Editorial

We have reached the end of the year and it's exciting to see India accelerating towards being a Leprosy free country. Elimination of Leprosy has become a consortium of various ministries, notably health, public welfare, and finance. With impetus to detecting new hidden cases, contact survey, post exposure prophylaxis and vaccination have taken a fore seat. New modes of transmission are being sought. MDT cure rates are phenomenal; however the monster of Antimicrobial resistance is rearing its ugly head. Quite a few Centres have reported Rifampicin, dapsone and Ofloxacin resistance, which is alarming. In these settings, the role of research is not one to be undermined.

Research at the field level is daunting. It is our dream that every center will be empowered to advocate by writing interesting case reports and presenting relevant data that speak to benefit the people affected by leprosy. World-class research requires significant investment in terms of financial resources but also of collective support from governments, university administrations, businesses, and citizens. We hope to build international partnerships based on shared values and academic standards and strive to develop and apply knowledge that benefits the wider community.

This newsletter summarizes the activities of the research domain in the last quarter. Ten papers were presented at the conference of Indian Association of Leprologists at Digha, West Bengal. TLMTI Research Department thought it pertinent to conduct a symposium on emerging antimicrobial resistance, which was attended by eminent leprologists, dermatologists and microbiologists. The highlight of the symposium was the inclusion of neurologists to discuss the involvement of central nervous systems in leprosy.

The National Leprosy Conference, the first ever in India, was co-hosted by TLMTI with 14 participants and 3 poster presentations. Medical officers and physiotherapy course were successfully conducted at Naini. Dr Loretta Das and Mr Babu attended a workshop on curriculum development for training of MO and physio at Chengalpattu.

We hope you will enjoy reading the newsletter. Wish you all a Merry Christmas and a blessed New Year 2018.

Dr Joydeepa Darlong
Head (Knowledge Management)
Bringing the Genomics Revolution to Develop Early Diagnosis for Leprosy, and Decoding the Transmission Dynamics

Leprosy is a pre-historical disease; it was first described in ancient Indian medical literatures. Clinical description of the disease in Charak Sushruta (600BC) includes sensory changes and deformities, which is similar to leprosy as we know it today (Dharmendra 1947). Although leprosy is caused by Mycobacterium leprae infection, which is now treatable, the disease has stigmatized mankind throughout history. The exceptionally high degree of stigma was probably a result of the fear of the unknown, because neither the cause nor the source of this disease was known. It was impossible to stop debilitating manifestations until the first anti-leprosy drug, Dapsone was discovered in 1943 at National Hansen’s Disease Program (NHDP) at Carville, USA. Currrently WHO recommended Multi Drug therapy (MDT) which includes clofazimine and rifampicin addition to the dapsone has reduced the global burden of leprosy tremendously. However, diagnosing leprosy before the clinical symptoms is still a challenge, so is identifying the source of infection and blocking the transmission, and it is probably the reason why global incidence or New Case Detection Rate (NCDR) is stubbornly stable at about quarter million per year, even 4 decades after the introduction of successful treatment.

Even today, leprosy diagnosis is mainly based on clinical symptoms, for example, loss of sensation, skin lesion and presence of acid-fast bacilli (AFB). Our body usually identifies the threats and initiates the immune response autonomously, and we only get sick if our immune response is not strong enough to stop the progress of infection. In case of leprosy, ~95% people can successfully clear the infection and do not develop the disease (Alter, Grant et al. 2011). Detection of antibodies against the pathogen is most common approach for immunological diagnosis of infectious diseases. However, tests developed to detect immune response to the leprosy bacilli lack sensitivity and specificity to be used as diagnostic tests. Thus, new biomarkers are desperately needed to develop tests for early diagnosis of leprosy.

Identification of gene signatures based biomarkers has been an important area of research in many diseases. For such studies, the transcriptional profile of patients (active disease) is usually compared to that of the people who are infected but do not yet show the symptoms. However, such studies cannot be conducted on human subjects, because of obvious ethical and technical concern, and most common laboratory animals (Mice, Rat, Rabbit etc.) are genetically resistant to this infection (Sharma, Lahiri et al. 2013). Nine Banded Armadillo (Dasypus novemcinctus) is the only mammal naturally susceptible to leprosy, moreover wild armadillos in the United States are naturally infected, and known to transmit the disease to humans (Truman, Singh et al. 2011; Sharma R, P.Singh et al. 2015). When infected with M. leprae, armadillos not only develop disseminated infection, but also simulates the leprosy as seen in human patients, and now being used as animal model for leprosy research (Sharma, Lahiri et al. 2013). National Hansen’s Disease Program (NHDP) in USA maintains the only colony of armadillos for research purpose with support from the National Institute of Health, USA. Researchers at NHDP in collaboration with Maharaja Sayajirao University of Baroda, India are working on using these animals for studying the gene expression during the progress of the infection to identify the markers which can be used for development of early diagnostic assays. The central hypothesis of this study is to compare the gene expression by RNA sequencing of animals resistant and susceptible to M. leprae infection, and identify gene signature capable of predicting the disease progress in response to the M. leprae infection. Differentially expressed genes during the early stage of infection would be evaluated for their potential for developing the tools for early diagnosis of leprosy, preferably diagnosing the infection before the onset of clinical disease.

Till the clinically evident leprosy is diagnosed and treated, infected individuals can contribute to the transmission of infection in the community. Thus, one of the most prominent remaining challenges in leprosy is to understand the exact mode of transmission of this disease and available tools for understanding the transmission of leprosy are very limited and inefficient. There are two different type of genomic markers are available for studying the leprosy transmission. Limited leprosy genomics studies have revealed that M. leprae strains from diverse geographical origins possess minimal genomic diversity and discrimination of one strain from another is challenging, particular if using only the selected genomic markers (SNP and VNTR).

Recent advances in next generation sequencing technologies are transforming modern infectious disease surveillance and expanding our understanding of pathogen evolution. Whole genome sequencing (WGS) provides the unprecedented opportunity to simultaneously analyze the already known markers (SNP, VNTRs and InDel), and to identify markers more relevant to a particular population, pathological disease condition, or spectrum of the disease. However the use of advance WGS techniques in leprosy have been limited to few studies deciphering the global migration of leprosy (Monot, Honore et al. 2009; Schuenemann, Singh et al. 2013) and zoonotic transmission from Armadillos (Sharma R, P.Singh et al. 2015), mainly because of the high cost of M. leprae.
DNA sequencing. Although cost of bacterial genome sequencing has fallen to 100-10 USD, this does not apply to *M. leprae*, because Leprosy bacilli cannot be cultivated and most clinical specimens contain <1% *M. leprae* DNA. If the total DNA from a clinical specimen is sequenced directly, the majority of the sequencing output would represent the host DNA (Schuenemann, Singh et al. 2013). Efficient sequencing of the *M. leprae* genome from clinical specimen requires enrichment of *M. leprae* DNA. This enrichment can be accomplished by hybridization capture of *M. leprae* DNA from the total DNA, which uses complementary DNA / RNA fragments (baits) to capture the target DNA. Custom baits can be commercially manufactured, which means the entire genome of *M. leprae* is to be synthesized in ~ 120bp DNA fragments. These synthesized baits are not renewable (Schuenemann, Singh et al. 2013), thus quite expensive (~ 700-800 USD / reaction). Researchers from NHDP, Stanley Brown Laboratory (SBL), Delhi and MSU of Baroda, are teaming up to develop almost no cost organic baits for enrichment of *M. leprae* DNA for cost effective sequencing of *M. leprae* genome and illuminate the missing links in leprosy transmission networks. Next Generation Sequencing libraries prepared from highly purified *M. leprae* reference strains DNA will be used as organic and renewable baits instead of expensive synthetic baits. Specific adapters will identify and exclude the bait fragments from being sequenced if some are carried during the hybridization process. Cost effective, high quality WGS sequencing of large number of clinical specimens will identify the potential markers associative with transmission at community level.

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**Author Biosketch**

Rahul Sharma completed his PhD in Leprosy genomics from JALMA Institute (ICMR), Agra India where he led the development of mycobacterial Microarrays. Thereafter, he joined the National Hansen’s Disease Program (NHDP) at Louisiana State University Louisiana, USA as Post Doctoral fellow. He was instrumental in the studies provided evidence of zoonotic transmission of leprosy in the United States. His is also leading the efforts to advance Armadillos model for leprosy, and developing new reagent and assays. Currently, he is leading the Molecular Biology department at NHDP.

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**A Brief Report of TLMTI’s participation in the 30th Biennial Conference of the Indian Association of Leprologists (IAL Digha 2017)**

The Leprosy Mission Trust India had a considerable presence at the 30th Biennial Conference of the Indian Association of Leprologists (IAL) held during 1st - 4th November 2017 in Digha, West Bengal. The organizing committee, Indian Association of Leprologists hosted the programme in collaboration with WHO, ILEP, NLEP, IADVL, TLM, and the Government of West Bengal. The Main Theme of the conference was “Current Scenario of Leprosy in India - In Search of the Ideal Ways to keep up the Status of Elimination”. On this occasion we were fortunate to enjoy the kind patronage of the local Members of the Parliament as well as the participation of Mrs. Chandrima Bhattacharya, Hon’ble Minister of State, Dept of Health and Family Welfare, West Bengal, and a big delegation from different parts of India. At the same time, we were privileged to have WHO Programme Leader; Dr. Ranganadh Rao on global elimination of leprosy in SEARO in this particular meeting. The Welcome Address was from Prof. Swapan Samanta, President, Indian Association of Leprologist. The session started with the President of IAL Oration by Dr. Anil Kumar, Dy Director General Leprosy, CLD, MoHFW, and Govt. of India. There were a large number of scientists, leprologists, research fellows, and field workers present, and they were eager to share their experiences. The Team from TLM India comprised of 11 people. TLMTI staff had 2 posters and 10 oral presentations on a wide range of topics. Every speaker was honored with a memento. Dr. Jerry Joshua was honored with the Lifetime Achievement Award (Dr. H.K. Srinivasan IAL Oration Award) in recognition of his sincere and dedicated comprehensive healthcare services for people affected by leprosy towards implementation of the National Leprosy Eradication Programme (NLEP) of the Government of India.
National Leprosy Conference

The National Leprosy Conference on “Accelerating towards leprosy free India through Innovative Approaches” was held at the Hotel Holiday Inn, Aerocity, New Delhi from 5th - 7th December 2017. This conference was organized by the Central Leprosy Division (CLD) in partnership with The Nippon Foundation, Novartis Foundation, ILEP, WHO, Hind Kusht Nivaran Sangh and Indian Association of Epidemiology. The purpose of the conference was to bring all the stakeholders together, share their experiences with each other, learn from each other and recommend measures to further improve the NLEP programme along with the innovative steps taken to eliminate leprosy and explore other measures that could be taken to ensure successful achievement of the target to make India leprosy free in the next few years.

As, there was a need to share the findings of new initiatives taken by Central Leprosy Division, Government of India, the present conference was organized and attended by various scientists, academicians, sociologists, representatives from Government health system in India, other partners of international organizations and NGOs along with national field level workers all of whom have enthusiastically contributed in the conference. The participants shared their experiences, detailed the challenges and barriers to derive recommendations.

The new innovative strategies which have been implemented in the Leprosy Eradication Programme (NLEP) for eradication of leprosy are as follows:

1. Leprosy Case Detection campaign specifically for high endemic districts.
2. SPARSH Leprosy Awareness Campaign to reduce stigma and discrimination.
3. Focused Leprosy Campaign for Hot spot i.e., rural and urban areas where grade II disability is detected.
4. Special plan for hard to reach areas.
5. Launch of NIKUSHTH, a web based reporting system for leprosy cases and introduction of ASHA based Surveillance for leprosy suspects (ABSULS).
6. Introduction of vaccine/ chemoprophylaxis or both for reducing the transmission of leprosy in community.
7. Introduction of mathematical modelling for leprosy in India and help in predicting future projections of leprosy cases and Grade II disability.

Based on the above topics several deliberations were presented by national and international experts. Discussions on recognition of leprosy affected persons in the community, case detection at grass root level, effective management, and coordination at block, district and state levels were effectively held. The role of dermatologists and civil society in elimination of leprosy was also highlighted. The conference was a great initiative for the participants of all leprosy workers from different organizations in the same platform for national and international experts in joining hands of all leprosy organization towards making future leprosy free world.

The Leprosy Mission Trust India had strong representation with over 20 participants, across different units of the organization, including persons affected by leprosy from community projects. TLMTI made three presentations from the ongoing researches within the organization. The topics selected were per the theme of the conference and included community based methods to enhance early detection of leprosy; community action against leprosy: innovations for elimination of leprosy and innovations in protective footwear for people affected by leprosy. The learnings from the conference will provide guidance on the areas to be focused on future research, particularly operational research.

The symposium was divided into five sessions. The “Inaugural Session” was initiated with an introductory remark on the purpose of the symposium on relapse and drug resistance in leprosy by Dr. Mary Verghese, Executive Director, TLMTI. She mentioned that although relapse and reactions in leprosy are not too many however, evidences are being accumulated that these leprosy cases might serve as a source for transmission of *M. lepraes* infection. Moreover, if the relapse/reaction is due to the growth of a resistant *M. lepraes* then it might be responsible for spread of a resistant strain of *M. lepraes* to a naïve individual to appear as a primary drug resistant case of leprosy in future. This was followed by a talk on the overview on the current activities of the National Leprosy Eradication Programme (NLEP) in the country by Dr. Anil Kumar, Deputy Director General of Leprosy of the Ministry of Health and Family Welfare, India. He highlighted about the three pronged approach adopted by NLEP in eradication of leprosy by (i) introduction of leprosy case detection campaign (LCDC), (ii) focussed leprosy campaign for hot spots in rural and urban areas where grade II disability is detected and (iii) special control plan for hard to reach areas. Later Dr. Laura Gillini, Medical Officer of the Global Leprosy Programme, WHO briefed on the global perspective on antimicrobial resistance (AMR) in leprosy. She mentioned about the weaknesses about the methods adopted by different countries while reporting drug resistance to rifampicin, dapsone and ofloxacin. Therefore, she mentioned about new guidelines that has been developed by WHO to carry out sentinel surveillance for AMR in the country. This session ended with the key note address on the important issues on relapses and drug resistance in leprosy by Dr. V. M. Katoch, Ex-Director General of ICMR, NASI-ICMR Chair on Public Health Research, Rajasthan University of Health Sciences, Jaipur, Rajasthan. He mentioned that relapses were mostly due to sensitive organisms and has been successfully retreated with standard MDT. Most of the drug resistance cases have been earlier described due to monotherapy and erratic management. Primary resistance to rifampicin has been recently reported mainly from TLM network. He mentioned about the different methods of determination of drug resistance and clinical management of cases by different drug regimen.

Second session on “Diagnosis and treatment” was started with the deliberation by Dr. V. Ramesh, Prof. & Head, Department of Dermatology, Venereology & Leprology (DVL) and discussed the issues of cardinal signs on leprosy and described their limitation in diagnosis of multibacillary leprosy. Prof. Bhushan Kumar, retired Head of the Department of DVL, Postgraduate Institute of Medical Education & Research (PGIMER), Chandigarh delivered a talk on pure and primary neuritic leprosy and detailed its importance in early diagnosis for prevention of deformities and advancement of disease. This was followed by
presentation from Dr. Sunil Dogra, Prof., Department of DVL, PGIMER, Chandigarh who described about the increasing incidence of unresponsiveness of MB leprosy patients to WHO MDT regimen and suggested an alternative multidrug regimen for treatment of such cases. Later Dr. Nalini Atchyaram, Prof. of Neurology from National Institute Mental Health & Neurosciences (NIMHANS) presented evidences of central nervous system involvement using magnetic resonance imaging in borderline tuberculoid cases of leprosy. Lastly, Dr. Archana Kumar, Medical Officer of TLM Hospital, Champa, Chattisgarh presented her experience on criteria for selection of leprosy cases for investigations on drug resistance. Through her presentation it was revealed that even reactional cases with high BI should be looked for drug resistance. Many cases from Chattisgarh were found to be refractory to MDT and were found to be resistant to rifampicin.

Third session on “Relapse and Treatment” was opened by Dr. Loretta Das, Medical Officer of TLM, Naini, Uttar Pradesh and presented the clinical picture of several relapse cases and noted that although there is no occurrence of rifampicin resistant but some were resistant to dapsone, ofloxacin or both and these relapse cases could be controlled by re-administration to MB-MDT or MB-MDT along with monthly dose of ofloxacin and minocycline regimen. Dr. V. V. Pai, Director of Bombay Leprosy Project, Mumbai delivered his presentation on clinical and field experience in dealing with relapses in leprosy and concluded that identification of relapse should be early for quick introduction to MDT for breaking the chain of transmission and in reducing the pool of reservoir of infection in the community. Rifampicin resistance was not an issue in this region. This was followed by presentation from Dr. Joydeepa Darlong, Chief of Research Domain, TLMTI detailing the pattern of relapses from TLM Community Hospital, Purulia, West Bengal. She mentioned that as relapses do occur after WHO MDT in MB leprosy the duration of treatment should not be reduced by implementation of uniform MDT (UMDT) for six months in all types of leprosy cases. She emphasized that clinicians should use their judgement to tailor treatment regimens for patients especially those with high bacterial load. The last presentation in this session was made by Dr. Archana Singal, Director Professor, Department of Dermatology & STD presented her deliberation on present day challenges in the management of leprosy and emphasized that transmission is going on because of poor compliance, poor contact/family screening. She also mentioned that drug resistance has become a reality. She finally stressed upon that dermatologists in India should play a central role in capacity building and training of undergraduates, postgraduates, medical officers and field workers in leprosy.

Fourth session on “Relapse & Resistance: Laboratory Evidence” started with the presentation from Dr. Vanaja P. Shetty, Foundation of Medical Research, Mumbai and she mentioned that after completion of full MDT regimen when patients are released from treatment (RFT) the events like neuritis, reactions, persistence of lesion and relapse which often occur were not attended to due to lack of post-MDT surveillance. With regard to drug resistance, rifampicin resistance was not observed in any of the relapse cases, however mono resistance to dapsone and ofloxacin were recorded. Considering the rate of relapse in 13.3% cases under study she suggested a rigorous placement of surveillance system during RFT under NLEP. Dr. Umesh Datta Gupta, Officer In-Charge, National JALMA Institute of Leprosy, Agra provided evidence for presence of mutations in rpoB, gyrA and folP gene region from 87 cases who were failing in treatment. It was noted that rifampicin resistant patients were earlier on rifampicin monotherapy. Dr. Aparna Srikantam, Head-Research, LEPRAD, Society-BPHRC, Hyderabad presented the data of 39 relapses from 774 RFT cases and 234 new cases from four districts of Andhra Pradesh, Telangana and Odisha States and did not find any mutation in any of the genes of folP (DDS), rpoB (rifampicin) and gyrA (ofloxacin). The last presentation by Dr. Mallika Lavana, Head of Stanley Browne Laboratory of TLM described about the drug resistant pattern from 239 relapse and 11 new leprosy patients from TLM hospitals spread across India between 2009 and 2016. Fifteen isolates showed representative mutations at least in 2 drug resistant genes. Two isolates showed resistance to all 3 drugs with appropriate mutations in their respective genes. Seven isolates showed resistance to rifampicin and dapsone and 7 other isolates showed resistance to dapsone and ofloxacin and 1 isolate with ofloxacin and rifampicin. The study also showed emergence of multi-drug resistance strains of M. leprae in MDT treated leprosy patients from certain endemic regions of India.

In the concluding session Dr. Anil Kumar, DDG (L) briefed about the strategy and road map of the NLEP programme which will be adopted to combat the problem of drug resistance by implementing a surveillance mechanism for identification of relapse and resistance and new cases throughout the country.

The final session on “Panel Discussion” was conducted by experts in identifying the major thrust areas of work for future. Concluding remarks were delivered by Dr. V. M. Katoch. The Symposium was closed after a vote of thanks from Dr. U. Sengupta, Consultant TLMTI.
Abstracts

◊ Courtesy stigma: A concealed consternation among caregivers of people affected by leprosy.


This study explored experiences of courtesy stigma among caregivers of people affected by leprosy. Using a qualitative research approach, twenty participants were purposively selected and in-depth interviews conducted. The interviews were audio-recorded, transcribed, and analyzed to identify emerging themes that addressed objectives of the study. The findings indicated that caregivers of people affected by leprosy experienced courtesy stigma. Evidence showed that fear of contagion underpinned caregivers’ experiences, especially in employment and romantic relationships. In addition, participants adopted different strategies (disregarding, concealment, education, faith-based trust) to handle courtesy stigma. The findings demonstrate that psychosocial support and financial assistance to caregivers are necessary considerations for attainment of effective care for people affected by leprosy.

◊ Limitation of activity and restriction of social participation in relation to age range, gender, and education in people with leprosy.


In Brazil, 38,000 new cases of leprosy are discovered each year, making it a public health problem. To identify whether or not there is an association between activity limitations and the restriction of social participation with some demographic data (age range, gender, and education) of the patients in a Basic Health Unit (BHU), diagnosed with leprosy. The SALSA scale was used to assess activity limitations, whereas the Participation scale was used to assess the restriction of social participation. The assessments were conducted with 31 BHU patients diagnosed with leprosy. Males were the most affected by leprosy, the multibacillary was the most prevalent, and education proved to be an important factor when related to the disease injuries among the evaluated individuals. Regarding activity limitations and the restriction of social participation, the percentage of individuals without limitations and without restrictions was greater in both scales. The main limitation is the small study sample. It can be concluded that, for the studied sample, no association was observed between the activity limitations, evaluated by the Salsas scale, nor the restriction of social participation, evaluated by the Participation Scale, with the analyzed demographic data.

◊ Revisiting primary neural leprosy: Clinical, serological, molecular, and neurophysiological aspects.


Leprosy neuropathy is considered the most common peripheral neuropathy of infectious etiology worldwide, representing a public health problem. Clinical diagnosis of primary neural leprosy (PNL) is challenging, since no skin lesions are found and the slit skin smear bacilloscopy is negative. However, there are still controversial concepts regarding the primary-neural versus pure-neural leprosy definition, which will be explored by using multiple clinical-laboratory analyses in this study. Seventy patients diagnosed with primary neural leprosy from 2014 to 2016 underwent clinical, laboratory and neurophysiological evaluation. All patients presented an asymmetric neural impairment, with nerve thickening in 58.6%. Electroneuromyography showed a pattern of mononeuropathy in 51.4%. Positivity for ELISA anti-PGL1 was 52.9%, while the qPCR of slit skin smear was 78.6%. The qPCR of nerve biopsies was positive in 60.8%. Patients with multiple mononeuropathy patterns showed lower levels of anti-PGL-1 (p = 0.0006), and higher frequency of neural thickening (p = 0.0008) and sensory symptoms (p = 0.01) than those with mononeuropathy. PNL is not a synonym of pure neural leprosy, as this condition may include a generalized immune response and also a skin involvement, documented by molecular findings. Immunological, molecular, and neurophysiological tools must be implemented for diagnosing primary neural leprosy to achieve effective treatment and reduction of its resultant disabilities that still represent a public health problem in several developing nations. Finally, we propose a algorithm and recommendations for the diagnosis of primary neural leprosy based on the combination of the three clinical-laboratorial tools.

◊ Two Cases of Lepromatous Leprosy from Exposure to Armadillos in Florida.


The first patient was a 41-year-old white man who was referred to the dermatology clinic with a 2-year history of numerous erythematous, hypoesthetic, poorly demarcated papules and plaques present on the trunk, buttocks, and bilateral upper and lower extremities (Figures 1 and 2). The lesions had initially begun as localized erythematous plaques on the right flank, and were diagnosed and treated as cellulitis and allergic contact dermatitis by primary care on separate occasions, with no resolution and continued gradual but persistent spread.
Molecular detection of multi drug resistant Mycobacterium leprae from Indian leprosy patients.


Emergence of multi drug resistant (MDR) organism for any infectious disease is a public health concern. Global efforts to control leprosy by intensive chemotherapy have led to a significant decrease in the number of registered patients. Currently recommended control measures for treating leprosy with MDT was designed to prevent the spread of dapsone resistant strains of Mycobacterium leprae. We report here the identification of MDR strains of M. leprae from relapsed leprosy patients from endemic regions in India. The drug resistant profiles of the isolated strains were confirmed by the identification of mutations in genes previously shown to be associated with resistance to each drug (Rifampicin, Dapsone and Ofloxacin). Between 2009 and 2016, slit- skin smears samples were collected from 239 relapse and 11 new leprosy cases from hospitals of The Leprosy Mission across India. DNAs were extracted from these samples and were analyzed for PCR targeting genes rpoB, folIP and gyrA associated with drugs (Rifampicin, Dapsone and Ofloxacin) in M. leprae. Thai-53 (Wild-type) and Zensho 4 (MDR) strains were used as reference strains. Fifteen strains showed representative mutations in at least 2 drug resistant genes. Two strains showed mutation in all 3 genes responsible for resistance. Seven strains showed mutation in genes responsible for rifampicin and dapsone and 7 strains showed mutation in genes responsible for resistance to dapsone and ofloxacin and one with rifampicin and ofloxacin. The study showed emergence of MDR strains of M. leprae in MDT treated leprosy patients from endemic regions of India.

TLMTI’s effort to build and retain expertise in leprosy

The Leprosy Mission Trust India’s Training Unit in Naini, Uttar Pradesh, has conducted a 5-day ‘Certificate Course in Leprosy for Medical Doctors’, from November 6 to 10. A total of 14 medical officers (1 from Ireland; 2 from Motilal Nehru Medical College, Allahabad; 2 from Damien Foundation; 1 from Green Pastures Hospital, Nepal; and 8 from The Leprosy Mission Trust India) who attended the course were trained in the following aspects of leprosy; (i) Clinical aspects: Diagnosis, treatment and management of leprosy and its complications; differential diagnosis; and eye problems in leprosy. (ii) Rehabilitation: Prevention of impairment and disability, nerve function assessment, reconstructive surgery, ulcer management, footwear, splints and adaptive devices, and community outreach. The training methods includes, lectures, case presentations and demonstration.

A 3 day “Orientation program in leprosy for German Leprosy Relief Association (GLRA) faculty” was conducted at Training Unit in Naini. A total of 22 participants (7 Medical officers, 2 Nurses, 9 Administrators, 2 Physiotherapists and 2 Para Medical Worker/Non-medical supervisors) attended the course and were trained in both the clinical leprosy and prevention of disability.

Mr G Babu
Training Coordinator
Merry Christmas