Report of the Global Meeting of National Leprosy Programme Managers

Report of the meeting
New Delhi, India, 23–25 November 2015

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Contents

Page

Annexes

Abbreviations

ALERT	All Africa Leprosy, Tuberculosis and Rehabilitation Training Centre
BCG	bacille Calmette-Guérin (vaccine)
CALL	challenging anti-leprosy legislations
CDC	United States Centers for Disease Control and Prevention
CIND	country integrated NTD database
CLAP	coalition of leprosy advocates of the Philippines
CM	case management
COLEP	contact transmission and chemoprophylaxis in leprosy
DHIS	district health information system
DRS	drug resistance surveillance
ENAPAL	Ethiopian national association of persons affected by leprosy
FSM	Federated States of Micronesia
G2D	grade 2 disability
GIS	geographic information system
GLP	Global Leprosy Programme
HRC	United Nations Human Rights Council
IEC	information, education and communication
ILEP	International Federation of Anti-Leprosy Associations
IMD	intensified management disease
LSHTM	London School of Hygiene and Tropical Medicine
M&E	monitoring and evaluation
MB	multibacillary
MDT	multidrug therapy
NGO	nongovernmental organization
NHRC	National Human Rights Council
NLEP	National Leprosy Eradication Programme (India)
NLP	National Leprosy Programme
NTD	neglected tropical disease
NTP	National Tuberculosis Programme
PB	paucibacillary
PCT	preventive chemotherapy
PCR	polymerase chain reaction

PLF	Pacific Leprosy Foundation
POD	prevention of disability
RMI	Republic of Marshall Islands
SARI	stigma assessment and reduction of impact
SEAR	WHO South-East Asia Region
SHG	self-help group
TAG	Technical Advisory Group
UCSF	University of California in San Francisco
WHO	World Health Organization
WPRO	WHO Regional Office for the Western Pacific

1. Opening session

1.1 Opening remarks by Dr Poonam Khetrapal Singh

Dr Poonam Khetrapal Singh, Regional Director, WHO South-East Asia Region (SEA Region), welcomed all to the Global Meeting of National Leprosy Programme (NLP) for the meeting.

In her opening remarks, the Regional Director highlighted that leprosy still exists in spite of having achieved global elimination as a public health problem in 2000. She encouraged all participants to come up with strategies that will further reduce the leprosy burden. Implementation should focus on 15 countries that carry 96% of the global burden; and on epidemic hotspots within these countries. A robust monitoring system should also be put in place to promote intensified and early case detection and treatment completion.

In view of the SEA Region carrying the brunt of the global burden, she had included leprosy control as one of her flagship priorities. She pointed out the potential synergies with other programmes or cutting across health system components as well as opportunities created as part of the Sustainable Development Goals to link leprosy to the wider development agenda.

In view of the prevailing stigma, the social aspects should equally be addressed for a holistic approach, including rehabilitation and reintegration.

Her final comment was on the need for research to monitor drug resistance as well as to identify and build on sustainable models for leprosy control and prevention.

1.2 Remarks by Mr Sunil Sharma

Mr Sunil Sharma, Joint Secretary, Ministry of Health and Family Welfare, Government of India, said that India has made remarkable progress in leprosy control, particularly in reaching the goal of elimination of leprosy as a public health problem at national level in 2005 as well as state-level elimination in most states and district-level elimination in the majority of districts. He noted with concern, though, that the number of new cases detected annually have remained static (around 125 000) for the past 10 years. This situation is not acceptable to the Government of India.

Mr Sharma further informed that the National Leprosy Eradication Programme (NLEP) has adopted innovative steps to improve case detection. Village-level accredited social health activists are assigned the responsibility of suspecting and referring cases of leprosy. This improved the coverage of health services. Financial incentives are allocated for case detection. The government has also extended such a provision to all citizens to

detect cases before disabilities develop. He also mentioned "Nikushth", the online data reporting system, as well as chemoprophylaxis with single dose rifampicin, which is being pilot-tested in a few districts. The feasibility of immunoprophylaxis using *Mycobacterium indicus pranii* vaccine is also being studied for preventing transmission of leprosy to healthy individuals in the community. Awareness in the community and involvement of civil society are identified as critical areas. The Government of India has launched a new information, education and communication (IEC) strategy that will improve case detection in villages and urban slums.

Mr Sharma mentioned that both as a benefactor and a willing partner, India would work with the World Health Organization in the fight against leprosy. He wished the programme managers a successful meeting.

1.3 Remarks by Mr Tatsuya Tanami

Mr Tatsuya Tanami, Executive Director, The Nippon Foundation (TNF) conveyed best wishes from Mr Yohei Sasakawa, Chairman, TNF and WHO Goodwill Ambassador for leprosy elimination. Mr Sasakawa firmly believed in elimination of leprosy as a measure of progress in reducing disease burden towards realizing the dream of "the world without leprosy". Mr Tanami gave a detailed account of Mr Ryochi Sasakawa, the founder chairman of The Nippon Foundation, who initiated funding of the WHO leprosy programme in 1975. The Nippon Foundation also strives for the betterment of people's lives, especially those who are vulnerable. Mr Tanami quoted that Dr Morizo Ishidate, first President of the Sasakawa Memorial Health Foundation, always considered contribution to leprosy work as an 'honourable duty'.

Mr Tanami observed that after 40 years of fight against the disease, the situation has now plateaued; transmission continues, new cases with grade 2 disabilities (G2D) continue to rise; and the number of new cases has levelled off indicating the need for more efforts to control leprosy.

Mr Tanami appreciated all national programme managers for their contribution in spite of hardships and the low priority status that leprosy faces in the health agenda. The efforts of national programme managers, Mr Tanami opined, will make a difference in the lives of the people affected. Mr Tanami said that the next five years will witness a significant improvement in the fight against leprosy with the new leprosy strategy and information about the programme. But still there is much to do before the "last mile" in leprosy control.

1.4 Remarks by Mr Jan van Berkel

Mr Jan van Berkel, President, International Federation of Anti-leprosy Associations (ILEP), informed that ILEP is a federation of 14 nongovernmental organizations (NGOs) based in 12 countries (Europe, North America and Japan). Collectively, ILEP members have an annual budget of US$ 65 million to support leprosy services, including more than US$ 2.5 million for research. The Federation is in official partnership with WHO. It also

has a strong partnership with persons affected by leprosy. A draft strategy to support leprosy control has been developed by ILEP covering the period until 2018. The strategy will be finalized following the completion of the Global Leprosy Strategy 2016–2020; consistency with the latter (overarching) strategy will be ensured. In spite of many achievements, there are still huge challenges facing leprosy, starting from many undetected cases, continued transmission and the long- term burden of leprosy-related disabilities that sometimes occur after and despite multidrug treatment (MDT). The draft global strategy has a pillar on stigma and discrimination and rightly so since leprosy still represents a huge barrier to inclusion for many men, women and children affected by the disease and for their families and communities. The new global strategy must identify breakthroughs to overcome these challenges, needs to be ambitious and based on evidence and it needs to encourage innovations and propose practical solutions. The strategy shall encourage integration with other programmes to manage cross-cutting issues and shall involve persons affected by the disease. Mr van Berkel hailed the open and transparent dialogue with stakeholders in developing this strategy and ensuringcloser collaboration to support its implementation.

1.5 Meeting objectives and introduction of participants

Dr Erwin Cooreman, Team Leader, Global Leprosy Programme (GLP) highlighted the objectives of this three-day meeting. They were to:

(1) critically review the draft and provide further inputs in the Global Leprosy Strategy, 2016–2020;

(2) share information on issues and challenges from leprosy-endemic countries;

(3) provide updates on technical and programmatic elements with relevance for developing the Global Strategy;

(4) agree on new Global Leprosy Strategy, 2016–2020.

He then introduced the different groups of participants to this meeting, which included managers (or their representatives) of national leprosy control programmes of 29 countries in Asia, Africa, Latin America and the Pacific. The members of the Technical Advisory Group (TAG) as well as independent experts and development partners were also introduced. Donors included The Nippon Foundation, the Sasakawa Memorial Health Foundation and the Novartis Foundation for Sustainable Development. International and local NGO representatives were introduced, in addition to technical and implementing partners. Dr Cooreman especially welcomed representatives from patients or communities affected by leprosy. Finally, he introduced fellow colleagues from WHO headquarters, regional offices, country offices and collaborating centres. Dr Cooreman acknowledged the support from The Nippon Foundation in bringing out the draft 'global leprosy strategy 2016-2020' through a series of consultation meetings with persons affected by leprosy, leprosy programme managers and experts in leprosy.

2. Session I: Global leprosy strategy

The first day of the meeting was chaired by Dr D. Kamala, NLP Manager, United Republic of Tanzania (Tanzania); and Dr S. Saypraseuth, NLP Manager, Lao People's Democratic Republic.

Session I was moderated by Dr H.J.S. Kawuma, Chair of TAG.

2.1 Global leprosy situation

Dr V. Pemmaraju, Technical Officer, GLP, gave an overview of the annual leprosy statistics that were collected from 121 countries across all WHO regions except the European Region. In 2014, globally, 213 899 new cases were reported. This is almost the same number as in 2013. A total of 18 869 (8.8%) of the new cases were children while 14 410 (6.7%) new cases were reported with G2D cases in 2014. This latter number has remained fairly static for the past decade (range between 13 000 and 14 000). A similar stagnation was observed in the number of new cases detected over the past 10 years, ranging between 213 000 and 232 000 annually.

The overall majority of cases occurred in the South-East Asia Region (72% of all new cases), followed by the Region of the Americas with 16%. Similar analysis of distribution of cases indicates that 81% of global leprosy is reported from three countries: Brazil (14%), India (59%) and Indonesia (8%). The treatment completion rate was suboptimal (ranging between 55% and 100%) indicating the need for improving adherence to MDT in the majority of the countries. With the current trend of new G2D case detection, it is clear that achieving the global target will not be possible by the end of 2015.

Anecdotal information from different quarters shows that many countries have legislation and social practices that discriminate against persons affected by leprosy. Inclusion of persons affected by leprosy in strengthening leprosy services is also reported sporadically. Such good practices need to be disseminated among programme managers for replication.

2.2 Perspectives from high-burden countries

Brazil

Dr Rosa Soares, Coordinator of the Brazilian NLP, mentioned that, as of 30 September 2015, the national prevalence was 0.96 per 10 000 population. This meant that Brazil has now achieved the goal of eliminating leprosy as a public health problem at the national level. It is expected that at the end of the year, the official announcement of elimination of leprosy as a public health problem at the national level in Brazil will be made. This important achievement will now allow Brazil´s NLP to focus and intensify actions on other public health goals: the elimination of leprosy as a public health problem at the state level and the reduction of disability.

Leprosy is not uniformly distributed in Brazil. There are great variations among states, from very low to very high prevalence rates. Thirteen states, with 72% of Brazil´s total population, have eliminated leprosy as a public health problem and five states are very close to elimination. Therefore, work needs to be intensified in the remaining nine states that are yet to achieve elimination. These states are considered difficult because of their social, economic and geographic characteristics. In the three states with the highest prevalence, a single dose rifampicin will be introduced, as an operational research project.

A comparison of the spatial distribution of the average detection rates of new leprosy cases between 2005 and 2007 and 2011 and 2013 shows that high prevalence municipalities are clustered in small foci, predominantly in the north and northeast regions.

Decentralization of health care services for leprosy started in the late 1980s. This coincided with the introduction of MDT. Many doctors were trained on leprosy diagnosis and treatment; more recently doctors involved in the "More-Doctors Programme" have also been trained. Brazil also developed an online training course on leprosy, which has been completed by 16 000 health-care professionals in more than 1000 municipalities.

Since 2011, Brazil´s Leprosy Control Programme is integrated with other neglected tropical disease (NTD) control or elimination programmes: lymphatic filariasis, onchocerciasis, schistosomiasis, soil-transmitted helminths, trachoma and, more recently, taeniasis /cysticercosis. In this context, integrated campaigns for active search of leprosy, deworming and examination for trachoma in school-age children were carried out in 2013, 2014 and 2015. In 2015, examination for schistosomiasis was also integrated as a pilot activity in selected municipalities. This experience has proven to be successful and beneficial for all the disease-specific control programmes. The campaigns have a strong IEC component. They contributed to creating a generation of children who are informed about leprosy and will talk about it without any stigma or discrimination.

During the campaigns, new case-detection rates have been decreasing despite increasing numbers of children being involved in the campaigns. This suggests that transmission is being slowed because of working constantly over the last three years in the same areas.

During the period 2012–2015, Brazil´s Ministry of Health invested US$ 35 million for leprosy control. This includes funds for research, but excludes additional investments from states and municipalities.

India

Milestones in NLEP India were presented by Dr Anil Kumar, NLEP Manager. He mentioned that the target of leprosy elimination at the national level was achieved in December 2005. Subsequently, the target was achieved in all states and union territories except in Chhattisgarh and Dadra and Nagar Haveli. The Twelfth Five-Year Plan (2012–2017) aims to achieve leprosy elimination as a public health problem in all 669 districts.

As of 1 April 2015, 137 districts are yet to achieve this status. The NLEP is prioritizing high-endemic areas. It aims at detecting leprosy cases at the earliest opportunity through house-to-house search. Active search campaigns will be organized on the pattern of polio campaigns and will be supervised from the central level. These campaigns will include search for cases, awareness generation and contact examination.

Dr Anil Kumar further presented current activities and plans, which include launching of online reporting system with a patient-tracking mechanism called *Nikushth*. Mapping based on the geographic information system (GIS) is initiated for spatial and temporal distribution and actions initiated at different levels. The NLEP is planning to issue a quarterly newsletter including best practices and sharing of information. The NLEP is also undertaking a feasibility project for chemoprophylaxis among contacts with roll-out during case-detection campaigns. Immunoprophylaxis is also planned on a pilot basis in four areas. Obtaining better estimates of disease burden in low-endemic states is also being planned.

Indonesia

Dr Rita Djupuri, NLP Manager, informed that leprosy control in Indonesia is integrated with lymphatic filariasis and yaws control. All new cases are treated at health centres. The new annual case detection over the past decade ranged between 17 000 and 20 000 cases (17 025 in 2014). Prevalence and new case detection show an almost static trend.

Of the new cases, 14 213 (83%) were multibacillary (MB); and 1894 (11%) were children, indicating continuous and intense transmission in the community. The G2D rate among new cases was 9.3% suggesting late case detection. This rate corresponds to 6.33 per million population.

The disease distribution is not uniform. Fourteen provinces registered higher new case detection and prevalence.

The government has doubled the budget for leprosy and yaws control, demonstrating an increased political commitment to address both diseases. Lack of a full-fledged training and disability care centre remains a major challenge.

Stagnation in leprosy control has occurred for almost 10 years. The disease is prominent in 14 provinces. The programme needs support to strengthen programme monitoring, development of training and disability care facilities.

2.3 Perspectives of the impact of public health strategies for universal elimination of leprosy

Dr S. K. Noordeen provided a historical rationale and future direction on public health strategies for leprosy elimination. Historically, the public health strategy in leprosy has always been built around detecting all cases and treating them effectively to reduce the reservoir of infection and transmission. However, since the achievement of the

elimination of leprosy as a public health problem, there has been stagnation in the reduction of case-detection rate.

The following factors were identified as critical in reconsidering public health strategies: (a) occurrence of high rates of leprosy in specific geographic areas or population groups; (b) occurrence of leprosy among children in significant numbers in certain situations indicating recent transmission; (c) occurrence of G2D among new cases; and (d) occurrence of leprosy among contacts, particularly household contacts.

To address these factors, the following strategies should be considered for incorporate into the global strategy: (1) detailed collection and in-depth analysis of data both on disease and disability separately for geographic areas, population groups, contacts and children; (2) selecting the anti-leprosy activities, including the use of campaign approach, to address specific issues identified in specific situations; (3) improving and/or simplifying MDT through Uniform MDT to facilitate greater compliance to treatment; (4) prioritizing areas of action so that high-priority areas/situations receive sufficient resources; (5) mobilizing substantial additional resources and increase involvement of more partners; and (6) as one of the NTDs, leprosy should endeavour greater coordination and integration of its activities with other NTD elimination activities, both to optimize resources and to bring about better impact.

Dr Noordeen concluded that unless we are able to concentrate on the important prioritized activities and act in time, we may end up with continued slowing down and stagnation if not emergence of unexpected new problems over time. At the same time, universal elimination of leprosy is attainable with the right determination and effort.

2.4 Introduction to the global leprosy strategy

Dr Erwin Cooreman presented an outline of the current draft of the Global Leprosy Strategy 2016–2020. He recapitulated the iterations of its development over the past 18 months. The global strategy aims to be comprehensive and serves as an umbrella under which regions, countries, technical agencies and donors can frame their strategies. It expands approaches with proven success as well as encourages introducing innovative actions. The long-term vision is a leprosy-free world with zero disease, zero transmission, zero disability due to leprosy and zero stigma and discrimination. The goal within five years is to further reduce the global and local leprosy burden with ambitious targets set.

He elaborated on components of the strategy, grouped under a medical pillar (mostly within the responsibility of NLPs), a socioeconomic pillar (focusing on community involvement, stigma reduction, social inclusion); and an overarching pillar related to governance, coordination and partnerships. “Action”, “inclusion” and “accountability” were the respective buzz words linked to each pillar.

The guiding principles of the strategy are five-fold: (1) responsibility of national governments and partnerships; (2) sustaining expertise in leprosy; (3) quality leprosy

services with children as the focus; (4) participation of persons affected by leprosy; and (5) protection of human rights and reducing social suffering.

The pillars, components, targets, logo and title of the strategy were further discussed during the group work and plenary sessions.

2.5 Global network for implementing the global leprosy strategy – scope and purpose of coordination of partnership

Dr Laura Gillini, Medical Officer GLP, described the need to accelerate and improve current practices to reach the ambitious targets set in the proposed global strategy. She also projected the strategy logo pointing out the importance of the first pillar, represented by the bicycle's frame; it is related to national ownership, government stewardship, coordination and partnership. Dr Gillini said that it is the sole pillar formulated in a positive way ("strengthen"), unlike the other two that start with "stop"; it is the cycle's frame that gives direction. Dr Gillini reminded particularly that the global leprosy strategy highlights the commitment and ownership of national governments towards leprosy control programmes, even where partnerships with NGOs exist for service delivery. The strategy also highlights the importance of coordination between partners and potential benefits of enhancing partnerships to address all key issues. Where relevant, national leprosy programmes should engage with other governmental sectors to address legal barriers, promote social rehabilitation and ensure better access to health services for women and children. Integration and collaboration with other programmes such as NTDs shall be pursued as well as wider engagement with the wider private sector and persons affected by the disease. Dr Gillini further highlighted that an effective coordination is key; otherwise the bicycle cannot run fast or smooth.

Dr Gillini said that GLP and partners are indeed discussing the possibility to promote national coalitions against leprosy as an innovative approach, both in high- and low-burden countries, disease-specific, combined or integrated. She also raised the question of the role of GLP in improving coordination and enhancing partnerships. She asked the audience about the possibility to rebuild a new global alliance following the model of the Global Alliance for the Elimination of Leprosy and link it with the global NTD alliance or to do something focused on leprosy only slightly different. She referred to a few global alliances such as the Global Alliance for Vaccines and Immunization, the Stop TB Partnership and Roll Back Malaria. By referring to these alliances, she not only pointed out the additional benefits provided for improved disease control but also highlighted the additional costs for managing such partnerships. Dr Gillini suggested that at the global level, partners and institutions shall start from working on better information-sharing, which would be the key in case of enhanced activities and increased number of partners. She gave the example of laboratory research for new leprosy diagnostics where several institutions are working in a compartmentalized way with no regular information-sharing. A global online platform could improve coordination and increase efficiencies; it could act as a common space for generating research questions, supporting IEC materials or attracting new partners to support one or more strategic pillars.

The global leprosy strategy clearly spells out how to fight leprosy from different angles; it is conceived as an umbrella strategy where all stakeholders can contribute. Dr Gillini requested participants to discuss during the working groups if the idea of a global online platform and/or a more formal global alliance could be more clearly articulated among the key interventions. She asked country managers how they would deal with such a resource for their work. She asked what sort of platform would be of interest and if they would be willing to continue brainstorming on how to move this forward. She finally suggested that, for setting up new or linking with existing national partnerships, countries engage more relevant partners and look for necessary resources.

3. Session II: From strategy to implementation – Pillar 2: Stop leprosy and its complications

The first part of this session was moderated by Dr S.K. Noordeen while the second part was moderated by Dr P. Krishnamurthy.

3.1 Contact screening and other forms of active case-finding

Dr P. Krishnamurthy gave a presentation on active case-finding for leprosy.

After a remarkable decline, the number of new leprosy cases detected annually has remained fairly static since 2006 globally as well as in most endemic countries. There are two possible explanations: the new case detection has now reached the true incidence of leprosy; or leprosy programmes have reached the threshold limit of operational efficiency. The second explanation is probably more true. There appears to be a significant under-detection and consequently, delayed detection of new cases. Although there are no good tools to estimate the true incidence, this thesis is sustained by three observations: (i) epidemiological investigations indicate that in surveyed communities, the detected number of cases can be four to six times higher than the reported prevalence (direct evidence); (ii) the G2D rate among new cases is increasing, now affecting 10%–20%; also, the still significant proportion of children diagnosed with leprosy indicates active transmission (indirect evidence); and (iii) any visit to a village in rural areas of several countries usually leads to finding new cases (anecdotal evidence).

The underlying reason for under- and delayed detection is that cases still self-refer or are referred by others. Case detection is a secondary prevention effort whose importance in leprosy programmes stems from the fact that primary prevention measures are currently not feasible.

Case detection activities can be analysed from different angles: by target group; by intervention; by intensity of coverage; or by endemicity.

Table 1 shows the interventions for case detection that can be considered based on the endemic status of the target area.

Table 1: *Case detection intervention by status of endemic area*

Intervention	Endemicity status of area	
	High-endemic	Low endemic
Campaign	Yes	
Contact screening	Yes	Yes
IEC (campaign/routine)	Yes	Yes
Screening among school-children	Yes	Yes
Focal survey	Yes	

Active case detection should be focused on high-risk individuals and hig-risk populations. The methodologies used should be specific, locally-adapted and sustainable. Where possible, interventions should be integrated. Major stakeholders, including the community, should be involved.

3.2 Mapping as a tool to identify areas for intensified case detection campaigns

This topic was introduced by Dr Paul Saunderson of The American Leprosy Missions.

In leprosy control, mapping aims at targeting interventions. These can be preventive (e.g. early case detection and prophylaxis) or related to service provision (provision of MDT and morbidity management). Mapping also supports monitoring the effect of interventions.

NTDs are listed in two main groups:

- preventive chemotherapy (PC) diseases such as lymphatic filariasis, trachoma, onchocerciasis, schistosomiasis and soil-transmitted helminthiasis widely dispersed, rely on laboratory diagnosis, have their programmatic decision-making based on prevalence, and can be treated with drugs that also reduce transmission;
- intensified management diseases (IMD) such as leprosy, Buruli ulcer, yaws, African and American trypanosomiasis or leishmaniasis, are relatively uncommon and clustered, rely on clinical diagnosis and on complex and/or individualized treatment; their transmission is not easy to stop.

These characteristics are reflected by rationale and protocol for mapping exercises. For mapping PC diseases, the implementation unit is usually the district (i.e. a whole district is treated or not, based on an established prevalence cut-off). Consequently, every district has to be sampled to map and update the epidemiological picture. For mapping of IMDs, the implementation unit is typically the village or local clinic; clusters are unpredictable and maps can be drawn based on data from patient registers or whole

population surveys. This exercise requires limited financial support and new data can be easily added.

Mapping exercises based on data of registered cases have been carried out in various settings with regular updates. Their outcomes include: identification of areas for intensified case detection, identification of gaps in morbidity management services and areas for integrated morbidity management, roll out interventions and data validation.

3.3 Prevention and management of disabilities: experience from countries

China

Professor Zhang Guocheng, TAG member, presented China's experience in prevention and management of disabilities. Overall, 120 000 people are living with disabilities due to leprosy in China. This high rate of disability can be attributed to: delayed diagnosis; poor services for prevention of disability (POD); and poor rehabilitation services.

To promote early detection, China's National Plan on Leprosy Control (2011–2020), issued jointly by 11 ministries, includes essential activities with the aim to reduce the proportion of disability to 20% by the end of 2020. The activities supported with central level funding include: contact examination, enhanced case finding activities in pocket areas, training for dermatologists and general health workers, and suspected symptom surveillance. The latter approach, initially piloted in Zhejiang province, resulted in a significant reduction in average diagnostic delays from 37 months to 18 months, as well as a substantial reduction of a proportion of G2D among new cases.

To improve POD services, self-care has been extensively promoted through education, training, provision of a free-of-charge self-care package and supportive quarterly monitoring. Empowering self-care groups is also critical.

To enhance rehabilitation services, extensive surveys on the situation of people affected by leprosy after MDT have been conducted. Based on the identified needs, various services have been provided by tailoring to each individual. Major components of support include:

- providing community-based rehabilitation;
- linking with the Chinese Association of People with Disability;
- issuing disability certificate and welfare assistance;
- ensuring access to prosthesis service and reconstruction surgery;
- providing housing support and economic rehabilitation opportunities.

Activities to address stigma and discrimination through advocacy and public education continue to be carried out.

Myanmar

Dr Oke Soe, NLP Manager, Myanmar, recalled the history of the National Leprosy Programme, which started with the introduction of dapsone monotherapy in 1952. In 1986, MDT was introduced. The target of elimination of leprosy as a public health problem was achieved in 2003.

A pilot project on prevention of disabilities was conducted in the Shwetaung and Thegone townships of the Bago Region in 2002 with support of ILEP. This project was expanded to nine townships by 2005 with support of the Japan International Cooperation Agency. Since then, coverage was completed as planned: 146 townships in eight high-burden areas (Nay Pyi Taw Union Capital Territory; Bago, Mandalay, Ayeyarwaddy, Sagaing (lower), Magway and Yangon Regions; and Mon State). Similarly, 12 townships in five low-burden areas were added in Kayin and Shan States and Sagaing (upper) Region.

Around 20%–25% of the patients had resultant G2D. For the last five years, the trend of G2D among new cases was around 10%. Out of 597 cases assessed for disabilities in 2014, 105 cases showed improvement and only 18 cases worsened.

The following problems were identified in implementing POD activities: weak sustainability; patient migration with loss of follow up; refusal to be assessed; incomplete follow-up due to shortage of staff trained in disability assessment; inadequate skills among health workers. Persistent stigma in society, reduced interest among family members, low compliance to self-care practices and low livelihood opportunities also affected the activities.

3.4 Early detection and management of childhood leprosy

Pacific Island countries

Dr David Blaney from the United States Centers for Disease Control and Prevention (CDC) reported on an investigation conducted by CDC in 2010 in the Republic of Marshall Islands (RMI) due to a sudden increase of leprosy cases detected (30 in one atoll against the usual two or three cases per year). Ten per cent of those cases were children. It was concluded that most of these cases were old cases, missed by previous passive detection by the only nurse of the atoll who had limited knowledge of leprosy. The increase in 2010 was due to active screening. The high proportion of pediatric cases (including MB) suggested high transmission. Due to those findings, a training activity on leprosy management and control targeting primary health-care workers was conducted and the country was supported with development of a strategic plan for leprosy. Leprosy is highly endemic in some Pacific Island countries with very high prevalence rates (especially in the Federated States of Micronesia (FSM), RMI and Kiribati). High rates were also observed in Nauru, Palau and Tuvalu but the smaller population size makes data difficult to interpret. In Nauru, no leprosy patient survived World War II; however, from 1947, new cases were reported probably due to reintroduction of the disease into the community. Citizens of the six United States-affiliated Pacific Island countries represent

an increasingly important proportion of the total leprosy cases detected and reported in the United States (more than 20% in 2014). There is also the phenomenon of inter-island migration and from other Pacific Island countries to the US-affiliated countries: in Guam, 98.7% of all leprosy cases originated from other US-affiliated countries or from the Philippines. Following the training in RMI, training courses were also conducted in FSM, Kiribati, Palau, Northern Marianas, Guam and American Samoa.

Dr Blaney showed how in RMI in the past two years, after the 2010 training, a steep increase of leprosy cases has been observed, which levelled off in the following years, with an observed and sustained reduction of proportion of MB cases over the total number of cases. A similar trend was observed in FSM. The proportion of children, however, remained very high in both RMI and FSM (40% in 2014 in FSM). In RMI, 100% treatment completion was achieved due to direct observation in children.

Dr Blaney said that the epidemiological characteristics of leprosy in RMI might reflect a more typical epidemic curve and be consequent to a recent introduction of the disease. Leprosy might also be fuelled by the challenge of having small isolated and overcrowded communities on some of the atolls. He referred to the Operational Guidelines linked to the global strategy 2010–2015, which supports passive detection (with the exception of active screening among contacts). Due to the particular context of the Pacific Island countries, other approaches might be needed such as periodic campaigns, periodic screening of larger communities, in addition to household contacts. Following the training in 2010 in RMI, only half of the cases were detected after self-referral. A small proportion was detected among contacts and a significant proportion was detected through campaigns and extended contacts screening. In 2013, an online reporting tool with a patient tracking system has been set up in all six US-affiliated countries.

Currently, active screening is periodically conducted in FSM and RMI (Ebeye atoll) and treatment is provided under direct supervision to all pediatric cases. The programmes are carrying out joint screening and disability prevention activities while going for outreach and GIS is in use to map leprosy cases in Pohnpei State, FSM.

The United States National Hansen Disease Programme and CDC plan to continue supporting training activities and to integrate the database with the *epi-anywhere* system used for other infectious diseases. They also plan to continue promoting integration with noncommunicable and communicable disease programmes and are working on including leprosy in the curriculum of the nursing schools in affected US-affiliated countries. Dr Blaney reported further that CDC is considering conducting a clinical trial on chemoprophylaxis and is looking for a wider partnership with the Pacific Leprosy Foundation (PLF), the Novartis Foundation and other interested actors.

3.5 Integration of health education on leprosy as part of nursing curriculum

Experience of Paraguay

As presented by Dr Julio Correa of the Paraguay NLP, Paraguay implemented the project titled "Improving the detection of patients with dermatological symptoms". The objective of this project was to improve surveillance, case detection and early diagnosis of leprosy in the Central Department, where the majority of leprosy problem in Paraguay were found. Two strategies were implemented: (i) education and sensitization sessions about leprosy to students of the fifth, sixth, seventh, eighth and ninth grades of schools in the Central Department; and (ii) active case-finding in communities for patients with dermatological symptoms. These strategies were implemented by trained third-year nursing students. A total of 20 659 students from 55 schools attended the education sessions. For the active community search, 7997 houses were visited in 538 blocks. The number of patients detected with skin manifestations compatible with leprosy during these activities was 28. The two strategies yielded an increased detection of suspect leprosy cases, which might otherwise not have been detected. Making strategic alliances with different stakeholders (education in schools, involving nursing students) allowed for improvements in the programme..

3.6 Uniform MDT

Results of multi-centre study

Dr M. D. Gupte, Principal Investigator, presented the results of the international multi-centre trial on Uniform MDT. This study involved six centres in India and two in China. The regimen consisted of six months of daily dapsone and clofazimin and monthly rifampicin for both paucibacillary (PB) and MB patients.

The objectives of the study were as follows:

- Primary: to assess the treatment response to Uniform MDT for all types of leprosy in terms of relapse rate not exceeding a maximum acceptable cumulative level of 5% at the end of five years.
- Secondary: to assess acceptability, safety and compliance.

The study was an open trial. A total of 3389 patients were enrolled, including 1401 females. Relapse was defined as “development of one or more new skin patches consistent with leprosy, without evidence of reactions, in a patient after completion of six doses of Uniform MDT and after the earlier lesions became inactive”.

At the end of five years, six relapses were recorded: four were MB and two PB; this corresponds to a rate of 0.042 per 100 person-years. Complications such as neuritis or Type I or Type II reactions were observed in 114 patients. Though the overall occurrence is at the same level as in patients treated with conventional MDT, the complications were

relatively more common in MB than in PB cases. Skin lesions became inactive in both PB and MB cases by the end of five years in almost all cases.

All patients completed their treatment within the expected time (nine months). The relapse rate was less than 5% and adverse reactions were less than with conventional MDT. Clofazimin-related pigmentation was found acceptable for all patients. The evidence produced by this study supports introduction of Uniform MDT in NLPs.

Literature review of Uniform MDT

Dr J. H. Kawuma had undertaken a literature review on Uniform MDT and presented his findings.

The discussions on Uniform MDT started in 2002 when it was proposed to undertake research on a simplified and shorter MDT regimen and abolishment of classification for treatment purposes. Six months of MB MDT was recommended for all leprosy patients. The rationale for consideration for Uniform MDT was to improve sustainability and to intensify efficacy and effectiveness of treatment with an identical drug regimen for both PB and MB.

A protocol was approved to conduct operational research on Uniform MDT in 2002 and patient enrolment started in 2003. Preliminary results in 2011 showed favourable responses and clinical improvement in 95% of the study group. Uniform MDT appeared safe, acceptable and effective. However, more evidence was required in view of several relapses being reported.

The following concerns were raised by stakeholders and patients, which need to be considered for global adoption of Uniform MDT as the main treatment strategy for leprosy: (1) further reduction of MB treatment (from 12 to 6 months) after it was shortened from 24 to 12 months a few years earlier; (2) no need for classifying patients into PB or MB based on number of lesions; (3) possible increase of relapses; (4) possible inadequate bacteriological response; (5) possible premature interruption of pharmacokinetics of killing of bacillary loads; (6) reactions and consequences; (7) insufficient justification for adding clofazimin to PB treatment; (8) exposure of PB patients to side effects of clofazimin; (9) possible implications on drug cost; (10) requirements to introduce change (transition period, logistics, adaptation of recording and reporting tools, training); and (11), so-called “change phobia”.

At this point of time, there is inadequate evidence for the implementation of Uniform MDT for all leprosy patients. A final paper on the ongoing trials is to summarize all available evidence.

Advantages of Uniform MDT, if well implemented, includes the scope for better integration of leprosy services into primary health care services. This will be most useful in settings with weak health infrastructure.

A roadmap should be developed for introducing Uniform MDT at the global, country and subnational levels.

3.7 Drug resistance surveillance

Global drug resistance surveillance (DRS) is supported by a WHO-ILEP network started in 2008 with the primary objective of detecting drug resistance rate among all leprosy relapse cases and also new cases since 2011. In 2009, the WHO Guidelines for Global Surveillance of Drug Resistance in Leprosy were published.

Professor E. Cambau stated that leprosy DRS was conducted through sentinel sites in 21 countries. Molecular tests are performed in 17 laboratories in nine countries. These tests include polymerase chain reaction (PCR) and mutation detection.

According to WHO reports for DRS during 2008–2010, the rate of secondary drug resistance was shown as 15% for dapsone, 7% for rifampicin and 1% for fluoroquinolones. Results for leprosy drug resistance conducted in 1607 cases with molecular detection for relapse and new cases showed 64 cases (4%) resistant to dapsone (folP), 69 cases (4.3%) for rifampicin (rpoB) and 24 cases (1.5 %) for ofloxacin (gyrA). According to these studies, most resistant cases are from Asia followed by the Americas and Africa. The result of the 2009–2015 DRS studies in the reference laboratory in Paris, France revealed that for 247 leprosy cases (209 new cases and 38 relapse cases) from Africa, there were eight primary resistant cases detected.

As leprosy drug resistance is critical, the following issues need to be addressed:

- why and how the resistance occurred;
- previous treatment and regimen used for the treatment of leprosy;
- rifampicin use for other purposes: tuberculosis, other infections and prophylaxis.

The WHO recommended treatment of rifampicin resistant leprosy cases is a two-year regimen, consisting of six months of daily clofazimin (50mg), ofloxacin (400mg) and minocycline (100 mg) or clarithromycin (500 mg), followed by 18 months of daily clofazimin, ofloxacin (400 mg) or minocycline (100 mg).

The treatment of drug resistance in leprosy is a challenge, which needs to evaluate the use of new drugs including rifapentin, moxifloxacin, etc.

Resistance can be due to previous leprosy therapy or from the general use of antibiotics. There is a need to identify new antibiotics for leprosy.

4. Session III: From strategy to implementation – Pillar 1: Strengthen government ownership, partnerships and collaboration

On the first day, this session was moderated by Professor W.C. Smith, TAG Member; and Dr M. Virmond, representative of the International Leprosy Association.

The session continued on the second day, and was chaired by Mr O. Merpela, NLP Manager of Solomon Islands and Dr Sameeh Haridi, NLP Manager of Egypt; and moderated by Dr Jan van Berkel, ILEP President.

4.1 Integration of leprosy services

Integration of leprosy and tuberculosis services in Afghanistan

Dr Md. Aloudal, National Professional Officer, WHO Country Office for Afghanistan, informed that leprosy is endemic in several provinces in Afghanistan. Over the past 40 years, leprosy control has largely depended on international NGOs. In 1996, WHO supported the establishment of a leprosy clinic in the dermatology department of Maiwand Hospital in Kabul. The NLP was established in 2007; this programme remains heavily dependent on donor funding. Leprosy cases have been mainly notified from the Central Highlands region and more sporadically from all other parts of the country. Many people still travel for diagnosis and treatment to neighbouring countries due to the social stigma associated with the disease, very limited leprosy care facilities and existing geographical barriers, which hinder access to health facilities in Afghanistan.

Sporadic leprosy cases are reported from around Afghanistan and there is inadequate support from the government and partners to expand the leprosy programme. Only a few health facilities are providing leprosy care services, mainly located in endemic areas in the Central Highlands. However, Afghanistan has a relatively strong National Tuberculosis Programme (NTP) with countrywide coverage and adequate resources supported by a capacity-building and supervision mechanism. Considering the current weak capacity and resources for leprosy control, the relatively strong tuberculosis control programme and both bacilli belonging to mycobacterium, the Ministry of Public Health decided to integrate NLP into NTP to enhance the effectiveness of both programmes.

The NTP deputy manager/coordinator was assigned as the national leprosy focal point while the provincial tuberculosis coordinators were assigned as leprosy focal points in all 34 provinces. All these cadres of staff were properly trained in leprosy care. Initial and refresher training courses were conducted for around 600 health workers from leprosy-endemic areas, including dermatologists and health-care providers from organizations implementing the basic package of health services and essential package of hospital services.

There are 12 leprosy care centres in Afghanistan of which 11 are run by two international NGOs. All leprosy care centres, except for the government-run Maiwand Hospital, provide leprosy and tuberculosis control services. All the above-mentioned stakeholders and trained health-care workers form a "leprosy network" through which a leprosy referral system has been established. This network includes two centres of excellence, supporting referrals and capacity-building.

The combination of leprosy and tuberculosis services started in 2009. Trends in new case detection as well as G2D rates have improved since then. Enhanced general awareness, strengthened capacity of health staff, a stronger health system, active involvement of WHO and financial support from the Sasakawa Memorial Health Foundation contributed to these achievements.

However, challenges still remain. Leprosy elimination activities are not yet formally included in the terms of reference of the provincial tuberculosis coordinators or other health workers at primary health care or hospital levels. Funding is inadequate for full integration and expansion of the programme. Human resources are limited and characterized by a rapid turnover of leprosy focal points and other health workers.

Full integration and expansion of leprosy activities into tuberculosis control activities at all levels contribute significantly to detect leprosy cases earlier and further reduce G2D.

4.2 Chemoprophylaxis in leprosy

Review of current evidence

Professor W. Cairns Smith introduced the topic listing the so-called "hierarchy" of scientific evidence going from 1 to 4, with the best grade of evidence belonging to meta-analysis of randomized controlled trials. Studies important for public health purposes focus on either the efficacy or on the effectiveness of an intervention, or on both. Professor Smith said that there is not a very effective measure for prevention of leprosy, apart from a partial protection due to vaccination with *bacille Calmette-Guérin* (BCG). MDT has not been effective in interrupting the transmission of leprosy. The first trials on chemoprophylaxis were conducted in the 1970s with dapsone and in 1980 using single dose of rifampicin. After those two studies, several more have been conducted including a study in the mid-1990s in FSM and RMI using two doses of rifampicin, ofloxacin and minocycline; two more trials conducted in Indonesia in 2000 and 2010 studied the use of two doses of rifampicin. The contact transmission and chemoprophylaxis in leprosy (COLEP*)* study, conducted in Bangladesh between 2000 and 2009, assessed the use of single dose rifampicin in close 'contacts' of leprosy patients; this was also studied in Thailand and India in the mid-2000s. When conducting a meta-analysis of the three randomized control trials using dapsone, its efficacy was 40% in preventing the disease; when reviewing the two randomized control studies using acedapsone, its efficacy was 50%. The main conclusion of the study conducted in Indonesia that compared three groups in different islands, under a non-randomized placebo-controlled protocol, was that the efficacy of post-exposure prophylaxis in reducing leprosy incidence was observed

only during the first three years after the chemoprophylaxis was given. After six years of observation no difference was documented between the intervention and control group; after eight years, however, a sudden rise in incidence was observed among the control group. The efficacy of single dose rifampicin in the COLEP study was 57% for the first two years while no effect was seen after four and six years. The effect of the chemoprophylaxis depended on contact level, ranging from 25% in close blood relatives to 75% in social contact. Interestingly the effect of single dose rifampicin together with BCG vaccination given at birth resulted in 80% protection. Professor Smith pointed out that there is no doubt that household contacts are at higher risk of leprosy compared with other contact types.

The target groups for chemoprophylaxis are the high-risk groups only. An assessment after the Indonesia study showed a reduction of leprosy by 67% after a decade. After performing a systematic literature review in 2009, all the studies reported efficacy (with dapsone, acedapsone or rifampicin) ranging between 43% and 65%. In May 2015, an expert group meeting was held to assess the risk of single dose rifampicin for tuberculosis; the conclusion was that this is negligible at both individual and population levels. Chemoprophylaxis could thus contribute to reducing the leprosy burden and preventing new cases. Further research is, however, needed to study its effectiveness, cost-effectiveness and safety. Some of this is already the object of current investigations.

Feasibility multi-centre study

Dr Bart Vander Plaetse, Global Programme Head Access, Novartis Foundation, reported that his organization is working with several partners around the world to execute a new strategy to interrupt transmission of leprosy. Over the past 15 years, the Novartis Foundation has donated MDT to 6 million leprosy patients and will continue the donation programme throughout 2020. The mainstay of this strategy would be early diagnosis and prompt treatment of all patients.

The Novartis Foundation supports projects on chemoprophylaxis in six countries: India, Indonesia, Myanmar, Nepal, Sri Lanka and Tanzania. The projects run for three years (2015–2017) and are implemented by NLPs.

Overall project coordination is provided by the Novartis Foundation, overseen by a Steering Committee consisting of experts (affiliated with ILEP members; Erasmus Medical Centre, Rotterdam; and the Swiss Tropical and Public Health Institute, Basel). There is one main protocol that serves as template for national protocols.

The main objectives of the project are to: (i) document the impact of chemoprophylaxis; (ii) assess surveillance and reporting; and (iii) document cost-effectiveness, perception and acceptability. Outcome indicators are: case-detection rate; proportion of index cases whose contacts were screened; and proportion of confirmed leprosy among contacts.

It is expected that, after an initial increase, the case-detection rate would start to decline after two years.

4.3 Improving data management

mHealth leprosy telemedicine programme in the Philippines

Ms Gina Manlapig, representative of the Philippines NLP, shared the experience with the mobile health tools used in the Philippines to improve leprosy data management. The tool was developed over the past three years and branded under the name EARNS. Following a successful pilot, it has been expanded to three regions.

The main objectives of the tool are to refer presumed leprosy cases and reduce or eliminate diagnostic and treatment delays. As a result it is expected that this will have a positive impact on cutting transmission and reducing incidence rates.

The tool is designed within existing health-care systems and depends on a regular mobile phone. It is most useful in remote areas as it links peripheral health units with rural or even specialist physicians. It augments the responsiveness of the health system and provides better health outcomes and financial protection, in line with the universal health coverage agenda.

This innovative approach will be assessed in 2016 to determine (1) the concordance between the LEARNS and conventional approach to diagnosis and (2) the effectiveness in terms of programme monitoring and user satisfaction.

Finally, some complementary initiatives were presented such as the e-learning module on stigma and discrimination and the integrated leprosy information system.

Web-based data management systems in the Western Pacific Region

Dr Nobuyuki Nishikiori, Team Leader, Stop TB and Leprosy Elimination, WHO Regional Office for the Western Pacific (WPRO), introduced the web-based surveillance systems developed and adopted in the Region. There have been four products developed since 2011: (a) web-based reporting system; (b) regional leprosy database (1983–2014); (c) regional analyses and online leprosy dashboard; and (d) case-based surveillance system (electronic case register).

A web-based reporting system was developed in 2011 on the District Health Information System (DHIS2) platform (an open-source health information system) and has been used for WHO's annual data collection in the last four rounds. There were no major issues for countries to enter data in the system. By using the same system, the Regional Office has entered all backlog data since 1983 to form a regional leprosy database. In addition, an epidemiological review has been conducted. Country-wise epidemiological profiles are now available online (https://wpro.shinyapps.io/leprosy_dashboard).

As disease burden decreases, disaggregated analysis will become key for proper epidemiological assessment and programme targeting. The conventional aggregated reporting has serious limitations and is not sufficient for surveillance in the post-

elimination era. Although levels of development towards case-based surveillance system vary by country, each country has to adopt case-based reporting system sooner or later. This is because national leprosy programmes need to monitor who are remaining high-risk groups (in terms of person, time and place) to adopt strategies and programme target. The Regional Office has developed case-based register on the platform of DHIS2 and plans to pilot in two countries in 2016.

Country integrated NTD database (CIND) in the WHO African Region

Further to the development of the integrated NTD monitoring and evaluation (M&E) framework by the Regional NTD Programme, a series of four workshops were held for the country NTD Programme and Data Managers in 2012. During the first workshop, the need for an integrated database for preventive chemotherapy (PCT) and case management (CM) of NTDs was identified. The Country Integrated NTD Database (CIND) was subsequently developed.

The CIND is designed to strengthen the capacity of national NTD programmes to store, manage, analyse, and report their data. Its primary functions are to (i) store and analyse data, demography, disease distribution, surveys, interventions, process indicators and serious adverse events; and (ii) generate reports that include WHO/partner reports, standard reports and customized reports.

The objectives of the system are to: a) store large volumes of M&E data generated by NTD programmes over time; b) assist with data management and analysis at the country level, thereby supporting programmatic decision-making, and c) strengthen the capacity for data sharing between countries, WHO and partners. The CIND is a Microsoft Access database capable of generating standard and customized reports on PCT and CM of NTDs.

CIND has been introduced in two African countries and plans for expanding to other countries have been developed.

Modelling in leprosy: potential use for programme monitoring

The NTD Modelling Consortium includes Erasmus Medical College, Rotterdam, Warwick/London School of Hygiene and Tropical Medicine (LSHTM), the University of California in San Francisco (UCSF) and Yale University. Funding and technical inputs are provided by the Novartis Foundation. Three examples of modelling in leprosy were presented by Dr Porco Travis.

Erasmus Medical College used SIMCOLEP model to predict future trends of leprosy incidence (until 2030). Supplementary information of different mechanisms for heterogeneity in leprosy susceptibility (SIMCOLEP) is an individual-based model capable of simulating the life history of individuals in a population structured by households, the transmission and natural history of infection with M. leprae and control strategy.

The Warwick/LSHTM model is based on back-calculation works, using estimates of the time distribution between infection-onset and onset-diagnosis. Each case diagnosed was infected and onset at some point in the past.

When applied to national data from Thailand, it showed:

- almost continuous decrease in incidence of infections;
- continuous decrease in incidence of onsets;
- fluctuations in incidence of diagnoses caused largely by fluctuations in diagnostic effort.

It was not clear if diagnosis-treatment was directly reducing transmission or if there was a smoothing of contamination.

In the UCSF model, statistical analysis of trends from a particular country was carried out. India shared a rich district-level dataset with the world. Combining districts over years (for consistency of longitudinal analysis) yielded 604 analytic districts and eight years of data.

The following challenges in modelling leprosy were identified:

- Natural history was unclear. Could there be any carriers? natural reservoir? relative infectivity of MB/PB? natural recovery? burnt-out cases?
- Reporting may not be consistent from place to place or time to time.
- Unclear role of case-finding. An increase in cases could be due to better reporting and case-finding, rather than a true increase.
- MB and age distribution not published at the district level.
- Relationship between prevalence and incidence not clear.

Modelling of two ancient diseases (trachoma and leprosy) was envisaged, and the presenter concluded on the crucial importance of testing our understanding through falsifiable or quantitatively comparable predictions of future trends.

4.4 Active screening among high-risk groups

Cambodia

The experience of active case finding in Cambodia was shared by Dr L. Sambath, NLP Manager. Leprosy was eliminated as a public health problem in 1998. The annual new case detection showed a decrease over the past five years (210 in 2014 versus 351 in 2009). Leprosy among children was around 10% and similarly, the G2D rate was also 10%.

An active case-finding intervention was launched in 2011 targeting contacts of patients registered between 2001 and 2010. This campaign focused on increased community awareness and improved diagnostic skills. Activities prior to the start of the campaign included training of health staff in diagnosing and confirming leprosy. During the intervention, home visits were made to the houses of persons affected by leprosy, physical examination of household members and neighbours and follow-up of absentees. Between 2011 and 2014, the new case-detection rate showed an increase of more than 6 per 100 000 population in all the three years. The proportion of MB cases was 67% in the first year. By the end of the third year, data showed a reversal with PB cases accounting for 61.5%.

The results showed that active case finding detects previously undetected 'hidden' cases. Without this intervention, there might have been further delay in treatment and increased transmission of the infection. The activity demonstrated that both disabilities and transmission can be prevented through active case finding. Building capacity of communities and local workers in combination with active case finding helped in having a long-term impact.

5. Session IV: From strategy to implementation – Pillar 3: Stop discrimination and promote inclusion

This session was moderated by Ms V. Shankar of the Sasakawa India Leprosy Foundation.

5.1 Elimination of discrimination of leprosy

UN Principles and Guidelines and Resolution of UN Human Rights Committee

This topic was introduced by Dr P.K. Gopal of IDEA International, India.

Leprosy has historically been associated with stigma and social exclusion. In spite of the availability of a cure, this condition remains associated with a persistent form of social injustice, prejudice and discrimination.

In 2003, to tackle stigma associated with leprosy, The Nippon Foundation raised this issue with the United Nations Human Rights Council (HRC). In 2004, a consensus was reached the fact that human rights were being violated.

In 2008, 2009 and 2010, HRC adopted three resolutions that address different aspects of elimination of discrimination against people affected by leprosy. Meanwhile, a draft set of principles and guidelines for the elimination of discrimination against persons affected by leprosy and their family members had been developed: the 'principles' recognize the basic rights to be enjoyed by persons affected by leprosy and their family members, while the 'guidelines' detail the actions that the States should implement to promote human rights among the same individuals. In December 2010, the United Nations General Assembly adopted a resolution, in which it noted with appreciation the Principles and Guidelines and encouraged Governments, the United Nations system,

intergovernmental organizations and national human rights institutions to give due consideration to the principles and guidelines in the formulation and implementation of their policies and measures concerning persons affected by leprosy and their family members.

Finally, in June 2015, HRC adopted another resolution, in which it requested a review of the implementation of the principles and guidelines and a report containing practical suggestions for their wider dissemination and more effective implementation in order to eliminate discrimination and stigma and promote, protect and respect the human rights of those affected by leprosy and their family members.

Further information can be found on the UNHRC website:
http://www.ohchr.org/EN/HRBodies/HRC/AdvisoryCommittee/Pages/Leprosy.aspx.

Stigma associated with leprosy

This topic was presented by Professor R.K. Mutatkar of the Centre for Health Research and Development, India.

In spite of the fact that leprosy is curable, affected individuals are still affected by discrimination and stigma. Discrimination associated with leprosy has traditionally been rooted in laws to the point that can be considered a human rights issue, at par with other group discrimination practices based on race, class, caste, religion or gender. Stigma is a more emotional response and implies denied access to social groups, or threat of exclusion from them, based on leprosy.

Stigma is based on people's perception about leprosy that might differ from the biomedical one. It affects persons with leprosy and entails fear of non-participation to social life up to 'social death'. As such, parameters of success in stigma reduction might include degree of participation in family and community life, no divorce on account of leprosy, non-denial of civic facilities and full participation in economic activities.

Traditionally, not much attention has been given to social inclusiveness by leprosy programmes. Nevertheless, WHO's Technical Report Series 716 (Epidemiology of leprosy in relation to control, 1985) and 768 (WHO Expert Committee on Leprosy, 1988) drew attention to this issue. Social consequences of leprosy should be given equal importance as health consequences; health education, IEC and behaviour change communication can play an important role in this regard.

The agenda for action should include banishment of the terms "ex-leprosy patient", 'released from control/treatment' and 'deformity' in the same way as "leper" was banished; definition and use of the term 'cure'; health education for morbidity prevention and management; integration of leprosy disability management with other services such as diabetes; repeal of all leprosy laws with wide media coverage; propagation of rights of people with leprosy and earmarking funding for nerve damage programmes and research.

On the ground, it would be important to ensure community ownership of the programme as a means to reduce stigma.

Discriminatory laws: the experience of India

Stigma against the disease and discrimination of the people affected continue to impact the disease control and quality of life of the affected. Ignorance about the disease in the community and discriminatory laws against the disease need to be addressed. In the Indian context, the Lepers Act, 1898 under the category of public health continues to be in force in some states and at the centre. It was brought into practice for segregation and medical treatment of those affected by leprosy in established ″leper asylums′. The Act has already been repealed in some states.

Repealing of this Act in other states is promoted as it violates Article 14 of the Constitution. India is the signatory to the United Nations Resolution on the Elimination of Discrimination against Persons affected by Leprosy and their Family Members, 2011 (A/RES/65/215).

Direct discriminatory provisions under 14 laws continue to impinge on the life of persons affected in three major areas – participation in political life, divorce and legal separation and confinement and segregation (Beggary law).

The Leprosy Mission Trust India evolved from a service delivery focus to a more holistic development focus with a rights-based approach. Some of the significant interventions have been: (1) working with the Law Commission and (2) engaging with the National Human Rights Commission (NHRC) and through implementing direct projects like the ‘Challenging Anti-Leprosy Legislations (CALL) to empower communities and people affected to demand a change in the status quo of opportunities, services and cultural practices.

Societal mindset change, empowering communities and making the duty bearers responsive are a few suggested steps in eliminating stigma and discrimination against leprosy. This also calls for convergence of ministries and departments from different ministries to work together for repealing discriminatory laws and creating a favourable environment for the people affected to lead a good quality life.

Stigma assessment and reduction of impact in Indonesia

The stigma assessment and reduction of impact or SARI approach was presented by Drs Rita Djupuri and Wim Van Brakel of the Netherlands Leprosy Relief.

Stigma is one of the important factors leading to social exclusion of persons affected by leprosy and their family members. It can be very persistent and disabling. Stigma has a direct impact on the socioeconomic situation of individuals affected. Indirectly, it remains a major barrier for implementation of leprosy control and rehabilitation programmes. The SARI project was carried out in Cirebon, Indonesia.

The objectives of the SARI project were to: (i) assess the efficacy of three strategies to reduce leprosy-related stigma and its effects; (ii) validate the toolkit developed when piloted in India; (iii) determine which combination of interventions has contributed most

to reducing stigma and in which way; (iv) produce guidelines that help to ensure the effectiveness and sustainability of interventions in reducing stigma against people affected by leprosy; (v) contribute evidence on which to base future government policies and programmes for the control of leprosy; and (vi) support capacity-building of local disabled people organizations to ensure sustainability of the project and the inclusion of the topic in the organization's policy.

A multi-centre randomized controlled cluster trial design was used in the project. Three stigma reduction strategies were selected for testing: counselling, socioeconomic development and contact between affected persons and the community. The first two were aimed at reducing stigma and its impact among affected persons; the latter aimed to reduce stigma in the community.

The following conclusions were drawn from the study: peer counselling has a powerful impact on clients and counsellors; socioeconomic development empowers people to fulfil their rights and become agents of change for themselves and their environment; and contact events are effective in increasing knowledge and reducing stigmatizing attitudes.

A survey carried out in 2007 showed that stigma affected the lives of people, e.g. inability to marry or to be formally employed. The Jakarta Resolutions 2015 were a major step against leprosy stigma in the community. The following three resolutions were adopted on 26 January 2015, which led to implementation of many interventions to eliminate stigma and discrimination against leprosy:

(1) The need for understanding and creating behavioural change of people to be able to receive people affected by leprosy in daily life.

(2) The need for understanding and creating behavioural change of families and community leaders to encourage people affected by leprosy to go to the health clinic.

(3) The need for understanding and behavioural change of health workers to provide services and treatment with compassion and without discrimination.

Implementation of these three resolutions entails raising awareness in the community, promoting behavioural changes among family members and community and conducting special advocacy activities such as 'leprosy run' frequently and regularly to eliminate stigma and discrimination against leprosy.

Promising practices of participation of persons affected by leprosy

Ethiopian National Association of Persons Affected by Leprosy(ENAPAL) was established in November 1996 to:

- advocate for full participation and equal opportunity of persons affected by leprosy;
- create awareness among society about leprosy and people living with consequences of leprosy;

- rehabilitate persons affected by leprosy to become productive citizens in society;
- mobilize governmental and nongovernmental organizations in the battle against leprosy and leprosy-related issues.

ENAPAL is operating in seven regions of Ethiopia with about 66 local associations, comprising more than 20 000 fee-paying members.

The main activities of ENAPAL include:

- awareness raising through radio and television programmes, print media, world leprosy day celebration and self-care;
- supporting its members for housing and toilet, water and sanitation;
- income generation;
- educational support.

Challenges encountered in implementing planned activities included deep-rooted misconceptions about leprosy, decline of attention after integration, leprosy-related poverty and lack of educated persons affected by leprosy. To address these challenges, ENAPAL builds on a well-organized and empowered association of leprosy affected persons, a strong relationship with the Ministry of Health and Ministry of Labour and Social Affairs, and a close partnership with NGOs and donors (Sasakawa Memorial Health Foundation, The Nippon Foundation, The Leprosy Mission, the German Leprosy and Tuberculosis Relief Association, Handicap International and the Embassy of Japan).

Accessing social support by leprosy patients in Nepal

Dr Basudev Pandey, Director, Nepal Leprosy Division, shared the experiences of persons affected by leprosy in accessing social support in Nepal. Under the country's Constitution, a provision was made to give a monthly allowance of NPR 1000 (approximately US$ 10) to the elderly; the same was extended to persons with disabilities due to leprosy with utmost severity.

To assess the severity of disabilities, the disabilities were graded into five categories and in each category of persons were given an identity card for identification and referral to the welfare schemes. The red card holds the highest social security allowance (NPR 1000). Some provisions were made for all persons with disabilities such as free health services and income tax exemption or discounted travel fares. An extra hour was given for students with leprosy disabilities to compete with people without disabilities.

Self-help groups (SHGs) were formed integrating persons with disabilities with members from the village. The government gave seed money for establishing the groups initially. It was gratifying to note that some SHGs gradually grew into cooperatives with high-volume budgets and extended help to other SHGs. Two shelters were provided for the homeless and persons affected by leprosy (in Khokhana, Kathmandu valley; and in

Syanja, Malunga district). To improve life skills and employment opportunities, persons affected by leprosy were provided with scholarships and vocational training.

The NLP encouraged formation of networks of persons affected by leprosy. It promoted their participation in all areas of leprosy control as active partners. Persons affected were very helpful in forwarding the messages about leprosy and participating in leprosy control. Best practices in the Nepal NLP need to be documented and shared with other countries. Some of the practices that received attention of other agencies were: disability-friendly constitution civil and political rights; help desk and information section; and managing assistive device centres and production of wheelchairs.

6. Session V: Group work

There were three working groups divided into six subgroups. Each working group discussed only one of the three pillars of the strategy. Each subgroup was assigned a facilitator and selected a chair and rapporteur. At the end of the day, the rapporteurs of the subgroups developed a joint Powerpoint to provide feedback on each reviewed strategic pillar to the plenary.

Country representatives present in each subgroup were requested to make a short presentation highlighting their experience related to the particular pillar in their country. This provided a practical introduction to the particular pillar and reality check. All the group members were also invited to contribute to the discussion on the strategy from their perspective as government representatives, partners, donors, researchers or persons affected by the disease to contribute to the improvement and finalization of the global leprosy strategy 2016–2020.

Each group also discussed the general format of the strategy, vision, goal, targets and indicators as well as title and logo. These discussions continued in the plenary session.

7. Session VI: More examples of innovative initiatives and partnerships

This session was moderated by Dr P. Saunderson of The American Leprosy Missions.

7.1 Bangkok Declaration Special Fund

The International Leprosy Summit was organized jointly by The Nippon Foundation and WHO in July 2013, in Bangkok, to address the concerns that efforts to tackle leprosy appear to be stalling and new case-detection rates have remained static in recent years. Honourable Ministers of Health or their representatives from 17 countries, which reported over 1000 new cases of leprosy annually made a strong commitment to devote further efforts to combat the disease to ensure a leprosy-free world at the earliest. They recognized the urgent need to focus on early detection of new cases in pockets of higher

risk such as urban slums, border regions and ethnic minority areas. In addition, participants agreed on the goal of reducing the number of new cases with G2D to less than one case per 1 million population by 2020.

The Nippon Foundation set up a Special Fund of US$ 20 million, of which US$ 11.5 million was to be channelled through GLP over five years. Of the remaining US$ 8.5 million, US$ 4 million was set aside for projects to be conducted by national programmes of endemic countries for three consecutive years. The remaining US$ 4.5 million will be used for projects initiated or co-organized by The Nippon Foundation and other stakeholders.

The International Leprosy Summit generated strong political commitment and strong momentum to further enhance leprosy control activities. The Bangkok Declaration Special Fund is meant for innovative activities supplementing routine leprosy control activities. Although multi-year projects are approved, funding allocation will be approved annually and depends on progress in implementation.

The key funding principles are to intensify case detection activities in high endemic areas to reduce disease burden in terms of new G2D cases and improve coverage of leprosy services and reduce prevalence of leprosy.

Two calls for proposals were issued: Round 1 in 2014 covering countries of the South-East Asia Region and Round 2 in 2015 covering the African Region. Six projects in the South-East Asia Region are under implementation and first-year reviews are planned. For the Round 2 call, one proposal was approved and six more are under review for approval.

Clarity on funding principles among Member States submitting proposals and high volume budget projects raising discussion on sustainability were a few of the challenges faced during the process of managing the Bangkok Declaration Special Fund. Until now US$ 1 328 777 were utilized in funding the projects.

The next steps include continuation of existing projects into the second year. The projects under approval will be revised to suit the funding principles.

7.2 New diagnostics: State of the art

Professor Emmanuelle Cambau from the National Reference Centre for Mycobacteria and Resistance to Anti-Tuberculosis Drugs, Paris, began her presentation on diagnostics for leprosy by stating that at the moment, the diagnosis of leprosy is mainly clinical. She highlighted the great need to identify tools to diagnose leprosy effectively and quickly; to differentiate between relapse and reinfection; to predict reactions; and to detect subclinical infection. Laboratory diagnosis is currently done through direct identification of the bacteria through microscopy; identification of bacterial DNA or RNA; or culture in vivo (in mice or armadillos). Another possibility to diagnose leprosy is to look for the consequences of bacterial presence such as products of the immune-response antibodies or cytokine through interferon-γ release assay or products of cellular damage due to the

microorganism. One limiting factor of using the laboratory is that a good sample is needed, typically a piece of skin or nerve (with potential to cause damage). Additionally, the ability to detect bacteria is directly related to their quantity; diagnostic tests are less likely positive in PB disease.

Professor Cambau said that light emitting diode microscopy is more sensitive than conventional light microscopy; microscopy can be facilitated through auto-staining systems. The use of microscopy, however, has been reduced massively over the years and it is difficult to reintroduce that capacity and probably not worth to pursue this in view of its low sensitivity. In vivo-culture typically takes six to twelve months. There are only a few laboratories performing such tests and their capacity needs to be sustained, at least for research purposes. Few laboratories are studying the possibility of an in vitro-culture using surrogates of growth. With regard to the detection by PCR, one limiting factor is the quantity of bacteria in the sample collected with the testing for resistance being efficient only for a quantity of bacteria above 10 million. Moreover, more accurate results are produced from skin biopsies (obtained through a more invasive procedure) rather than from skin slit smears. Another possibility to detect leprosy is searching for indirect products due to *M. leprae* infection but their efficiency varies by disease type since different immune responses are activated.

Professor Cambau also reported some ongoing studies to detect leprosy through an in vitro generated immune response. The best known is the test probing for phenolic glycolipid-1. However, such a test is not able to differentiate between infection and disease and its sensitivity is higher among patients with extensive forms of the disease such as MB. This test has been studied in different countries with conflicting results. Further clinical studies and more international validation are required. Other tests looking for a nerve cell response to the damage caused by *M. leprae* are still at the initial phases of study.

The detection of resistance is based on identifying genomic mutations through PCR. At the moment three antibiotics are usually tested: dapsone, rifampicin and ofloxacin. Detection of resistance requires the availability of a laboratory with expertise in DNA amplification.

Professor Cambau also presented leprosy data between 2001 and 2014. Out of 294 biopsies received with a suspicion of leprosy, 151 were considered positive either by smear and/or by PCR. Among those positive, 64% were from French overseas territories while among those originating from the mainland, the majority were from foreign-born persons with roots from a high-endemic country.

The ideal laboratory diagnostic test would be effective in detecting all forms of leprosy, cheap and easy to perform and ideally require a sample that is easy to collect. Whichever test is identified would need to be validated by studies in different countries and operational research would be required to determine where the test can be implemented.

7.3 Various country experiences in innovative approaches

E-modules in India

Dr Saurabh Jain, National Professional Officer, WHO Country Office for India, gave an overview of electronic training models in India.

Sustaining leprosy expertise has become an important area for which advocacy is needed for resources. The need for training in leprosy is immense as the diagnosis is based mainly on the clinical acumen of health professionals. There is a need to have training materials, which are always available (soft copy), easy to understand, downloadable or available through CD-ROM or other means. Keeping in view the training needs, the WHO Country Office for India has prepared e-leprosy modules based on the Operational Guidelines of Enhanced Global Strategy for Further Reducing the Disease Burden Due to Leprosy (2011–2015).

The e-modules are primarily meant for medical doctors and health professionals providing leprosy services or for those who intend to do so. They comprise seven chapters: (1) diagnosis of a leprosy case through elicitation of sensation in skin; (2) nerve examination; (3) treatment of leprosy with MDT; (4) complications of leprosy; (5) counselling; (6) self-care techniques; and (7) questions for self-evaluation.

Importance of centres of excellence for referral systems and sustaining knowledge: Ethiopia

Mr M. Beyene of the All Africa Leprosy, Tuberculosis and Rehabilitation Training Centre (ALERT) in Addis Ababa, Ethiopia, shared his country's experience in setting up a referral network for leprosy.

Leprosy remains a serious public health concern in Ethiopia. In 2014, 3758 new cases were reported. Among them 10% had G2D and 13% were children. Between 18% and 20% of all reported leprosy cases were diagnosed at leprosy referral sites. There are six leprosy referral centres in Ethiopia, including ALERT being the tertiary/specialized centre. With a reduced burden of leprosy, referral sites will still be required to ensure an integrated approach and continuum of care as well as to support general health-care services.

ALERT is the centre of excellence for leprosy in Ethiopia based on its vast experience in providing leprosy services. It has also a wealth of experience in conducting training courses and undertaking research.

Challenges related to the centres of excellence include: significant turnover of trained staff; data management and reporting; shortage of drugs and supplies (i.e., prednisolone); inadequate involvement of leprosy patients in self-care activities; programme coordination and monitoring; shortage of specialist staff (such as

physiotherapists, ophthalmologists, prosthetic and therapeutic footwear technicians); and limited surgical intervention conducted in referral sites.

These challenges can be addressed through capacity-building of health-care workers on leprosy, recording and reporting, reaction recognition and treatment; ensuring regular supply of leprosy drugs and other supplies; revitalizing patient self-care with support from referral hospitals, anti-leprosy association (ENAPAL) and partner NGOs. These can also be addressed through strengthening programme coordination and monitoring; encouraging full-time ophthalmologists /ophthalmic nurses /physiotherapists (equipment and supplies) and training new prosthetic, orthotic technicians; and supporting surgery.

Experience of patients' integration in Pacific Island countries

Ms Jill Tomlinson of Pacific Leprosy foundation (PLF) shared experience of integrated services in Pacific Island countries.

The Pacific Leprosy Foundation works in Samoa, Kiribati, Solomon Islands, Fiji, Tonga, Tuvalu, Vanuatu and New Zealand. In each country, it has a country coordinator and a number of volunteers who are in daily contact with patients and medical staff. Kiribati and Samoa are visited by PLF staff and consultants (medical expertise and welfare) three times a year, while the other countries are visited at least once a year. The work is tailored to individual needs.

The impact of a leprosy diagnosis includes patients overwhelmed by their own feelings or by community reaction. Family and friends often do not know how to react. Sometimes support is provided. Exclusion (sometimes self-imposed) may also occur. To tackle these issues, three basic principles are applied: (i) patient-centred approach with identification of patient needs; (ii) identification of needs of the community (in relation to the patient and in general); and (iii) identification of overlaps between patient and community needs. Strategies include partnering with community groups as well as with traditional healers.

An example of the positive impact of PLF´s work is a man who was diagnosed with leprosy in 2010. The event was even described in a local newspaper as a "curse from God". The patient was classified as MB with reaction; quite ill. At that time, he was living separately from his family in very poor environment. In June 2015, this person was elected as a village leader. This had been possible because he had received adequate treatment, assistance was provided to his son for tertiary studies and he had volunteered to be a 'patient' at the hospital training unit. The PLF also supports improving housing and in screening contacts for leprosy.

As a result of this long-term approach, individual and communities are supported; the individual receives support from the community; and the patient's self-esteem is raised. Addressing this convergence of needs works well because it enhances mutual confidence in both the community and the persons affected by leprosy and their ability to foresee a positive future.

Coalition of leprosy services and coordination of national programmes

Experiences of the "Coalition of Leprosy Advocates of the Philippines (CLAP)" were presented by Ms Gina Manlapig. This initiative provides an example of coordination for strengthening of leprosy services through a coalition of leprosy-affected persons. The coalition was created in line with WHO Guidelines for strengthening the participation of persons affected by leprosy, registered by the Department of Health and supported by the Sasakawa Memorial Health Foundation. Support was also provided by the chiefs of sanatoria and the network of people affected.

The mission statement of CLAP states: "The Coalition of Leprosy Advocates of the Philippines, the organization founded and led by competent officers is committed (i) to provide transparent and quality services; (ii) to utilize modern resources and technology genuinely dedicated to implement initiative that affect change, thus realizing the dreams and the aspirations of persons affected by leprosy; and (iii) to strengthen the sustainability and empowerment of its members to become agents of change towards a leprosy-free Philippines".

The key thrusts identified for the coalition are education, preservation of leprosy history, human rights and media advocacy and public health and staff development. The activities of CLAP include advocacy with local government units, academia, other government and nongovernmental organizations, communications development and planning with multi-media and social mobilization campaigns.

The coalition is constituted by 17 People's Organizations operating both at the local and national level. Activities of a few members were explained, exemplifying the role of coalition partners in strengthening leprosy services holistically.

8. Session VII: Finalization of the strategy

This session was moderated by Dr H.J.S. Kawuma.

All participants were equipped with relevant knowledge on the current leprosy situation and control methods. Countries had the opportunity of sharing their experiences, issues and challenges and ways to address these through the various presentations as well as poster displays. The group discussions specifically provided an opportunity for in-depth discussion on the pillars and components of the strategy as well as overarching issues.

During this session, the pillars and components were discussed in plenary starting from the draft versions as modified by the groups. All issues were thoroughly discussed and, where needed, amended.

The meeting reached consensus on the goal, objectives, principal indicators, pillars and components of the strategy as well as the title and logo.

Among various options, the meeting adopted as the title for the strategy: **Global Leprosy Strategy, 2016–2020 – Accelerating towards a leprosy-free world**. It was felt that this best reflected the momentum of building on earlier strategies, incorporating the unfinished agenda of subnational elimination, and incorporating renewed initiatives to promote increased and early case detection and inclusion of people affected by leprosy. The bicycle was also considered an appropriate pictorial model to reflect this strategy.

9. Closing session

Dr Erwin Cooreman summarized the proceedings of the three-day meeting and highlighted the conclusions. He also presented the timeline of next activities with finalization of the Global Leprosy Strategy, 2016–2020 before the end of 2015. An implementation manual will also be developed as a concrete tool for countries to stimulate implementation of the strategy. A mid-term review is planned in 2018.

He appreciated all speakers for their rich and inspiring presentations, highlighting current facts in all major areas and subcomponents of leprosy control.

He thanked all participants for their very valid and important inputs development of the strategy as contributed during the plenary sessions and the group work. Points were taken well and discussions resulted in a consensus on the way forward.

On behalf of the Regional Director, Dr Cooreman formally closed the meeting.

Annex 1

Agenda

(1) Opening session

(2) Current leprosy situation at global and country levels

(3) Presentation and discussion of global leprosy strategy beyond 2015

(4) Implementation plan of global leprosy strategy at country level

(5) Role of partners and mechanisms of coordination of contribution by partners

(6) Concluding session

Annex 2

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The global meeting of national leprosy programme managers was part of a consultation process organized by WHO's Global Leprosy Programme (GLP) to review the current leprosy situation and discuss new technology and knowledge available to address the leprosy problem worldwide in order to finalize the Global Leprosy Strategy, 2016–2020. Representatives of 45 national leprosy programmes, nongovernmental organizations, development partners, persons affected by leprosy and experts in relevant fields participated in the deliberations.

The meeting participants agreed on the Global Leprosy Strategy 2016–2020 "Accelerating towards a leprosy-free world". The strategy is built on three pillars: (i) strengthen government ownership, coordination and partnerships; (ii) stop leprosy and its complications; and (iii) stop discrimination and promote inclusion. The strategy will work towards the targets of zero grade 2 disabilities due to leprosy in children and bringing down grade 2 disability cases to <1 case per 1 million population by 2020. WHO will facilitate national programmes, develop country implementation plans and support effective monitoring for achieving the desired targets.

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