID TRANSDERMAL PATCH DELIVERY WITH/WITHOUT ELECTRICAL STIMULATION IN LEPRA NEURITIS –STEROIDS SYSTEMIC TOXICITY REDUCTION AND ACTIVE FUNCTION STRATEGY

Presenter: Tharangarazhu Pugazhenthan

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Objectives: It is a well-established fact that an oral steroid causes more troublesome side effects when compared to its benefits. In Lepra reaction involving neuritis or merely neuritis, the main objective is steroidal management based on body weight dosing or empirical dosing of steroids. In most of the clinical set up the distressing effect of steroids is frequently reported in spite of providing antigastric drugs and supplements.so in order to reduce the systemic side effects and to make concentrated drug near the nerve structures involved there is a need for focused delivery system of drugs. So Iontophoresis could be good strategy to combat the above said deficiencies and complications.

Methods: Iontophoresis is a process of transdermal drug delivery by use of a voltage gradient on the skin. Molecules are transported across the stratum corneum by electrophoresis and electroosmosis and the electric field can also increase the permeability of the skin. These phenomena, directly and indirectly, constitute active transport of matter due to an applied electric current. So the desired drug dexamethasone or any corticosteroid preparation can be transported below the underlying structures. For instance for application of ulnar neuritis it the transdermal patches containing the drugs are pasted over the skin of medial aspect of the flexed elbow and Both patch and pouch are connected to an ionto machine. As the medication is delivered through the pores of the skin, the ionto machine also applies a small electrical current, which further increases the skin's permeability to the medication. The study will be pilot and is under the review process.

Results: The desired outcome will be because of possible anti-inflammatory effects with proposed least side effects.

Conclusion: This is a good strategy to deliver the indented steroids for neuritis and thereby preventing steroid induced side effects systemically. This has been proved in other inflammatory condition of musculoskeletal disorder. Another advantage of using this approach is that unilateral, single nerve involvement may be targeted without major adverse effects. Also the tapering concept is not used here.

P-102

USE OF MOBILE TECHNOLOGY IN LEPROSY MANAGEMENT – A CASE STUDY

Presenter: Sathish Kumar Paul

Sathish Kumar Paul[1], David Prakash Kumar[1], Richard Joseph[1], Jerry Joshua[1]

[1]Schieffelin Institute of Health Research & Leprosy Centre, India

Objectives: The rapid development in telecommunication sector across the globe has revolutionized communication networks even in the rural areas. To improve treatment adherence, compliance and self-care, mobile handsets (non android) with facilities to send and receive short message service (SMS) were provided to individual patients at a tertiary referral hospital in India. This report presents a case where use of mobile phone led to enhanced care/ treatment

Methods: In a tertiary leprosy referral hospital in Tamil Nadu, India leprosy treatment was started for a male patient presenting with the clinical signs and symptoms suggestive of leprosy. At the behest of the clinician's need for close monitoring, the patient was provided with an individual mobile phone and a 12 hour toll free number. Mobile phone was provided to the patient as he was from a remote location and also had to be continually monitored. The patient through his individual mobile phone was able to provide detailed regular information on his condition to the health worker. Physiotherapists and paramedical staff after adequate orientation on the leprosy complications, treatment and self-care interacted with the clients through the 12 hour toll-free number. However the patient after few months of treatment, did not visit the hospital for his treatment.

Results: The follow up call within few days of his delay revealed that the patient dint have enough financial resources to visit the hospital for treatment. The patient was further visited by the health workers and was reassured and arrangement were made by the hospital to reimburse his travel costs.

Conclusion: The use of technology could facilitate and complement the work of health workers to reach their patients living in remote areas. Utilizing the advancements in technology would help in solving some of the key unanswered issues still existing in leprosy.

P-109

PLANTAR PRESSURES MEASUREMENT IN STANDARD OFFLOADING DEVICES

Presenter: David Prakash Kumar

David Prakash Kumar[1], Sathish Kumar Paul[1], Jerry Joshua[1]

[1]Schiffelin Instutitute of Health Research & Leprosy Centre

Objectives: To assess the plantar pressures in the foot when a patient is wearing a Total Contact Cast(TCC). To identify areas of the foot that exhibit peak plantar pressures inside the total contact cast. To compare the plantar pressures in the contact cast with those wearing protective footwear.

Methodology:
Design and Sample

An experimental study design with 5 in the experimental group and 5 patients in the control group. The experimental group had Leprosy patients with plantar ulcers and a total contact walking cast. The control group patients had protective footwear for healing of plantar ulcers.

Instruments

A sensor was placed between the foot and the total contact cast. The sensor was designed to measure the plantar pressure in the heel area, lateral border of the foot and the forefoot area.

Results: The plantar pressures in the heel, lateral border and the forefoot area for those in the experimental group decreased when the TCC was applied. But, contrary to expectation that there will be complete offloading, it was noted that the heel area had minimal reduction in plantar pressure and exhibited peak plantar pressure. This is a significant finding because the heel ulcers may not heal effectively with the use of TCC.

Comparison of plantar pressures between TCC and protective footwear showed that plantar pressures decreased significantly when TCC was used than when protective footwear was used.

Conclusion: TCC is a better offloading device when compared to protective footwear, but the cost and practical difficulties prevent TCC being used more often. The reduction in the plantar pressures in all areas when TCC is used ensures that considerable offloading is present. The use of total contact walking cast in the healing of plantar ulcers is very effective for ulcers in the lateral border and the forefoot.

Presence of plantar pressure in heel, even inside the TCC, as measured by the sensors, will create a doubt in the mind of clinicians whether it can be an effective method of healing heel plantar ulcers. Also, TCC is unpopular among users because of the restrictions on Activities of Daily living that it causes. Use of latest design software and technology to find alternate designs of offloading measures to heal plantar ulcers is the need of the hour.

P-162

IMPROVE THE QUALITY OF MICRO CELLULAR RUBBER SHEET FOR MANUFACTURING FOOTWEAR FOR LEPROSY AFFECTED PERSONS WITH ANAESTHETIC FEET

Presenter: Al Samraj

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Objectives:

1. To improve the quality of Micro Cellular Rubber Sheet for making footwear for anaesthetic feet.
2. To Increase technically durable, acceptable and useful for prevention of injuries and ulcers footwear for patients affected by leprosy and others.

Methods:
• In 2018, our Rubber Mill manufactured a few samples of modified Micro Cellular Rubber (MCR) by resetting the formula and obtained better quality of MCR which gives 15o A Shore. This MCR generates a controlled amount of softness and cushioning while walking with an Ulcer foot.

• The new formula was set in consultation with a Rubber Technologist and a few samples were manufactured by trial and error method for the correct Shore. These samples were tested for 8 weeks. Every week the hardness was tested by a Durometer and recorded for study purposes. The process was repeated many times and got the required Shore consistently in all areas of the MCR sheet.

• There were alterations and modification done on the Hydraulic Press and moulds to get a constant temperature which is the main criterion at the Vulcanisation process of the Rubber compound to manufacture MCR.

• The newly developed MCR sheet was used for making sample footwears. These footwears were given for use to our staff and a few patients to check the quality and the durability. Every week measurements were recorded and the results, based on the changes, were reviewed for 12 weeks.

• Finally, the new MCR sheet was tested for tensile strength, abrasion resistance, flexing and resilience property at the Rubber Research Institute, Kottayam.

Results: The Comparison of the data showed that a significant increase of softness occurred when we reset the chemicals formula. It was noted that if we change the present mould made of Galvanized Iron to C45 grade Steel which is capable of holding the temperature for more time continuously, gives good result at the vulcanisation of chemical compound. The result shows that we should undertake more tests to achieve a scientifically proven MCR.

Conclusion: This study showed that this new formula (by altering or modifying the present Hydraulic Press) gives a good degree of softness, even re-distribution of pressure, good abrasion resistance, cushioning effect, flexing and durable quality of Micro Cellular Rubber.

P-166

IMPACT OF COMMERCIAL FOOTWEAR COMPARE TO MCR FOOTWEAR IN PLANTER SIMPLE ULCER

Presenter: Ramesh Kumar Choudhary

R K Choudhary[1], G. Mahara[1], R. Niraula[1]
Institutional Affiliation of Author and Co-authors: Nepal Leprosy Trust (NLT)- Lalgadh Leprosy Hospital & Services Centre (LLHSC)

Objectives: The primary purpose of this study is to investigate whether commercial footwear, which could be prefabricated and delivered in a retail setting, could achieve appropriate pressure reduction, or whether it prevents the occurrence and progression of foot ulcers.

A second aim is to compare responses between MCR footwear and commercial footwear in order to understand whether MCR footwear is effective than commercial footwear or commercial footwear are effective in preventing occurrence of foot ulcers.

Methods: 120 people affected by leprosy with anaesthetic feet, who have simple ulcers in planter, and regularly attending LLHSC, and who will accept the ready-made footwear and MCR footwear, and willing to report footwear

conditions regularly for 6 months will be included in the study. Out of this, 100 people will be sample size (50 for MCR and 50 for commercial).

Results: The study is going on and under process to collect information. The result of the study will make available on time and will be shared in the International Leprosy Congress, Manila

Conclusion: The conclusions will be presented after the results are available.

P-173

IS LEPROSY DISABILITY PREVENTION CARE GENDERED? SURVIVAL ANALYSIS OF PERSONS AFFECTED BY LEPROSY WITH DISABILITIES IN KONGO CENTRAL PROVINCE, DR CONGO

Presenter: Louis Paluku Sabuni

L.P. Sabuni[1], J.K. Kadima[1].

[1]The Leprosy Mission Congo, Kinshasa, Democratic Republic of Congo

Objectives:
1. To evaluate the success of the management and prevention of disabilities in persons who have completed multi-drug therapy in Kongo Central Province
2. To analyse the gender equality of persons affected by leprosy in Kongo Central Province

Methods: Retrospective, cross-sectional study.

Survival analysis of persons affected by leprosy who are part of the prevention of disability programme in Kongo Central Province. The criterion of success is the absence of grade 2 disability.

The duration (in months) from diagnosis to onset of impairment (disaggregated by gender and age) was collected from patients registers from 2013.

Data was analysed using the Kaplan-Meier survival analysis method and the two curves (male and female, young and adult), were compared using the Wilcoxon test and the Mantel test.

Results: In six endemic leprosy villages in Kongo Central Province, more than **200** new cases of leprosy have been identified and treated in six years. Of these, only **48** have complete records.

Using the Wilcoxon test, we reject the hypothesis of equality of the two curves (male and female) because the value of W exceeds 3.84 (level 0.05). Impairments appear earlier in women affected by leprosy compared to men, and in adults compared to children.

Conclusion: Gender-sensitive interventions are important for reducing stigma, especially for women and girls. Given the weight of local tradition and poverty on gender inequalities, it is important for any leprosy programme to conduct gender analysis before implementation and to involve women and girls more in programme design, implementation, and monitoring and evaluation. It is important that data on leprosy and related disabilities be improved, with adequate disaggregation by gender and age.

The fact that a patient with leprosy has completed treatment is not the best indicator of clinical success. The success of the clinical work should be evaluated after long-term follow-up of patients without disability.

P-180

PROGRESS OF RESEARCHES OF FACTORS INFLUENCING QUALITY OF LIFE IN LEPROSY PATIENTS

Presenter: Shumei Feng

FENG Shu mei[1], HE Jian[1], GE PengFei[1], WU Shan[1], ZHANG Hong-mao[1], HE Jiong[2], MAO Weiwu[3] WANG Kejian[4],

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Objectives: To review the researches of risk factors influencing the quality of life in leprosy patients and describe their progress.

Methods: The related literatures at home and abroad in recent years were reviewed and summarized.

Results: The factors influencing the quality of life of leprosy patients were respectively personal factors (sex, age, education background, economic income and the state of illness), factors of disease (type of leprosy, diagnostic delayed, reaction of leprosy, neuropathic pain and disability), social factors (social security service, social discrimination and social support).

Conclusion: In order to improve the quality of life of leprosy patients, the comprehensive assessment should be conducted in three aspects of individual, leprosy and society to develop scientific, reasonable and individualized intervention plan.

P-196

FOOTWEAR USAGE IN LEPROSY-AFFECTED PEOPLE WITH PLANTER ANESTHESIA

Presenter: Khorshed Alam

A. Liton[1], D.N. Roy[1], K. Adhikary[1], N. Alam[1], T. Haque[1], A. Hossain[1], A.S. Chowdhury[1], J.C.Roy1, K. Alam[1]

[1]Rural Health Program, TLM international Bangladesh

Objectives: MCR sandals have been used routinely for patients with foot anesthesia in leprosy control activities in northwest Bangladesh for 38 years. However, the number of patients using MCR sandals is decreasing rapidly. The aim of this study was to establish the proportion of eligible patients using MCR footwear, and reasons for not using MCR footwear.

Methods: In a prospective study we obtained data from two sub-districts; one from Thakurgoan and one from Panchagarh district. Of 215 patients in these sub-districts with anesthetic feet, 118 were selected for the study. We visited their houses, observed MCR use, and interviewed them with a questionnaire that was developed through focus group discussions with persons with leprosy related disabilities.

Results: Of the 118 patients, 89 were male (75%), and 29 female (25%); 28% were farmer, 21% day laborer; 17% housewife; 8% were ultra-poor (income <25 BDT/day); and 56% were poor (income 26-70 BDT/day). In total 18% lived within 1-5 km; 32% within 6-10km; 25% within 11-15 km; and 25% lived >15 km from the clinic. Forty four patients (37%) had foot anesthesia only; 37 (84%) having anesthesia for >5 years. Five patients (11%) had a plantar ulcer. All 44 patients were using market-bought shoes. None had received MCR sandals in 2018. The remaining 74 patients (63%) had foot anesthesia with an abnormal shape of the foot, of whom 68 (92%) had anesthesia for >5 years. Of these 74 patients, 23 (31%) had a plantar ulcer, and 63 of these 74 patients (85%) were using MCR sandals and 11 (15%) market-bought shoes. In total 42 out of the 74 patients (57%) received MCR sandals in 2018 through the leprosy clinic. This means that only 42 out of 118 patients with plantar ulcers in this study group (36%)

received MRC sandals. In total 76 patients did not receive MCR in 2018 because of disliking the footwear model (49%), social stigma (38%), forgetting the clinic date (3%), long distance for coming to clinic (3%), and because the clinic could not supply MCR to patients (8%) for several reasons.

Conclusion: Only half of the eligible patients with plantar anesthesia use MCR sandals; the remaining patients use market-bought shoes. More attention needs to be given to the model of MRC sandals to accommodate the preference of the patients and to reduce stigma related to the wearing of MRC sandals that are recognized as 'leprosy footwear'.

P-247

SELF-CARE PRACTICES AMONG WOMEN AFFECTED BY LEPROSY AND LIVING IN THE NEIGHBORHOOD AROUND ALERT CENTER, THE LEPROSY REFERAL HOSPITAL IN ETHIOPIA

Presenter: Saba Maria Lambert

S. D. Nigusse [1], T. Lema [1, 2], S. Lambert[1]

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Objectives: Large numbers of treated leprosy patients reside in the area surrounding ALERT center and many are presenting to the hospital with foot ulcers. Self-care activities and groups are known tools for Prevention of Disabilities (POD). Traditional neighborhood groups and NGO sponsored mixed (ex-leprosy and non-leprosy members) self-help groups exist mainly for income generating activities.

This project assesses self-care activities at community level amongst women affected by leprosy.

Methods: A structured questionnaire was administered to 151 leprosy affected women living in the neighborhood of ALERT. Focus group discussions (FGDs) were conducted with 34 women (24 leprosy affected and 10 non-leprosy affected persons). Leprosy Associations and organizations working on leprosy have been interviewed on key program issues.

Results: Amongst the questionnaire respondents, 86.1% were aged over 35; 27.8% live in households with more than 5 people, with 51% being illiterate and 42.3% being on a daily income of less than a dollar. Many of the women (74.2%) had disabilities; 64.2% had eye problems and loss of sensation in feet was reported by 41.7% and in hands by 42.4%. Almost half of these women (47.7%) were members of self-help groups whose activities mainly constituted in income generating activities and integrating assistance to other members of the group. None of the women interviewed belong to a group in which self-care activities for prevention of disability was integrated.

FGDs revealed that relationships between leprosy affected and non-leprosy affected people were good. Marriage with leprosy unaffected person was possible despite reported sensitivity and hidden stigma. FGDs revealed lack of adequate knowledge and awareness about self-care practices and confirmed that there are usually no discussions around self-care during self-help meetings, a finding confirmed by NGOs working with people affected leprosy in the neighborhood.

Conclusion: This study indicates that despite the majority of women affected by leprosy participating in income generating self-help groups and other traditional groups, no self-care activities were held during those meetings. Self-care education is given on an individual basis at ALERT hospital when patients are receiving treatment, but no community level activities are held to reinforce the importance of prevention of disabilities. Only one NGO (Medhin) combined self-care activities in the self-help/ microfinance group meetings. We feel this is a missed opportunity. As self-help groups are popular amongst persons affected by leprosy in this community, integrating some self-care discussions into some of their meetings would improve knowledge and peer-support in preventing further disability.

P-253

THE P75NTR SERUM LEVEL AS A BIOMARKERS TO EVALUATE THE PREVENTION OF DISABILITY IN LEPROSY: A CORRELATION BETWEEN WHO DISABILITY GRADING AND SEMMES-WEINSTEIN MONOFILAMENT-TEST EXAMINATION

Presenter: Dhelya Widasmara

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Objective: Leprosy is one of the oldest diseases in the world that is still a burden. The modalities of therapy with multidrug therapy (MDT) have started long ago. Due to various factors limitations, especially community knowledge contributed to a slow diagnosis where disability has occurred. The p75NTR receptors play a role in the regulation of neural plasticity, neurogenesis and increased expression of Schwann cells in response to lesions and neurodegenerative diseases. The degrees of disability of leprosy patients can be assessed using the WHO scale and the Semmes Wenstein Monofilament (SMW) test.

Methods: The purpose of this study was to determine the linkage between p75NTR with WHO level of disability assessment and SMW test. Leprosy patients in Saiful Anwar and Kusta Kediri hospitals who entered the inclusion criteria were grouped into MB and PB, then SMW test and WHO assessment of disability grade were performed. Serum p75NTR levels were then measured in both groups using ELISA.

Results: Then the data is analyzed. Results showed that 33 leprosy patients were included in the inclusion criteria, 21 people including MB and 12 PB. There was a strong correlation between p75NTR and leprosy type, WHO-based disability status, and SMW test results on hand and foot respectively with p = 0,031; p = 0,000; p = 0,000; and p = 0,000.

Conclusion: The PB leprosy group had a higher p75NTR than the MB group. It is suspected that Schwann cell apoptosis can be induced by Serum p75NTR.

P-293

COMMUNITY BASED DISABILITY MANAGEMENT SERVICE IN TAMIL NADU FOR PEOPLE AFFECTED BY LEPROSY AND OTHER DISABILITIES

Presenter: Manivannan Govindarajlu

G. Manivannan [1], Tina Mendis[1]

[1] The Leprosy Mission Trust India, New Delhi, India

Objectives: To promote prevention of disabilities for people affected by leprosy and other disabilities. And, to build the capacity of Duty bearers, paramedics, undergraduate and post-graduate medical professionals on issues of people with disability.

Methods:: This study was a part of community based project named partnership advocacy research and training towards inclusion (PARTI)One of the objectives of the project was to conduct a situation analysis of the local needs and resources for establishing Community based Disability Management with active support of duty bearers especially the health sector officials, with a focus on leprosy. The activities include training of CBR workers on signs and symptoms of leprosy, identifying the children with developmental delays, establishing the therapy units at the village level, building capacity of rural health workers on basic therapy skills to minimize and prevent further

disabilities, with provision of adaptive aids. Physiotherapy and Occupational therapy were provided at village level.Community members were encouraged to take up the activities to reduce the disability in their villages.

Results: During the project period, total of 2220 (366 leprosy & 1854 general disability) assessments and therapy plans were made by rural health workers and implemented in the therapy unit established at village level. Total of 151 patients received MCR footwear. Aids and appliances were given to 222 persons with disability, of which persons affected by leprosy were 214. A total of 47 people are continuing in the self-care groups. Those (47) requiring specialized care were referred to higher centers by the local health workers after assessment. As part of their community action, leprosy case detection was carried out in one village and 28 new cases were identified, 15 of them were children.

Conclusion: Building capacity of local volunteers and health workers at village level with the support of government functionaries could identify and mange disability and improve function.

P-341

MODIFIED LEPROSY ELIMINATION CAMPAIGN - A SYSTEMATIC ACTIVE CONTACT TRACING APPROACH UTILIZING THE COUNTRY'S FIRST MOBILE PHONE-BASED LEPROSY REFERRAL SYSTEM THROUGH THE LEPROSY ALERT RESPONSE NETWORK AND SURVEILLANCE SYSTEM (LEARNS) USING THE PAST FIVE YEAR DATA IN REGION 6.

Presenter: Ame Liz Mardoquio

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Objectives: To contribute to the leprosy elimination efforts by maximizing the engagement of public health care workers in the systematic active contact tracing using the past five year data of the index cases to screen 80% of household contacts and, To strengthen case finding through advanced Referral System of suspected leprosy cases in Western Visayas for early detection and to lessen diagnostic & treatment delay.

Methods: It is common knowledge that the last remaining sources of leprosy infection are in pockets found in difficult or hard to reach areas. Innovative approaches such as the MLEC and LEARNS had been developed to address this dilemma, and enhanced tools developed include the following: (1) Participatory approach which involvement of stakeholders and health service provider, being geared for the support of the activity specially in mapping the data in the community; (2) Community mobilization wherein the Barangay Health workers identify/help in identifying the areas to be visited during house to house contact tracing and invites household contact of index case if there will be a "Kilatis Kutis" (community Skin screening) in one point area; (3) Advocacy, Communication and social mobilization implementing effective information, education campaign to broaden community awareness and eradicate stigma in making zero-leprosy in the community; (4) Leprosy Alert and Response Network and Surveillance System (LEARNS), the country's first mobile phone-based leprosy referral system designed to work within the existing healthcare system. It is a mobile platform that requires no more than a regular phone providing a quick link between frontline workers and experts; aids in early case finding; reduces diagnostic and treatment delay; a tool for surveillance; and in the long term, interrupt transmission and reduce the incidence of leprosy (5) LEARNS, through its innovative mobile health (mHealth) platform enables healthcare practitioners to refer possible leprosy patients by simply sending the sms to the leprosy healthcare provider: LEARNS LN message: LN_HFCode_PatientInitials_MM/DD/YYYY_Gender_Patient_CellNumber_
Symptoms (AN :anesthesia, DEF :with deformity, LG :with lidgap, X :with exposure to a leprosy patient). LEARNS system receives and replies to the message. Patient consults with MHO for face to face diagnosis within 2 weeks (if POSITIVE message from the system) and within 7 days (if NEGATIVE message from the system).

Results: MLEC

In three (3) household contacts reported to have a skin screening, there was one (1) who was a confirmed new leprosy case. The MLEC approached develop effective and efficient leprosy elimination campaign to find all cases at an early stage to prevent deformities, increasing awareness of the leprosy challenges and gaps at the localities; strengthening political support and empowered involvement of community in general and improving health-seeking behavior of individual in particular.

LEARNS

In one hundred five (105) tele-referrals to the LEARNS network from 2014 to 2018, the system identified seventy nine (79) POSITIVE; thirteen (13) NEGATIVE; four (4) MAYBE and nine (9) UNSPECIFIED message tele-referrals respectively. LEARNS is an evidence based innovative approaches to achieving zero transmission of leprosy in addressing the more difficult challenges we face in leprosy control such as (1) limited access to healthcare, particularly for those living in remote and geographically isolated areas; (2) decreasing number of leprosy experts in the country, with experts mostly found in hospitals and urban centers.

Conclusion: MLEC

The above findings indicate that MLEC is a good if not currently the best approach needed by healthcare service providers to find the remaining cases using the systematic active contact tracing in all the areas especially difficult/hard to reach areas,. As it is highly significant that contacts of the index case/patient that has been treated for leprosy in the past 10 years be visited, the promotion of MLEC is crucial to the attainment in finding all those who have been exposed and developed Hansen's disease. The strategies identified in MLEC are therefore suggested to be reinforced, with more emphasis on the household contacts in finding new cases.

LEARNS

LEARNS as a strategy in case detection and interruption of leprosy transmission is an innovative tool, implemented within the public healthcare system and designed to complement other strategies of the National Leprosy Control Program. LEARNS is a good tool for screening suspected leprosy patients and close contacts of previously treated patients. It is a leprosy surveillance system using SMS that provide epidemiological data needed to monitor disease patterns.

P-372

DEVELOPMENT OF NEW DESIGNS OF FOOTWEAR FOR BETTER ACCEPTABILITY FOR PERSONS AFFECTED BY LEPROSY.

Presenter: Pankaj Gupta

Pankaj Gupta[1], Karthikeyan G[2], Rajeev Joy Nathan[3], Geeta Bharti[4]

[1]Physiotherapist, The Leprosy Mission Hospital Nand Nagri, New Delhi-110093, India [2]Research Coordinator, The Leprosy Mission Trust India, New Delhi, India [3]Superintendent, The Leprosy Mission Hospital Nand Nagri, New Delhi-110093, India [4] Occupational Therapist, The Leprosy Mission Hospital Nandnagri Delhi, India

Objectives: The protective footwear made of MCR in routine models and colours are found to be less attractive to for patients to use. MCR footwear with different colours and models might improve the compliance in use of it. Therefore, the objective of this study is to assess the effectiveness and acceptability of MCR footwear developed in various colours and designs.

Methods: The study was conducted in a tertiary hospital for leprosy in New Delhi. Persons affected by leprosy with anaesthetic foot/feet due to leprosy, both male and female, aged between 15 to 50 years were be included in the study. Those with short foot and/or absorbed digits/feet were excluded. Study participants were identified from out-patient department, during their regular visits to hospital for their treatment. Study participants were shown all the models of the footwear available in the footwear department of our hospital. These footwear models consisted

of old hand models of MCR, factory made regular MCR models and newly developed MCR models in new colours and designs. Patients would be allowed to select the model of MCR footwear of their choice. The effectiveness and acceptability was measured after 6 months of receiving the footwear.

Results: In total 257 persons affected by leprosy were recruited in the study over the period from January 17 to December 2018. Out of 257 persons affected by leprosy, all opted for newly designed footwear in different colours and designs. Out of the 257 patients, we provided newly developed footwear to the first seventy patients and included them in this analysis, 31 males and 39 females. As on December 2018 we followed up with 47 patients. It was observed that that there was increased frequency in the use of footwear and its acceptability, and one patient developed new ulcer.

Conclusion: The protective (MCR) footwear in different colours and models, improves the compliance and acceptability in patients, which will ultimately lead to decreased occurrence of new and recurrent ulcers.

P-400

ROLE OF PRIVATE SHOE MAKER IN SUSTAINABLE SUPPLY OF PROTECTIVE FOOTWEAR FOR DISABILITY REDUCTION & MANAGEMENT

Presenter: Masuma Parvin

Masuma Parvin[1], Jiptha Boiragee[1], Md. Khalequzzaman[1], Noyel Tappa[1], Bijoy Rishi[2]
[1] Leprosy Mission Bangladesh, [2]Master Shoe House, Kamalganj

Objectives: To assess the effectiveness of local private shoe maker for sustainable production and supply of protective footwear in a cost effective manner for disability reduction and management of people with insensitive foot due to leprosy.

Methods: National Leprosy Program (NLP) has no budget for shoe support to persons with insensitive foot due to leprosy. As a partner of NLP, TLM Bangladesh is providing majority of protective footwear across Bangladesh. Thus production and supply of protective footwear is fully dependent on NGO projects which is not a sustainable supply system. Considering the above situation Activating and Engaging government and people in Partnership (AEP) under TLM Bangladesh is piloting different methods to encourage active involvement of private shoe producers in the field of leprosy, using following techniques;

- Partnerships with local shoe producers
- Training and exchange for capacity building of technical persons
- Engage NGO partners, people affected by leprosy, SHGs and Government staff working for leprosy
- Analyze the cost of shoe produced and supply by NGO managed projects
- Provide unavailable shoe materials for producer in subsidized price and offering small production charge for each pair of shoe

Results: This model has demonstrated it is feasible to enlist help of private shoe maker in shoe production, costing and supply system of protective footwear in poorly served districts of Bangladesh which are as follows;
- Signed MoU with three local, community minded shoe producers in poorly served and high prevalence districts.
- Provide technical and capacity building support of the three producers who have shoe making skill and shoe store in key market places for better communication.
- Produced and supplied 108 pairs of footwear in 2018 this includes supply at home for vulnerable groups.
- 80 people and their families with G2D, introduced with supply center (shoe stores) for independent contact for further needs
- Community has recognized and are aware of the stores who produce footwear for persons affected by leprosy for

future refer.
- Production cost of each pair footwear is BDT 450 by local market producer which is 250% less than project supply back strap leather shoe per pair.

Conclusion: The findings provide strong evidence that private shoe producer can contribute in leprosy disability reduction and protection in a cost effective manner. This community based production can be a sustainable supply system in absence of NGO projects. This also contributes to social inclusion, mobility and stigma reduction.

P-405

DISABILITY STATUS AT COMPLETION OF MULTI-DRUG THERAPY OF NEWLY REGISTERED PATIENTS IN TERITARY REFERAL CENTRE AT TLM HOSPITAL TAMILNADU

Presenter: Ilavarasi Kumarasamy

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[1]The Leprosy Mission Trust India, Community Hospital, Vadathorasalur, Tamilnadu, India [2] The Leprosy Mission Trust India, CREATE Project, Vadathorasalur, Tamilnadu, India

Objectives: To determine the extent of Disability status at the time of diagnosis and at completion of MDT, and to identify opportunities for intervention and their relative impact on the prevention of disabilities (POD)

Methods: This retrospective cohort study includes all new leprosy patients diagnosed, registered for treatment and referred to public health system to continue MDT from January 2017 to December 2017 from TLM hospital Vadathorasalur, Tamil Nadu. The nerve function assessment was done at standard intervals to determine the disability level and graded based on the standard WHO leprosy disability grading system and SALSA scale was recorded at the time of diagnosis and during completion of MDT. The patients were encouraged to do regular self-care practice at home. The collected data was analysed using SPSS.

Results: A total of 98 patients were included; 62 males, 36 females. There were 47% PB, and 53% MB patients. In terms of change in the disability status according to WHO grading system, of the 28 patients with grade 2 at diagnosis, reduced to19 at completion of treatment and all of them moved to grade 1. Of the 14 patients with grade 1 disability at diagnosis, 13 remained same and 1 completely recovered when assessed at completion of treatment. One patient with no disability developed impairment during treatment and moved to grade 1 disability. The mean (SD) SALSA score at diagnosis and at RFT was 27(12) and 26(11), respectively. While 16% of them had smear positive at diagnosis reduced to 4.3% at RFT.

Conclusion: It was concluded that the regular nerve function assessment and prompt treatment during the Multi-drug therapy would prevent further worsening of disabilities and development of new impairments. This will help in increased performance in daily living tasks with safety awareness.

P-405

HIGHLIGHTS FROM THE MID-TERM EVALUATION OF THE MH-POID PROJECT IN MAHARASHTRA, INDIA

Presenter: Bijoy K Swain

Bijoy Swain [1], John K George[2] and Bart Vander Plaetse [3]

[1 & 2] Swiss Emmaus Leprosy Relief Work – India [3] FAIRMED Switzerland,

Objectives:

- To safeguard the technical supervisory role while implementing the project.

- To review the log frame and assess the fulfilment of projectobjectives.
- Exploring the level of confidence and motivation amongst the PHC staffs dealing with leprosy issues.

Method:

- Desk review of different documents like the log frame, annual reports, back stopping reports, previous evaluation reports and the like related to the project.
- Through field visits and meeting with different stakeholders like the State and district NLEP society govt. of Maharashtra, Primary Health Centres staffs, the secondary health care staffs, Alert India and People affected by Leprosy.
- Analyzing the epidemiological status of the districts.

Result: The MHPOID Project has been able to achieve Outputs 1 and 2 to a great extent where as the Outputs 3 has not progressed and will require more time to become successful.

The project organised trainings to 2,266 general health care(GHC) staffs including the Medical officers, ASHAs(Acredited Social Health Activists), NLEP(National Leprosy Eradication Program) nodal persons and other PHC(Primary Health Centre) staffs who will be rendering services to the people.The trainings conducted have been well received and appreciated and there is an increased measure of confidence in diagnosing and treating leprosy and its complications.

The PHC is established as the fulcrum of basic leprosy services while the LRC(Leprosy Referral Center) recognised itself as the secondary service centre in both the districts. As many as 10,196 people accessed the services at LRCs where 7,144 people accessed for complication management which indicates the increasing change in health seeking behaviour of people. Most of this improvement is ascribed by the staff to the capacity building and POID camps organised by the project.

The group formation activities need more time, capacity building, support and ownership from the GHC staff to progress further, but will still need more time for actual establishment of the groups.Most importantly, over 737 people accessed social benefits such as monthly pensions, housing, travel concessions and disability certificates that entitles them to receive disability pension.

Conclusion: The MHPOID project has made significant progress towards making quality leprosyservices accessible to people at the primary and secondary centres. The GHC staff in general have also benefitted by having their capacity built and feel motivated to carry out therequired activities. The GHC staff appreciate the contribution of the MH-POID project to their work and the service provided to people.

P-416

AWARENESS REGARDING USE OF BELOW KNEE PROSTHESIS AND STUMP CARE AMONG PERSONS AFFECTED BY LEPROSY

Presenter: Pankaj Gupta

Pankaj Gupta[1], Karthikeyan G[2],Khusboo Johari[3],Yamini Khanna[4]

[1.]Physiotherapist, Department of Physiotherapy TLM Community Hospital Nandnagri Delhi. [2.]Research Co-ordinator The Leprosy Mission Trust India. [3.]Khusboo Johari, Final Year Student of Physiotherapy, ITS college of Physiotherapy Ghaziabad Uttar Pradesh. [4.]Yamini Khanna, B.P.O: Prosthetics and Orthotic Consultant Satellite centre PDDUIPH, New Seemapuri Delhi

Objectives: The aim of this paper is to determine the awareness regarding the use of the below knee prosthesis among the person affected by leprosy who have undergone below knee amputation.

Methods: Data was collected from the person affected by leprosy with amputated limb living in the Tahirpur Leprosy Complex in Delhi. Feedback regarding the prosthesis was taken in the form of questionnaire which was designed and developed with the help of rehabilitation team consisting of Physiotherapist, occupational therapist, counsellor and paramedical health worker working in The Leprosy Mission Hospital Nandnagri Delhi. Age of the participants was between 30 to 70 years. All the person affected by leprosy who were using below knee prosthesis had undergone below knee amputation because of leprosy sequelae. Amputation due to any other cause like trauma or diseases other than leprosy were not included in the study.

Results: 56% persons did not have any awareness regarding the stump care to prevent stump ulcer. Only 12% of the persons using prosthesis were repairing the prosthesis at regular intervals. 52% of the person using below knee prosthesis did not have any knowledge and awareness regarding the prosthesis care.

Although around 76% of the participants said that they were satisfied with the prosthesis, because they were able to walk and conduct activities of daily living with some ease with the prosthesis. However, in reality most of them faced lot of problems due to the use of prosthesis.

Conclusion: Knowledge regarding the prosthesis and stump care among persons affected by leprosy is poor. Therefore, it is recommended that persons affected by leprosy using prosthesis be educated regarding the care of prosthesis and care of stump to prevent stump ulcers.

ILC-5: DISABILITY and IMPAIRMENT:

5.3 Rehabilitation

P-007

REHABILITATION INFORMATION SYSTEM FOR PEOPLE AFFECTED BY LEPROSY

Presenter: Arnuwat Rannarong

Arnuwat Rannarong
Office of Disease Prevention and Control 3 Nakhon Sawan, Thailand

Objectives: The objective is to develop information technology innovation to support the implementation of surveillance disability and rehabilitate people affected by leprosy.

Methods: 1. Development of rehabilitation information system for rehabilitate people affected by leprosy. Data collection faced the problem, receiving a monthly allowance and web Development experiment and implemented. 2. Satisfaction assessment for use by health personnel performing surveillance work.

Results: The results of Web. application development for rehabilitation people affected by leprosy show that information on current for people affected by leprosy annual report and physical examination of rehabilitation people affected by leprosy provision of disability by comparing the size of the wound and the image. Map (Google map) of rehabilitation people affected by leprosy ' homes. Staff who use Web. application development are satisfied 100 percent. 93.75 percent that information form web. application useful to plan Leprosy control program.

Conclusion: Information System for rehabilitation people affected by leprosy by development of computer software in the form of Web. application works through the Internet by health officials responsible for surveillance, prevention and rehabilitation of people affected by leprosy. It is planned to monitor the disability of people affected by leprosy who have received the allowance efficiently.

P-017

PLATELET-RICH PLASMA IN TREATING ULCERS IN LEPROSY: A REPORT OF 3 CASES AND LITERATURE REVIEW

Presenter: Debao Yu

YU Debao[1], ZHANG Furen[2] QIN Dongmei[1]
[1].Jinan Dermatosis Prevention and Control Hospital , [2].Shandong Provincial Institute of Dermatology and Venereology

Objective: We tried to use autologous platelet-rich plasma therapy in the treatment of chronic leg ulcers in leprosy, in order to find a more effective treatment for refractory leg ulcers.

Methods: Using autologous blood 10-20ml of leprosy patients, after twice centrifugation, high-concentration platelet-rich plasma was obtained and injected into the periphery of leprosy ulcer and the ulcer surface. To observed

The healing time and area of leprosy ulcer were under different times of treatment, and evaluate the effect of PRP in the treatment of leprosy ulcer.

Results: Three cases of leprosy foot ulcers were treated with platelet-rich plasma (PRP) in clinic. The results were satisfactory. Among them, 3 ulcers were cured in 2 cases and the area of ulcer in 1 case was reduced by 95%.

Conclusion: PRP therapy is a simple, safe and effective means to treat leprosy ulcers.

P-158

THE CHALLENGES OF FOOTWEAR IN LEPROSY FROM A DESIGN PERSPECTIVE

Presenter: Niyoshi Shah

Niyoshi Shah [1] , Joydeepa Darlong [2] , David Kumar Prakash M. [3]

[1] Royal College of Art, London [2] The Leprosy Mission Trust of India [3] Schieffelin Institute of Health - Leprosy & Research Centre, Vellore

Objectives: Under India's National Leprosy Eradication Programme, people with leprosy are given footwear made from Microcellular Rubber (MCR) for preventing chronic ulcers. This has been effective in alleviating impairment but increasingly patients are reluctant to wear these shoes because they want better styles. Some data is available in this respect, which focuses on respondents' clinical histories and any feedback they might have about the footwear's cosmetic aspects, but given how the experience of leprosy has evolved such research seems thin. Most patients now participate in public life — they are no longer secluded — so their footwear must also nurture their confidence and follow norms. A fuller picture of their needs is required. Therefore, this study uses comprehensive interviews for developing a deeper understanding of these patients as people: it seeks insights about their social context and analyses the lived experience of this footwear. The viewfinder of design is used here because design considers our practical and emotional engagement with products, and a rounded outlook of this sort, it is hoped, will humanise the said discourse.

Further, this study is critical given our present moment. With two decades of liberal growth, society at large has become more competitive. People are therefore compelled to maintain a desirable image — and the challenges of leprosy must account for this reality.

Methods: Exploratory formats of inquiry were used for ascertaining the key issues of this field, after which, semi-structured interviews were conducted at Schieffelin Institute of Health - Leprosy & Research Centre, Vellore. There, I spoke to patients at the clinic and workshop for observing the environment in which they receive care, and also reached out to the Institute's staff for a multifaceted perspective on the challenges this footwear faces.

Results:
1. Negative reactions to the shoes are explained as instances of leprosy-related stigma but insulting behaviour can also stem from other social factors. This phenomenon, therefore, needs proper scrutiny.
2. Responses varied according to demographics and the level of disability, where, older patients with severe injuries consider this footwear indispensable.
3. Patients rarely complain about their footwear even when there are serious issues with quality, which suggests that surveys designed for gathering feedback might not generate accurate insights.

Conclusion: An updated and nuanced profile of patients is required for designing shoes that not only have medical value but also ensure wellbeing — and collaborations with design can help in this regard, for collecting holistic data.

P-174

EDUCATION : AN IMMENSE BOON TO THE WEAK AND UNDERPRIVILEGED

Presenter: Pius Kalathil

PIUS KALATHIL, MARY MERCY NIRMALA
GREMALTES HOSPITAL, INDIA

Objectives: To provide basic education to children affected by leprosy or at least one of whose parents is a victim of the disease; in order to build self-confidence and to empower them to pursue further professional education or training and secure better quality of life.

Methods: Identified children infected by leprosy or at least one of whose parents is affected by the disease and sensitized them and their parents on the importance of education to instill self-confidence and prepare them for better education, employment and life. Although basic education is free in Government schools, assistance for books, uniforms is provided by the Hospital. Performance of each student is monitored annually and further assistance provided; which they receive up to twelve years, from standard I to XII. Successful students on graduation from high school and higher secondary school are recognized and felicitated at the Founder's Day function of the Hospital each year in order to inspire and motivate them as well as other such children and parents.

Results: Started from the inception of the hospital in 1971, the Scheme has provided assistance to more than 1000 leprosy affected children, many of whom are middle aged now and manage their own families; some of whom are well placed and lead respectable family and social life.

Conclusion: Education is a panacea to build confidence, dignity and development, especially for the poor and socially weaker and deprived sections of people. The leprosy affected clients have realized this fact over the years and presently all of them ensure that their children are enrolled in schools and get the best education they can provide. Many of the beneficiaries of the educational assistance the hospital provided over the years today lead normal family life and occupy respectable positions in the community.

P-241

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.

Presenter: Khondoker Habebul Arif

K.H. Arif
Damien Foundation Bangladesh

Objective: To assess the effectiveness of two different models of empowerment and income generating support provided to the disabled poor leprosy patients so that they can generate income and can lead normal lives with dignity.

Methods: Selected disabled poor leprosy patients from two districts and provided the following supports after their orientation on the specific trades:

1 Beneficiary selection: A total of 181 beneficiaries were selected through set criteria and provided Income Generating Activities (IGA) support like grocery shop, milking cow, rice husking etc. Moreover, Vocational Training (VT) support like tailoring, shoe making etc. and Housing and educational support were also provided for the selected beneficiaries.

2 Orientation for the beneficiaries: Before financing, trade wise different orientations have been conducted. e.g., orientation for beneficiaries on IGA management and ensuring Vocational training for skill development, Orientation for SUS (Swabolomby Unnyan Samity) supervisors, and orientation for Community Volunteers(CV) on IGA management.

3 Financing to the beneficiaries: Financing is implemented following two models, e.g. a) GRANT– LOAN Model: In this model, Grants from Damien Foundation (DF) and a loan is also given to the same client at the same time from SUS-a local Microfinance Institution who are proficient in microfinance with supervision. b) 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 focal person of DF and in GRANT-CV Model, supervision & monitoring is done by CV in addition with DF staff and also weekly report to focal person.

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.

Result: 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 25% are sustainable, 43% are medium, 15% are low and 18% are failure on the other hand, in GRANT-CV Model, the result shows that 42% are sustainable, 32% are medium, 17% are low and 10% are failure.

(Sustainable means able to meet up 100% expenses of the family, medium means 70% expenses, low means <50% expenses and Failure means lost capital or moved away).

Conclusion: This study shows that the GRANT-CV Model gives a better and sustainable result.

P-268

WITH LOOMS LIFE IS NO MORE LOOMING

Presenter: Kismat Nanda

Kismat Nanda[1], Tina Mendis[2]

[1] Program Manager, The Leprosy Mission Trust India, Chhattisgarh [2] Head-Sustainable Livelihood and Community Empowerment, The Leprosy Mission Trust India, New Delhi

Objectives: The Leprosy Mission Trust India launched a rehabilitation and development project for establishing Self Help Groups in five districts of Chhattisgarh state titled **Strengthening Self Help Groups Project** (SSHG). The Strengthening Self Help Group Project Chhattisgarh provide services to the people affected by Leprosy, differently abled and other marginalized sections of the society. The project intends to improve quality of life for those affected by leprosy, disability and other marginalized groups through contributing towards their socio-economic empowerment. Weaving was identified as a potential work to consider towards forming a society by one of the SHG's in Durg District of Chhattisgarh. Training of the women in hand looms for making jute mats and other items were sponsored by the Weaving Society of the government. To study the Impact of Weaving as an occupation for development in the lives of people affected by Leprosy

Methods: The methodology includes review of the project proposal, project reports, Interviews. Focus Group Discussions will be conducted with several stakeholders, Project staff (Project Manager, Programme Implementation Facilitator, Community Development Organizers, Volunteers), SHG members and Cooperative Society members. All involved will be the sample size. A qualitative and journalistic approach was used in the interviews and discussions with the stakeholders.

Results: The result indicates how the looms helped in improving the economic condition of the families in the Leprosy colony and securing the future of the community. The study describes the changes and developments in terms of social status, better opportunities, empowerment of women and children etc. It shows how the women who were once roaming for finding some odd labour or buying and selling toys or plastic items are now busy at work with an income of almost three times of a normal daily wage. The children who were sent to a distant government school are put in a nearby private school with fees for better education

Conclusion: The study describes the importance of engaging in weaving as an occupation by forming SHG's. Also, how this occupation can improve employment opportunities in the neighborhood and thereby improve status of a leprosy colony. It concludes that the jute mats the women spin through the hand looms are not the end but means to materializing dreams of a better life.

P-271

ACCESSIBILITY OF SOCIAL ENTITLEMENTS BY LEPROSY AFFECTED LIVING IN DIFFERENT LOCALITIES: LEPROSY COLONIES AND GENERAL COMMUNITY IN 4 STATES OF INDIA.

Presenter: Mathanraj David

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Objectives: To study the level of access to general and specific entitlements for the persons affected by leprosy living in leprosy colonies and general communities, among the four states (UP, CG, AP and TN) of India.

Methods: This was a Cross sectional, descriptive study carried out from the four states, to get information about their access to all the schemes and entitlements applicable for the leprosy affected. A total sample size of 379 includes from Uttar Pradesh (UP) 100, Chhattisgarh(CG) 100, Andhra Pradesh(AP) 101 and Tamil Nadu(TN) 78, out of which 161 from leprosy colonies and 218 from general community. This study is a outcome of baseline survey carried out during 2016 to 2017 for the CREATE Project

Results: The study clearly shows that maximum difference between the colony and general community towards accessibility of general schemes was found in the state of UP (4 schemes) and comparatively lesser in CG (3 schemes) and Minimum in the states of AP (2 schemes) and TN (1 Scheme). Whereas, with regards to Specific schemes more differences were present in the states of UP (7 schemes) followed by AP (5 schemes) and least in the states of CG (3 schemes) and TN (1 Scheme).

Conclusion: The leprosy colony dwellers have better accessed to both the general as well as specific schemes. The varied differences in accessing entitlements among the four states from maximum to minimum in order of UP, CG, AP and TN determines the influence of local demographic and cultural factors on the accessibility process which needs for state specific approaches.

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INCLUSIVE SELF-HELP SAVING: LIVES TRANSFORMED

Presenter: Jiptha Boiragee

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Objectives: To assess feasibility of model self-help saving and credit scheme for empowerment, livelihood development and reducing discrimination, disability of people with leprosy in Bangladesh

Methods: Piloting this model with careful monitoring of impact using mixed quantitative and qualitative approach, using following techniques;
• Group members were disadvantaged people from; People affected by leprosy, disability and socially handicapped
• Community Resource Person (CRP) development and financing by SHGs
• Capacity building of leaders and CRP
• Built strong relation between groups, federation and obtain Government recognition
• Linkage with GoB and NGOs service unit
• Increase financial income and control
• Formed National level organization of people with leprosy and disability

Results: Self-help approach of TLMIB has brought significant change in the lives of people affected by leprosy in Bangladesh which are as follows;

Formal recognition (allows access to Govt. benefits and advocacy)
• 80% Federation registered by cooperative and social welfare department.
• Increased access to GOB safety net (35%) e.g. disability card, VGD

Individuals' lives improved (physical, social and economic)
• Member's average saving BDT 8000 & 90% demand of loan met by SHG's capital.
• 78% member's HH income increased, 75% member's experienced improved social integration.
• 3% direct leprosy clients were found with less disability and 53% found no change in disability (EHF)
• 1068 children supported by SHGs.
• Increased self confidence in group leaders who acquired new skills

Self-determination (control over own assets and policies)
• 60% operational and management cost met by SHGs through earning from interest
• Groups selected and appoint CRP to assist them, often from disadvantaged people
• 40% salary of CRP paid by SHGs from own income and contribution.
• 78% federation doing self-advocacy
• Formed National level organization of people with leprosy for higher level advocacy

Conclusion:
-Sustainable CBR program is challenging if member are not empowered and financial ability not improved. Organizational and staff commitment is essential for sustainable facilitation.

-Capable and empowered SHGs and mutual linkage with GoB and other stakeholders is foundation for sustainable support. Participatory leadership and professional management are vital for functional DPOs. So, systematic leadership and handover process is important.

-Financial sustainability is challenging but important for livelihood development of its members and external support should gradually transition out. Ownership, accountability and transparent system in saving and credit is important for self-management. Cooperative micro finance, SEED Fund & linkage with financial service needed for members and DPOs sustainability.

-CRP should be part of sustainability and handover process.

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HOSPITAL BASED SCHOOL EDUCATION FOR CHILDREN AFFECTED BY LEPROSY IN A TERTIARY CARE CENTRE IN CHHATTISGARH.

Presenter: Rashmi Nayak

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Objectives: Hospital-based school education support aims to assist children affected by leprosy who are unable to attend their regular school because of their prolonged and recurrent hospitalization due to illness. This will help to meet their educational needs and goals despite the absence from school, with efforts focusing on facilitating a smooth re-entry to school.

Methods: All the children affected leprosy with age group below 14 years admitted as an inpatient during the period of 2013 to 2016 in Bethasda Leprosy Mission Hospital, Champa, India has been included in this study. A total of 24 children have been admitted during the study period of this 12 were male and 12 were female. The physiotherapist and a counselor take responsibility to assist in children education needs, school re-entry and advocacy to the parents. An assessment is made regarding the school education and type of support needed to continue their education. According to this they choose the subject and arrange a time table for education. The program was conducted mostly in a separate place where they could learn without disturbance. Education support may include one to one or in a group if more children admitted and are often highly personalized. The parents are also involved throughout the program to encourage the children. A feedback is obtained from the children and parents during their next visit to the hospital about their re-entry to school after undergone this education program.

Results: Of the 24 children affected by leprosy 20 (83%) were diagnosed for multibacillary leprosy (MB), among these 17 (71%) were detected as a new case, and 03 (13%) were treated for leprosy (RFT). AT diagnosis 10 (42%) had grade 2 disability and remaining 14 (58%) had no disability. According to their admission reason 15 (63%) were admitted for leprosy reaction/neuritis. The most perceived stress among children's were their upcoming board exams and they have to work hard and give extra time to cover the syllabus due to their absence they unable to cope up due to leprosy complications. During their follow up we observed 18 (75%) were continued their education regularly and three of them joined Diploma courses in VTC. Most of the children felt that hospital-based education was helpful for them to maintain their academic skills and joined higher education. The parents felt the children's are active as before in going school and shown interest in coming hospital and to take medications.

Conclusion: This education support aims to prevent the children from becoming disengaged from school, education, and learning due to their hospitalization.

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SOCIO-ECONOMIC REHABILITATION OF PATIENTS, FORMER PATIENTS AND PEOPLE AFFECTED BY LEPROSY, A SUCCESSFUL EXPERIENCE THROUGH ONE YEAR IMPLEMENTATION OF ASSOCIATIONS BASED PROJECTS FOR SELF-PROMOTION IN BURUNDI IN 2017

Presenter: Michel Sawadogo

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Objectives: Burundi is a landlocked, resource-poor country and the mainstay economy is agriculture (32.9% of GDP in 2008), large numbers of persons largely dependent on international humanitarian assistance. A

socioeconomic rehabilitation project was needed to raise socio-economic situation of people affected by leprosy. It aimed to: i- improve knowledge of associations' members about project management; ii- strengthen organizational capacities; iii- improve the organizational and managerial capacities of the projects.

Methods: Five (5) associations of leprosy patients, officially registered and recognized by local administration had been selected in 5 endemic provinces in Burundi:

1- **Training of Associations members by experts on association in:** i- associations and their way of functioning; ii-rural economic activities, income and management.
2- **Setting new organs of representation for each association** in replacement of old ones after an assessment made by members and the training through elections.
3- **Activities' funding**: On the basis of proposals from the members, breeding were proposed (picture 1). A total of 116 goats, 6 billy goats and 6 cows were granted to 5 associations of 198 members. All these animals were bought on the local markets close to the Association.

Results: Some qualitative changes have occurred after one year of operation. Income generating activities seems to be successful with changes in human, social and economic levels. Comparing with previous situation, there were few women in the organs of the associations and they did not participate much in the meetings. After the training, women are represented on the committees and express themselves freely. They understand the need for credit unions for their self-financing. The training and coaching was conducted by Burundian association and this was a new experience among leprosy affected people.

1-**In social and economic level**: Goats allowed patients to have financial income and organic fertilizer for agriculture; associations initiated micro-banks for savings-credit and allow microcredits to their members; agriculture was boosted (manioc, beans, peanuts and sweet potatoes). **2-Grown of the animals**: After one year, five associations had at all 180 goats, among which 55 goats in gestation and 37 young goats. (Picture 2). **3-behavioral changes and mentality**: Leprosy patients feel now pride to be member of associations.

Conclusion: Socio-economic reintegration through the development of projects for leprosy patient can be successful within associations with a good initial training of members, a funding of the main projects they choose and a follow-up trough formative supervision.

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