Meeting of Leprosy Programme Managers in the South-East Asia Region

Kolkata, India, 11–13 April 2023

World Health Organization
REGIONAL OFFICE FOR South-East Asia

SEA-CD-338

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Abbreviations and acronyms

ADR	adverse drug reaction
AMR	antimicrobial resistance
ANM	auxiliary nursing midwifery
ASHA	Accredited Social Health Activist
BCG	Bacillus Calmette-Guérin
COVID-19	coronavirus disease 2019
DHIS	District Health Information Software
DOT	directory observed treatment
ELISA	enzyme-linked immunosorbent assay
FCHV	female community health volunteers
G2D	grade 2 disability
GLASS	Global Antimicrobial Resistance Surveillance System
IEC	information, education and communication
IHIP	Integrated Health Information Platform
ILEP	International Federation of Anti-Leprosy Associations
LEMT	Leprosy Elimination Monitoring Tool
LPTA	Leprosy Programme and Transmission Assessment
MB	multibacillary
MDT	multidrug therapy
MPW	multipurpose worker
NGO	nongovernmental organization
NRL	National Reference Laboratory
NTDs	neglected tropical diseases
PB	paucibacillary
PCR	polymerase chain reaction
PKDL	post kala-azar dermal leishmaniasis
PHC	primary health care
SDR-PEP	single-dose rifampicin for post-exposure prophylaxis
SOPs	standard operating procedures
SRL	supranational reference laboratory
WHO	World Health Organization
WHO-SEARO	WHO Regional Office

1 Introduction

1.1 Meeting organization

The meeting of leprosy programme managers in the South-East (SE) Asia Region was convened by the WHO Regional Office for South-East Asia (WHO-SEARO) from 11 to 13 April 2023 in Kolkata, India. The meeting was attended by 40 participants, including 15 national focal points from nine countries, five experts, partners, donors and WHO staff members, including those from the Global Leprosy Programme (GLP).

1.2 Meeting objectives

The objectives of the meeting were to:

- review the current situation and progress of leprosy elimination in the Member States;
- discuss the updates on the new guidance and tools from the Global Leprosy Programme;
- facilitate experience-sharing and catalyse discussions to identify innovative practices, solutions and remaining gaps across countries to enhance leprosy elimination activities; and
- determine priority actions and support needs for accelerating leprosy elimination in the Region.

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Proceedings

2.1 Opening session

Dr Aya Yajima, Regional Adviser, Neglected Tropical Diseases (NTDs), WHO-SEARO, delivered the opening remarks from Dr Poonam Khetrapal Singh, WHO Regional Director for South-East Asia, as she was unable to attend the meeting because of prior commitment.

The Regional Director acknowledged that all Member States had achieved the initial target of eliminating leprosy as a public health problem by bringing down the prevalence to less than 1 per 10 000 population by 2005. Yet, she noted, the South-East Asia Region continues to bear the highest burden of leprosy in the world, accounting for over 60% of the global burden of leprosy. She emphasized that if elimination of leprosy is to be achieved – the new aspirational goal under the latest Global Leprosy Strategy set for 2030 – "business as usual" is not an option.

She proposed five key priorities. The first one is to innovate and enhance early case detection and treatment. Continuous efforts must be made to sustain awareness about the disease and reduce the stigma associated with leprosy in communities. Adopting and expanding the post-exposure prophylaxis (PEP) using single-dose rifampicin (SDR) strategy is the second priority as this can be a game changer in the fight against leprosy. Strengthening surveillance systems is the third priority. Accurate data on the prevalence of leprosy are very important for monitoring progress towards elimination and mobilizing necessary resources. Fourth, it is crucial to provide rehabilitation and support services to the leprosy-cured cases to prevent disability and deformity. Finally, sustainability needs to be ensured by continuously raising awareness, building capacity of health-care workers, implementing active case detection, tracing contact and using preventive chemotherapy. Rehabilitation and support services can be delivered through integration with services for other diseases, and eventually as part of the essential public health functions of the health system and primary health care. She concluded by wishing everyone fruitful deliberations during the meeting.

After her message, Dr Aya Yajima shared the objectives and outcomes of the meeting.

This session was followed by introduction of the participants. All participants introduced themselves. After this, Dr Zaw Lin, Technical Officer, WHO-SEARO, proposed the name of the Chair for each session of the meeting and shared the details of the rapporteurs, which were endorsed by all participants.

2.2 Global Leprosy Strategy 2021–2030 and global updates on new tools and guidance from the Global Leprosy Programme

Dr Pemmaraju Rao, Technical Officer, Global Leprosy Programme

In 2021, 140 594 new cases of leprosy were reported globally, 95% of which were reported from 23 global priority countries and 66% from the South-East Asia Region (81 039 cases). Meanwhile, 36 countries have reported zero leprosy cases while 12 countries have less than 10 annually reported cases of leprosy. The prevalence rate per million was 16.9 globally and 39.4 in the South-East Asia Region; the new case-detection rate per mission was 17.8 globally and 45.43 in the South-East Asia Region. The new child case-detection rate per million child population was 4.46 globally but 10.88 in the South-East Asia Region. Re-treatment is high in India and Indonesia. Supervision and monitoring need to be carried out at the subnational level to improve treatment completion rates and prevent re-treatment.

Eight countries reported data on resistance globally; the number of individuals detected with mono-resistance was 51 for rifampicin, 49 for dapsone and three for ofloxacin; in addition, four patients presented resistance to more than one drug. Reporting of resistance cases needs to be improved. India has a commendable system of antimicrobial resistance (AMR) surveillance reporting and WHO receives the reports. All countries of the SE Asia Region are encouraged to report AMR. Adverse drug events have been reported from India and Thailand, with a total of 74 patients. It has been reported that of the 142 000 cases that were examined at the end of treatment in 2021, 1000 had developed disability – this needs attention. A total of 116 discriminatory laws have been reported and it has also been reported that 86.7% of the health facilities have persons trained in counselling for leprosy patients.

The WHO Technical Guidance on interruption of transmission and elimination of leprosy disease is being finalized. It now aims for interruption of transmission and absence of autochthonous cases in the population.

The Global Leprosy Strategy 2021–2030 has four strategic pillars. Under the first strategic pillar, "Implement integrated country-owned zero leprosy roadmaps in all endemic countries", many countries are showing solid ownership. However, resources have to be ensured at the subnational level for acceleration of the leprosy elimination efforts in a sustained manner, for which several countries have developed national strategic plans. However, the capacity in the health-care system for quality leprosy services is declining. To improve monitoring of antimicrobial resistance, the Global Leprosy Programme, together with its Technical Advisory Group, is developing an AMR surveillance toolkit. Monitoring of adverse drug reactions (ADRs) also needs to be strengthened as adverse events can impact the acceptance of multidrug therapy (MDT) in a country.

Under the second strategic pillar, "Scale up leprosy prevention alongside integrated active case detection", contact tracing needs to be improved. In India, it has been estimated that a person is spending, on average, 20 hours with an untreated patient in a week with family and neighbours and 45 persons are expected to be in contact with a patient. Preventive chemotherapy using single-dose rifampicin (SDR) for all eligible contacts can prevent leprosy in more than 57% of them. Protective effect can be improved by early case-finding, contact tracing and Bacillus Calmette-Guérin (BCG) vaccination at birth. The integrated skin neglected tropical diseases (NTDs) approach – for example, using skin camps and child/school health clinics – will enhance case-finding.

Under the third pillar, "Manage leprosy and its complications, and prevent new disability", countries in the South-East Asia Region are performing well in terms of early case detection as grade 2 disability (G2D) is declining. However, child cases are not declining at the same pace. Treatment of reactions and other conditions during the course of treatment and ensuring mental well-being through psychological first aid and therapeutic counselling for patients have to be prioritized.

Under the fourth pillar, "Combat stigma and ensure human rights are respected", "Principles and guidelines for elimination of discrimination against persons affected by leprosy and their families" should be adopted. Persons affected by leprosy can play a role in combating stigma and abolishing discriminatory laws. Amendment of discriminatory laws is a priority and health departments are encouraged to coordinate with the ministries of social justice in respective countries.

2.3 Country updates on leprosy situation and programmatic progress

2.3.1 Bangladesh

Dr Kazi Shafiqul Halim, Director, Mycobacterial Disease Control (MBDC), Directorate General of Health Services, Dhaka

The number of new cases detected has remained almost static for the past 12 years. The COVID-19 pandemic, in particular, hampered case-detection activities in 2020 and 2021. Surveillance of tracking of imported cases and data on autochthonous cases are absent as well.

The leprosy endemicity status has been analysed for each of the 64 districts and two city corporations in Bangladesh and colour-coded, based on the case-detection rate for 2022. As a result, a total of 11 districts were classified as "red zone" (detection rate >5/100 000 population), six districts and the Dhaka City Cooperation as "orange zone" (detection rate 2–5/100 000 population), 36 districts and the Chattogram City Corporation as "yellow zone" (detection rate <2/100 000 population) and 11 districts as "white zone" (detection rate 2–0/100 000 population). Compared with 2021, new case detection in 2022 was enhanced and many districts moved from "yellow" to "orange" and from "orange" to "red"; four districts moved from "yellow" to "white". Yet, out of 64 districts, only 24 implemented interventions and insofar as subdistricts (*upazila*s) are concerned, only 13.03% had interventions.

The National Strategic Plan is under development in line with the Global Leprosy Strategy 2021–2030 and set to be launched this year.

There are two existing Technical Working Groups on leprosy: (i) the National Technical Committee for Leprosy and (ii) the Leprosy and Tuberculosis Coordinating Committee.

Diagnosis is mainly carried out on a clinical basis, with a limited provision of laboratory diagnosis. Relapses are reported, however, there is no facility to culture *M. leprae*. There is also no scope for AMR detection at laboratories. In 2022, "relapse" cases were reported, but there was no way of knowing whether these involved resistance or relapse.

Online aggregated data management is ensured through the District Health Information Software 2 (DHIS2), which reports data from subdistricts to districts and the National Leprosy Programme for compilation. Case-based data were expected to be collected from 2023.

Active case-finding is the mainstay of case detection in Bangladesh. In 2022, active case-finding covered 18 million population from 39 subdistricts of seven districts. Contact tracing also covered more than 11 million in 34 subdistricts, supported by partners. An action plan had been ready for a pilot project for SDR-PEP in two districts – 8 (2+6) in 2024, 32(8+24) in 2025 and countrywide in 2026. Rehabilitation plans (disability allowance, reconstructive surgery, etc.) were also afoot for all surviving grade 2 disability (G2D) patients in the whole country.

No discriminatory laws exist in Bangladesh as of today – Parliament of Bangladesh repealed the British colonial law, Lepers Act 1898, on 24 November 2011. Multisectoral collaboration has been ensured with engagement of the Ministry of Social Welfare and Rural Development. The highest political commitment of the Prime Minister for leprosy elimination was also announced in 2019 at the National Leprosy Conference 2019 'Zero Leprosy Initiative-2030.'

There is a plan for strengthening awareness-raising activities through mass media, school health programmes and publication of books narrating the life stories of people affected by leprosy. Lack of funds for community awareness is a challenge and hence, it is only carried out in high-burden districts. More focus on capacity-building, active case searching, establishment of laboratory facilities, AMR surveillance, integrated approaches, community awareness-strengthening surveillance, data management and research is required.

2.3.2 India

Dr Sudarsan Mandal, Deputy Director General (Leprosy), Ministry of Health and Family Welfare, Government of India, New Delhi

India is working towards eradication of leprosy by 2027, three years ahead of the global target, with a vision of zero leprosy cases, zero transmission, zero disability, and zero stigma and discrimination. Leprosy is considered a prioritized tropical disease and not a neglected one in India.

India accounts for 54% of the new leprosy cases reported globally (Brazil accounts for 24% and Indonesia 8% of the global new cases). However, the proportional contribution of G2D cases has gradually declined from 40% in 2016 to 22% in 2021. Hence, India is considered to be performing well with regard to early case detection. India also has 68% of the total disease burden and reports 80% of the new leprosy cases in the South-East Asia Region. The number of child cases has decreased from 9000 to 4000, and the proportion of multibacillary (MB) cases has increased from 50% to 60% in the last four years (from 2017–2018 to 2021–2022).

Within India, eight states have more than 5000 new cases, with Maharashtra accounting for more than 70% of the new cases. Accredited Social Health Activist (ASHA) workers/auxiliary nursing midwives (ANMs)/multipurpose workers (MPWs) identify suspected cases at the field level and medical officers at peripheral health centres diagnose the leprosy cases, initiate treatment with MDT and provide counselling. District hospitals provide tertiary care for complicated cases.

A series of new initiatives has been introduced since 2016: (i) Leprosy Case-Detection Campaign (14 days) in high-endemic districts through hose-to-house visits, ensuring each and every member of the targeted population is examined by the search team; (ii) ASHA-Based Surveillance for Leprosy Suspects in low-endemic districts, including zero reporting every month; (iii) Focused Leprosy Campaign in low-endemic districts where a G2D case is detected and hence, considered a hotspot; (iv) special plans for hard-to-reach areas; (v) post-exposure prophylaxis; (iv) monitoring and supervision through

the Joint Monitoring and Investigation Mission at the state level conducted by central government teams, G2D epidemiological investigations, directory of leprosy experts, and provision of certification and award for successful districts; (vii) information, education and communication (IEC) and training through the SPARSH leprosy awareness campaigns conducted across the country on Anti-Leprosy Day (January 30); and (viii) convergence of leprosy screening under the National Health Mission through Comprehensive Primary Health Care under Ayushman Bharat (30+ years) through Community-Based Assessment Checklist, Rashtriya Bal Swasthya Karyakram (0–18 yrs) and Rashtriya Kishor Swasthya Karyakram (10–19 years).

On 30 January 2023, the National Strategic Plan and Roadmap for Leprosy 2023–2027 was launched, with the goal of accelerating achievement of interruption of leprosy transmission in India. The National Leprosy Eradication Programme has effectively been supported by nine International Federation of Anti-Leprosy Associations (ILEP) partners. The Pillar 5 of the Roadmap refers to digitalization. Under this Pillar, *Nikusth* 2.0 for digitalization of individual patient records was also launched in January 2023. This also involves digitalization of reporting and recording systems, integrated with the Integrated Health Information Platform (IHIP), and digitalization of the supply chain management of anti-leprosy drugs. The National AMR Guidelines have also been released and the highest commitment of the Prime Minister of the country and chief ministers of the states and Union Territories obtained.

In 2023–2024, search for half of the estimated hidden cases has been planned, with the remaining reserved for next year. Since there is no vaccine available for leprosy prevention, SDR-PEP is the only tool for protection as of now. Considering the family size and social context of the country, currently, around 20 contacts are targeted to cover each case.

Discriminatory laws are being repealed. Many have been repealed, but more efforts are needed and under way.

Dr Amar Timalsina, Executive Director, Association of IDEA Nepal, Kathmandu, said that Nepal is struggling to repeal laws and asked for suggestions from India. The Programme Manager from India stressed that joint efforts of the Government of India and partners had been useful in this regard.

2.3.3 Indonesia

Dr Regina Tiolina Sidjabat, Chief, Neglected Tropical Disease Team, Directorate for Communicable Disease Prevention and Control, Ministry of Health, Jakarta, Indonesia

As per a 2022 report, 12 416 new cases were detected – 89.77% MB cases, 9.89% child cases, 36.29% female cases and 6.37% G2D cases – in that year. Since 2020, the COVID-19 pandemic has substantially impacted the community-based activities for leprosy.

There are national policies related to leprosy, namely:

(i) Health Minister Decree 11/2019 as an umbrella guidance in the implementation of the Leprosy Elimination Programme at central, province and district levels;

(ii) Health Minister Decree HK.01.07/MENKES/308/2019 as a guidance for leprosy case management for general practitioners and specialist doctors; and

(iii) Health Minister Decree HK.01.07/MENKES/1936/2022 on inclusion of leprosy in the clinical practice guidance for doctors at primary health care (PHC) facilities.

Based on the Global Leprosy Strategy 2021–2030, Indonesia has developed the National Action Plan for Leprosy Elimination Programme 2023–2027. It has four main strategies, namely community, integration, acceleration, and commitment, policy and management.

In terms of leprosy surveillance and data reporting, the Excel-based recording and reporting system is transitioning to the DHIS2-based Leprosy and Yaws Information System (SITASIA) that enables real-time reporting from the districts/municipalities through the provinces to the Central level and data visualization.

Leprosy diagnosis is carried out by trained staff at PHC clinics based on the clinical observation of the three cardinal signs of leprosy. Currently, MDT drugs are provided free of charge by Novartis through WHO. Directory observed treatment (DOT) is not yet available but treatment compliance is monitored by leprosy workers.

Active case-finding and contact tracing are implemented through community-based activities. Currently, 24 districts in 11 provinces have implemented SDR-PEP. Single-dose rifampicin has been procured by the Ministry of Health (MoH).

For public awareness and community engagement, the National Programme, with the support of WHO and until No Leprosy Remains (NLR), have produced posters and leaflets, and organized webinars for community doctors and medical doctors, particularly around World Leprosy Day.

The major challenges in Indonesia include:

- stigma and discrimination perpetuated among health workers and community members;
- geographical situation, reaching remote population for routine leprosy activities;
- frequent stockouts of MDT drugs at the peripheral level, particularly due to calculation difference between the Ministry of Health and WHO formula, and suboptimal supply chain management;
- lack of community participation;
- dissemination of new WHO guidance on elimination criteria; and
- strengthening of AMR surveillance and laboratory capacity.

2.3.4 Nepal

Dr Prashnna Napit, Chief, Leprosy Control and Disability Management Section, Epidemiology and Disease Control Division, Ministry of Public Health, Kathmandu

Nepal achieved leprosy elimination as a public health problem at the national level in 2009 and declared it in 2010. Since then, Nepal has been consistently sustaining this status at the national level. Efforts are under way to further reduce the disease burden and achieve subnational elimination at the municipality level.

New case detection has been stagnant at the level of up to 2000–3000 cases since 2010. Cases among women are increasing and for this reason, female field-level workers are involved in

case detection; community participation of women are also increasing. In 2021–2022, child cases among the new cases stood at 3.19%, with only four new child cases with G2D. The proportion of G2D among all new cases was 7.22%.

The National Roadmap for Zero Leprosy 2021–2030 and the National Leprosy Strategy 2021–2025 have been developed. There are two technical committees on leprosy, i.e. the National Steering Committee under the chairmanship of the Secretary, Ministry of Health and Population (MoHP), and the Leprosy Technical Committee: Skin Diseases and Leprosy under the chairmanship of the Director of the Epidemiology and Disease Control Division.

Leprosy surveillance needs to be improved. Clinical diagnosis is being expanded to primary health care centres with episodic case validation by dermatologists and the diagnostic referral mechanism. The capacity for silt skin smear is available at district and provincial hospitals, tertiary-level hospitals and leprosy-specific hospitals, and that for histopathological examination is available at tertiary-level hospitals. Anandaban Hospital has the capacity to conduct AMR surveillance. Yet the country will like to request India to share guidelines related to leprosy for replication in Nepal, e.g. those pertaining to AMR surveillance.

Routine data collection and reporting are carried out through the HMIS on a monthly basis. Timely reporting is ensured through entry into the DHIS2 system, till 15th of next month. There are plans to develop a case-based surveillance system, embedded in the existing health management information system with GIS mapping.

SDR-PEP has been extended to 15 districts now, with a preliminary report of 55% effectivity. PEP++ piloting is being held in two districts (Dhanusha and Mahottari), with three doses of rifampicin and clarithromycin on Days 1, 29 and 57 (four weekly) to contacts of a case.

Leprosy services have been integrated into the general health system and are a part of the basic health services. Free MDT and other leprosy-related services are available at government health facilities and specialized leprosy hospitals. Complication management is carried out at specialized leprosy-dedicated hospitals and tertiary hospitals. Rehabilitation services for patients with disability are provided through community-based rehabilitation programmes.

Awareness activities are conducted through the celebration of World Leprosy Day, IEC, campaigns involving persons affected by leprosy, mobilization of female community health volunteers (FCHVs) and networking, self-help groups, and mobilization of persons affected by leprosy.

Discriminatory laws still exist in Nepal. Coordination between the Ministry of Law, Justice and Parliamentary Affairs and the Ministry of Home Affairs is being ensured.

Challenges include delays in detection, stigma and discrimination against leprosy patients, poor routine surveillance system, stakeholders according leprosy low priority, inadequate domestic funding, migration and foreign cases. Support is required for developing and expanding case-based surveillance system, scaling up SDR-PEP and rifampicin supply, building capacity, scaling up contact examination and ensuring technical assistance for research.

2.3.5 Sri Lanka

Dr Dalini Wijesekara, Consultant and Community Physician, Anti-Leprosy Campaign, Ministry of Health, Colombo

In 2022, 1401 new leprosy cases were detected (59.88% MB cases, 38.18% female cases, 11.06% child cases, 7.13% G2D cases and 1 G2D child case).

Diagnosis is mainly carried out on the basis of clinical findings by consultant dermatologists in Base Hospital and other hospitals. All hospitals with consultant dermatologists have slit skin smear and biopsy facilities.

The AMR surveillance protocol was developed in 2022 and was planned to be implemented soon. However, at present, no laboratory facilities are available in the government sector to perform the testing for AMR. They plan to establish a laboratory at the University of Colombo.

Leprosy-related data are shared with the district leprosy control teams during the monthly, quarterly and annual reviews. Data are also published in the Annual Health Report of the Anti-Leprosy Campaign every year. GIS mapping of all identified cases is ensured for the high- and medium-risk districts.

Active case search, contact examination and SDR-PEP are mainly conducted in high-risk areas. Pictograms are shared with children, their guardians and parents for examining children for various skin diseases, including leprosy. A social marketing campaign has been launched to improve new case detection by raising awareness and to break the stigma through the Leprosy Initiative For Elimination (LIFE) using Facebook pages and YouTube channels.

Bottlenecks involve availability of monofilaments and second-line drugs, and quality assurance of drugs.

Discussion

Dr Wim H van Brakel, Chair, ILEP Technical Commission, clarified that paucibacillary (PB) cases occur after a shorter incubation period and therefore, an increasing trend of MB proportion is an indication of the progress towards interruption of transmission. The same holds true for G2D proportion. It tends to go up as progress is made towards interruption of transmission. Furthermore, zero G2D cases may not be necessarily reached before the achievement of zero leprosy cases.

Dr Mandal mentioned that on average, 20 contacts are covered per index case with the criteria in India. Dr Rashmi Shukla, National Professional Officer, WHO India, pointed out that for contact tracing, three households on either side of the house of the index case and three households in the front are usually covered.

The Programme Manager from Sri Lanka informed the participants that the female proportion among the new cases detected is 40% due to the strong support of the community-level female staff. Dr Indira Kahawita, a member of the WHO Technical Advisory Group for Leprosy (TAG-Leprosy) explained that in passive case detection in Sri Lanka, 89% of the G2D cases detected involve men. It is presumed that compared with men, women are seeking services for health issues at an earlier stage, which helps prevent progression of disability.

Dr Prashnna Napit from Nepal pointed out that 500–600 foreign cases, mainly from India and Bangladesh, were reported and registered in the country this year. Patients from Nepal also seek treatment in India and vice versa. Dr van Brakel emphasized that based on the historical review of data across the world, there is no evidence so far to show that cases that come from outside have transmitted leprosy. However, it is important that treatment is provided uniformly for all patients, regardless of the origin.

2.3.6 Thailand

Dr Jumpol Tantiwongsakij, Director, Raj Pracha Samasai Institute, Department of Disease Control, Ministry of Public Health, Nonthaburi

The country plans include as priorities the following:

- leprosy case-finding in households and among social contacts;
- development of a digital database of leprosy patients;
- supervision, follow-up and evaluation of the performance of leprosy control for district network provinces, districts and subdistricts;
- development of a surveillance system for leprosy control among migrant populations;
- development of the capacity of personnel responsible for leprosy elimination in the central and regional areas (in the targeted areas) to gain knowledge and skills for leprosy surveillance;
- maintenance of the expertise of the Leprosy Centre to provide standard leprosy services; and
- development of knowledge, research, innovation and surveillance system.

Active case-finding is carried out in the priority areas, which are any areas where within the past 10 years:

- new cases have been detected every year;
- a new child case has been found in any year; and/or
- a total of seven cases of foreign-born patients have been found.

Household contacts have been screened every year over 10 years.

Challenges include diagnosis of (i) dapsone-induced methemoglobinemia, which is conducted through oxygen saturation recording and (ii) dapsone-induced agranulocytosis.

Awareness campaign for leprosy in risk areas is conducted in the week of the Raj Pracha Samasai (Leprosy campaign week). To ensure coverage of rehabilitation services, the Raj Pracha Samasai Institute, which is responsible for the Thai National Leprosy Programme, has made efforts to establish a social welfare and rehabilitation network for persons affected. A working model of "local volunteer group" was formed to support persons affected by leprosy and persons with other forms of disability in the community. This has been carried out with the cooperation of local welfare- and rehabilitation-related organizations and persons affected. The local volunteer groups help the persons affected access mainstream public social development projects. There are 60 local volunteer groups across the country.

2.3.7 Bhutan

Dr Rada Dukpa, Senior Programme Officer, Department of Public Health, Ministry of Health, Thimphu

Services for leprosy control activities have been available in Bhutan since the 1960s. Under the ownership of the Royal Government of Bhutan, the National Leprosy Control Programme was established in 1981. MDT was introduced nationwide in 1982, followed by a nationwide introduction of supervised DOT.

Bhutan achieved case notification of less than 1 per 10 000 population and was certified for elimination of leprosy as a public health problem in 1997. The current prevalence rate per 10 000 population is 0.225/10 000 population. In 2020 and 2021, seven and 21 new cases were detected respectively.

Between 2018 and 2022:

- number of new cases detected: 58
- number of new cases of MB leprosy: 55
- number of women among new cases: 28
- number of children among new cases: 1
- number of new cases with G2D: 3
- number of child cases with G2D: 0.

In 2022, new cases were detected from five districts.

The National Leprosy Strategic Plan 2021–2025 is available, with the following objectives, which are to:

- ensure political commitment and adequate resources for the Leprosy Control Programme;
- further improve early case detection through active case-finding in endemic areas, contact tracing and case management for early treatment interventions;
- establish surveillance for detection of primary and secondary drug resistance to anti-leprosy drugs;
- ensure innovative approaches towards retaining and training health workers, and sustaining expertise for prevention and management of leprosy cases; and
- promote societal inclusion through addressing all forms of discrimination and stigma.

Two Technical Working Groups exist at the national level, namely the National Committee for Disease Elimination and the National TB and Leprosy Technical Advisory Group.

Contact tracing and focal survey are carried out annually for a period of five years for PB and for a period of 10 years for MB under the leadership of the programmes in-charge. Rollout of AMR surveillance is still under process.

The Programme remained largely underfunded in the post-elimination period. As a result, there are many missed cases and late diagnoses.

2.3.8 Maldives

Dr Fathimath Nazla Rafeeg, Senior Medical Officer, Health Protection Agency, Ministry of Health, Malé

Maldives eliminated leprosy as a public health problem in 1997. Currently, fewer than 10 cases are reported annually, with prevalence recorded at 0.05 per 10 000 population.

The Framework for Zero Leprosy in Maldives to achieve 100 leprosy-free islands by 2023 and zero leprosy status by 2030 has been launched. The National Leprosy Management Guideline and standard operating procedures (SOPs) have also been endorsed.

The Zero Leprosy Programme has been initiated by the Health Protection Agency, with the following activities:

(1) contact tracing for all cases;

(2) single-dose rifampicin for contacts;

(3) disease surveillance and management, referral system for leprosy; and

(4) leprosy screening during work visa medicals, as part of strengthening migrant population health.

Maldives National University and Leprosy Research Initiative are collaborating for research on awareness of leprosy and stigma associated with it.

Maldives plans to strengthen migrant health by conducting refresher trainings in work visa medicals and AMR, and requires support for genome testing and AMR surveillance.

2.3.9 Timor-Leste

Mr Agostinho da Costa Pinto, National Officer for Neglected Tropical Diseases, Directorate National for Disease Control, Ministry of Health, Dili

The National Leprosy Elimination Programme is integrated with the Ministry of Health and works in collaboration with international organizations, and national and local NGOs. Timor-Leste is one of the Regional Priority countries with a high new case-detection rate (81.9 per million population) and new Grade 2 disability (G2D) case rate (4.6 per million population). Leprosy was eliminated as a public health problem in March 2011.

The National Leprosy Elimination Programme took an initiative to update and release the Costed National Leprosy Strategic Plan 2022–2025, with the overall objective of eliminating leprosy as a public health problem in Timor-Leste by 2025.

The country plans to move from control to zero infection/transmission by 2030. In 2022, zero prevalence of leprosy was reported in four municipalities. The remaining 10 municipalities reported a high prevalence of more than 1 per 10 000 and a high new case-detection rate of more than 10 per 100 000. The Leprosy Mission in Timor-Leste is currently implementing active case-finding in two municipalities; further expansion in five municipalities is planned through the SHF 2022 and 2023 funding support.

Leprosy is mainly diagnosed in the country through clinical diagnosis. The treatment completion rate is low and hence, monitoring and follow-up need to be intensified to ensure treatment completion.

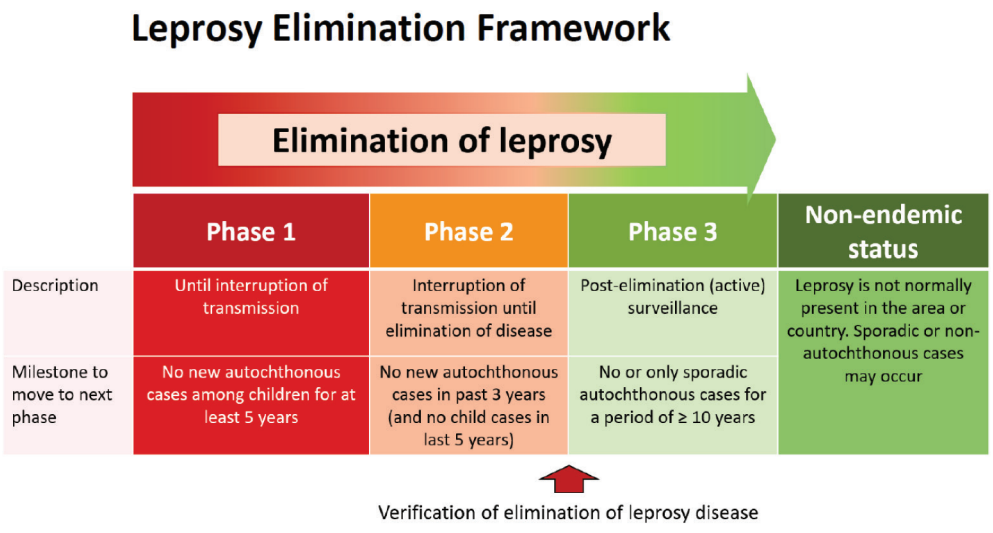
2.4 Leprosy Elimination Monitoring Tool (LEMT)

Dr Wim H van Brakel, Chair, ILEP Technical Commission

Definitions of key concepts in interruption of transmission of leprosy are as follows:

- interruption (elimination) of transmission: an epidemiological state in a previously leprosy-endemic country or area where there is no more local transmission of *M. leprae*, evidenced by a zero "new case rate among children" for at least five consecutive years;
- autochthonous case: a case of leprosy presumed to have acquired the infection following local transmission in the reporting area;
- non-autochthonous case: a new case of leprosy wherein infection is assumed to have occurred in a country or area other than where s/he was diagnosed to have leprosy; epidemiologically, non-autochthonous cases are not considered part of the local chain of transmission;
- elimination of leprosy disease: zero new autochthonous leprosy cases in the past three years;
- sporadic new case: occasional new autochthonous cases occurring in each area and which are unrelated (i.e. not an index case and secondary case);
- endemic: the constant presence and/or usual prevalence of a disease or an infectious agent in a population within a geographical area (now practically tied to presumed presence or absence of transmission); and
- non-endemic (for leprosy): autochthonous leprosy cases that have not been detected or only as sporadic cases in the population of that area or country for 10 years or more.

Fig. 1. The Leprosy Elimination Framework in the Global Leprosy Programme



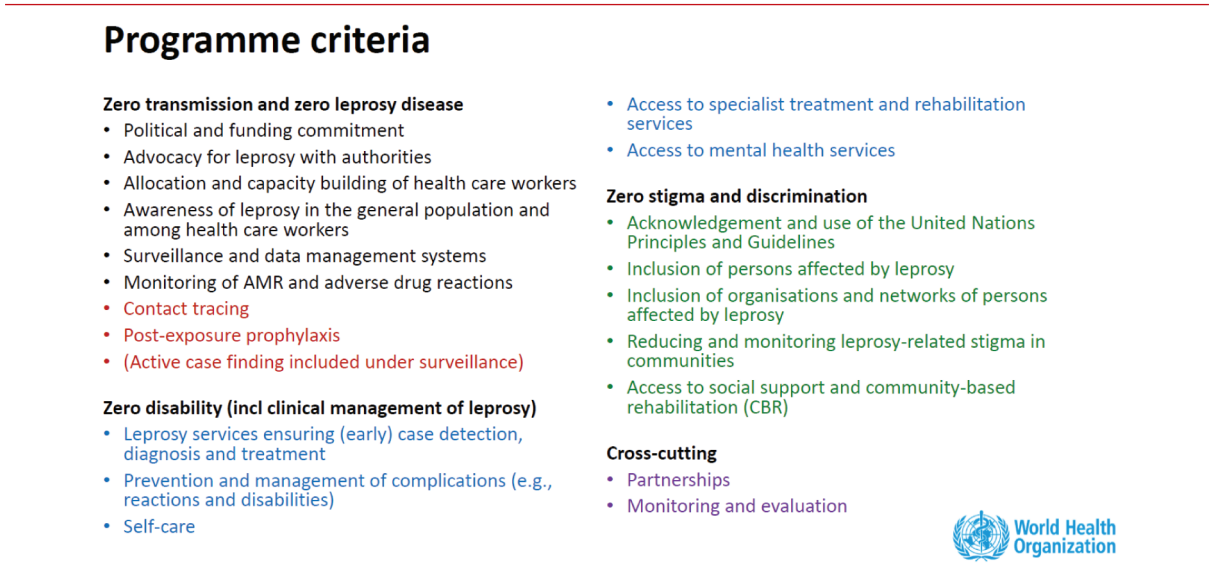
Traditionally, leprosy data monitoring used aggregated data at the national level and the trend in new case detection was monitored through the total number of new cases in the country and the case-detection rates. The disadvantages of this approach are that what is occurring at lower levels and where the cases are occurring cannot be seen, and interruption of transmission and elimination of leprosy at lower levels or anticipating what is coming cannot be monitored as well. To address these issues, the Leprosy Elimination Monitoring Tool (LEMT) was developed as a new and simple tool to monitor phases of elimination; promote bottom-up process of achieving the milestones; provide detailed long-term overview at any desired level; and allow managers and technical staff to anticipate achievement of milestones, and corresponding strategic and policy changes.

Many countries and provinces/states/districts/municipalities have already interrupted transmission. Review of 500+ subnational-level jurisdictions was conducted in 10 countries: hardly any instances of possible resurgence were observed (three or more new cases in three consecutive years). Large systematic literature review (Hambridge et al., 2021) has also shown that the risk of secondary cases and resurgence of leprosy in low- or non-endemic circumstances is very low to non-existent.

Country experience of using LEMT of Maldives and Thailand was also presented. Both countries explained the process of using LEMT by validating and entering retrospective data in the LEMT template, and how the process and outcomes of the exercise helped them assess the current status and identify the areas of priorities to accelerate leprosy elimination.

Together with LEMT, WHO also published the Leprosy Programme and Transmission Assessment (LPTA) Tool. To verify interruption of transmission of leprosy, Leprosy Programme and Transmission Assessment needs to be conducted, followed by the development of a Leprosy Elimination Dossier. LPTA aims to guide a detailed programme review at the subnational or national level and has a series of programme criteria to be assessed (Fig. 2). It will help compile evidence for the Leprosy Elimination Dossier. It is suggested that LEMT be implemented at the district level in all districts in Phase 1 of the Leprosy Elimination Framework and then LPTA be conducted in Phase 2.

Fig. 2. Programme criteria in the Leprosy Programme and Transmission Assessment



Discussion

Dr Sudarsan Mandal shared his thoughts on the domains of elimination, which needed to be covered: acting on reservoir of diseases and acting on both newly diagnosed and hidden cases; breaking the chain of transmission by social distancing, behavioural changes; protecting the susceptible through vaccines and PEP; and improving the nutritional status and thus ensuring better immunity.

In summary, the chairs emphasized that the new WHO guidance provides a clear Leprosy Elimination Framework with definitions, indicators and milestones for interruption of transmission and elimination of leprosy disease. LEMT helps visualize and anticipate progress, especially at national and subnational levels. It allows countries to work towards achieving the milestones with a bottom-up approach. However, there is a need to ensure that the reported zero cases signify absence of diseases. Sentinel surveillance, repeated serosurvey, ensuring data quality and use of additional indicators to validate data must be incorporated. Seroprevalence data are important for validating progress.

LPTA is to be used to carry out a detailed programme review at the subnational or national level, helping compile evidence for the Leprosy Elimination Dossier. There should be independent bodies to review the claims and reporting of disease elimination. Subnational verification must be in process and a task force has to come up with a document for monitoring the tools for the Leprosy Programme and Transmission Assessment regarding services and accessibility.

2.5 Active case-finding, contact tracing and preventive chemotherapy

2.5.1 Current WHO guidance on leprosy active case-finding, contact tracing and single-dose rifampicin for post-exposure prophylaxis (SDR-PEP) strategy and tools

Dr Pemmaraju Rao, Technical Officer, Global Leprosy Programme

Active case-finding is an exercise to actively screen population to detect cardinal signs of leprosy; it is conducted by skilled health workers. Active case-finding is mainly recommended in the following areas:

- high-burden areas;
- hard-to-reach areas/or groups;
- communities around a new child case and a new case diagnosed with G2D;
- contacts; and
- schools (as an integrated effort).

Preparatory steps include:

- awareness campaigns;
- training of field staff to enhance skills for suspecting cases;
- setting up mechanisms to ensure referral for confirmation of cases;
- collaboration with universities to update medical and nursing schools' curricula; and
- inclusion of persons affected by leprosy from the step of planning.

There was a WHO special project on case-finding activities in Bangladesh, Nepal and Myanmar, which was able to find a significant number of new cases through the case-finding activities.

In 2020, WHO published the Technical Guidance document on contact tracing and chemoprophylaxis. In this document, "contact" is defined as "a person having proximity to a leprosy patient for a prolonged duration". Such persons are considered "exposed" to leprosy and may or may not have been infected. "Prolonged duration" is typically defined as having been in contact with an untreated patient for 20 hours per week for at least three months in a year (e.g. family members, neighbours, friends, schoolchildren in the same class and co-workers in same office).

There are also three "contacts" defined in the document:

- household contact: contact living in the same dwelling or sharing the same kitchen with an index case;
- neighbour contact: a person living in the neighbourhood of an index case, living within 100 metres; and
- social contact: other persons having prolonged contact with an index case, e.g. factory workers, office colleagues, school students and teachers.

For those contacts (index case), it is essential to provide appropriate counselling at the time of diagnosis ("golden hour") – after three months and also after six months – on the facts about leprosy, risk of infecting others, treatment, prevention and management of disability.

The information on WHO recommendation on chemoprophylaxis was also explained. Single-dose rifampicin (SDR) may be used as leprosy preventive treatment for contacts of leprosy patients (adults and children aged two years and above) after excluding leprosy and tuberculosis disease, and in the absence of other contraindications. SDR can be provided through two approaches:

- for contacts: need agreement of index case; and
- blanket approach: in areas of high endemicity, overcrowding.

Based on the feasibility study, SDR has shown about 57% effectiveness[1] and hence, can serve as a complementary tool for:

- early case detection and prompt treatment;
- contact tracing; and
- vaccination at birth with BCG.

Table 1. Rifampicin dose for SDR

Age/weight	Rifampicin single dose
15 years and above	600 mg
10–14 years	450 mg
Children 6–9 years (weight ≥20kg)	300 mg
Children <20 kg (≥2 years)	10–15 mg/kg

1 Steinmann et al. (2018). Leprosy Post-Exposure Prophylaxis (LPEP) programme: update and interim analysis (interim report), Lepr Rev, 89, 102–116. Accessible at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10174212/pdf/nihms-1839674.pdf.

2.5.2 Rolling out SDR-PEP strategy

Dr Epco Hasker, Professor, Mycobacterial Diseases and Neglected Tropical Diseases, Institute of Tropical Medicine in Antwerp, shared the preliminary results of the trial data as of 8 April 2023. Post-exposure prophylaxis had already been tried in the 1960s, using the drugs that were available then. All trials that were conducted showed a reduction in leprosy incidence among those who received prophylaxis and in almost all studies, this reduction was statistically significant. The overall effect calculated by Smith et al.[2] in a meta-analysis was 60% reduction. However, post-exposure prophylaxis with dapsone required contacts to undergo treatment for at least six months or longer; obviously, this was not feasible at a large scale.

A breakthrough occurred when rifampicin was tested as a drug for post-exposure prophylaxis. A trial by Bakker et al.[3] in Indonesia, conducted on small island populations with a very high baseline incidence, showed no reduction in incidence when rifampicin was provided to close contacts only; however, there was a threefold reduction when an entire island population was provided with rifampicin. In this trial, two doses were administered, three weeks apart. Next came the pivotal COLEP trial in Bangladesh in 2008. This cluster randomized trial showed a 56% reduction in incidence when a single dose of rifampicin was provided to close contacts of leprosy patients, household contacts, neighborhood contacts and social contacts. The effect was shown to last for two years, after which leprosy incidence in intervention clusters gradually returned to the background level as observed in non-intervention clusters. What is important to realize is that there was no rebound effect, and the incidence did not increase after the intervention was stopped in the intervention clusters. This showed that post-exposure prophylaxis did not just postpone leprosy cases but also prevented them. The difference in effect between these two studies is probably due to the very high background incidence level in the Indonesia trial.

Now a trial called PEOPLE is being implemented on two islands of the Islamic Federal Republic of the Comoros, namely Anjouan and Moheli, and in the Miandrivazo district of the Republic of Madagascar. The planned sample size covered 144 000 people, 36 000 in each of the four study arms. This was based on an expected annual incidence of leprosy in the comparator arm of 1.4 per 1000 and a 50% reduction in each of the intervention arms over a three-year period. There are four study arms. Arm 1 is the comparator arm in which annual door-to-door screening for leprosy is conducted, identified patients are treated but no prophylaxis is provided. In arm 2, annual door-to-door screening is conducted, and leprosy patients are treated; in addition, rifampicin is provided to all household contacts of incident cases. In arm 3, the same activities as those in arm 2 take place, but rifampicin is provided not only to household contacts, but also to anyone living within 100 metres of an index case (if more than 50% of the village population is eligible, the whole village is provided with PEP). In arm 4, the same activities as those in arm 2 take place, with PEP provided to household contacts, but a serological test using anti-PGL-I is conducted and anyone living within 100 metres of an index case who tests positive for anti-PGL-I also receives PEP. The main analysis by study arm involves not only the incidence of leprosy over the three-year follow-up period, but also the potential of PEP to reduce transmission; the spatial clustering and phylogenetic clustering of leprosy are also analysed.

2 Smith et al. Chemoprophylaxis is Effective in the Prevention of Leprosy in Endemic Countries: a Systematic Review and Meta-Analysis Journal of infection September 2000 Volume 41, Issue 2, Pages 137–142

3 Bakker MI, Hatta M, Kwenang A, Van Benthem BH, Van Beers SM, Klatser PR, Oskam L. Prevention of leprosy using rifampicin as chemoprophylaxis. Am J Trop Med Hyg. 2005 Apr;72(4):443-8. PMID: 15827283

Provisionally, it seems to show:

- individual effect of PEP => ±40% risk reduction (p=0.018);
- comparable protective effect of BCG, no interaction;
- at study arm level, borderline significant reduction of 48% (p=0.021) in arm 3 (blanket coverage) when controlling for baseline prevalence;
- PEP adding additional protection on top of effect of annual door-to-door screening and treatment of leprosy patients; and
- strong association between incident cases and the distance to the nearest prevalent case at baseline.

Indonesia and the Indian state of West Bengal shared their experience of rolling out SDR-PEP strategy. In Indonesia, the number of new cases, paediatric cases and grade 2 disability cases seem to have decreased over time following SDR-PEP conducted in target villages in 2014; it gives hope to leprosy officers and the public that leprosy can be prevented. However, the following recommendations were highlighted:

- SDR-PEP should be continuously implemented until no leprosy case remains.
- SDR-PEP needs to be implemented with high quality.
- The commitment of policy-makers needs to be maintained.

West Bengal highlighted the following key aspects that are crucial for successful and sustained implementation of SDR-PEP:

- involvement of policy-makers of the state;
- training and sensitization of all categories of staff, including district leprosy officers, medical officers, supervisors, ANMs, ASHA workers and other front-line workers;
- preparation of guidelines in local languages for front-line workers;
- procurement of rifampicin to ensure its sustained availability in block PHCs as per requirement by ANM;
- convergence of various government initiatives relevant to population health;
- ASHA workers leading contact tracing and ANMs helping them screen eligible candidates;
- proper counselling and consent of the beneficiary under direct supervision before administration of PEP; and
- development of a monitoring system.

2.5.3 Short orientation on DHIS2 leprosy case register

Dr Pemmaraju Rao, Technical Officer, Global Leprosy Programme

The Leprosy Case-Based Tracking System, based on DHIS2, uses a "tracker", which is the DHIS2 app for individual-level (or case-based) transactional data. It supports data collection, case monitoring and follow-up, analysis, and reporting – all within the DHIS2 system.

- It handles multiple events (including single event) with registration.

- Tracker data are automatically aggregated within DHIS2 to support national and international reporting requirements and allow taking full advantage of the built-in suite of DHIS2 tools for data analysis and visualization, such as tables, charts, maps and dashboards.

Test instance was shared and short orientation on the system provided so that participants could jointly study these.

The Global Leprosy Programme and WHO-SEARO will be available to provide support for country introduction and adaptation of the tool upon request.

2.6 Diagnosis, treatment, referral and management of leprosy cases, reactions, neuritis and disability

2.6.1 Current WHO guidance and experience in diagnosis, treatment, referral and management of leprosy cases, reactions, neuritis and disability

Dr Indira Kahawita, Base Hospital, Homagama, Sri Lanka

There are two key WHO guidelines on this topic: (i) guideline for diagnosis, treatment and prevention of leprosy (2018) and (ii) Leprosy/Hansen disease: management of reactions and prevention of disabilities (2020).

Diagnosis of leprosy is based on clinical examination, with or without skin silt smears or pathological examination of biopsies. Enzyme-linked immunosorbent assay (ELISA), lateral flow and polymerase chain reaction (PCR) techniques do not represent a clear advantage over current standard diagnostic methods and there are no alternative tests such as ultrasound that meet inclusion criteria. None of the currently available tests is capable of detecting latent infection.

For treatment of leprosy, there is some evidence from the uniform MDT trials to show that three drugs are superior to two drugs in PB disease. To also avoid misclassification and considering the advantages on implementation, WHO recommends the same three-drug regimen with rifampicin, dapsone and clofazmine for all leprosy patients, with the duration of treatment totalling six months for PB leprosy and 12 months for MB leprosy since 2018. Recommendations for drug-resistant leprosy have also been provided in the 2018 guidelines.

The new key recommendations in the 2020 guidelines were:

- Use of graded monofilaments to assess sensory impairment is recommended.
- Prednisolone regimen for Type 1 reactions has been modified.
- Severity scales for both types of reactions have been introduced.
- Use of thalidomide for management of severe Type II reactions has been recommended by WHO for the first time.

In 2022, the Sri Lanka College of Dermatologists guideline on leprosy included new aspects regarding a patient travelling abroad for a long period:

- WHO recommends that the original clinician follow up for six months. The Sri Lanka College of Dermatologists also recommends follow-up by the original clinician for a minimum of three months, accompanied by MDT after three months.

- There needs to be a letter of referral to the clinician overseas with clear instructions on follow-up and contact details in case further clarifications are needed.

National surveillance for adverse drug reaction (ADR) due to leprosy chemotherapy needs to be strengthened in countries. WHO has identified that national surveillance of ADR due to MDT is a priority. Technical Guidance on management of ADR regarding drugs used in treatment of leprosy is in the draft stage. A pilot project involving five districts in Sri Lanka is being planned by the Anti-Leprosy Campaign with WHO support. Real-time online reporting of ADR would be ideal to minimize loss of data with quarterly, retrospective data collection.

Finally, a study was conducted in the city of Palmas, Brazil, to investigate if the impact of the pandemic on new case detection could be quantified. The autoregressive integrated moving average (ARIMA) model was applied to predict the under-reporting of new cases in the city. By studying the leprosy indicators in the city from 2001 to 2020 using the autoregressive integrated moving averages method, it predicted that 177% of the new cases of leprosy were not reported in the area under study. This was an eye-opener for public health authorities and leprosy control programmes worldwide; it emphasized the need for aggressive case-finding missions, which should be undertaken with immediate effect.

The potential effects of the "hidden cases" are as follows:

- higher risk of transmission within the community;
- risk of disability due to late presentation;
- wastage of drugs initially and drug shortages later due to economic crisis (more relevant to ofloxacin, clofazimine 100 mg, thalidomide and azathioprine); and
- a system that may get inundated later.

In Sri Lanka, special efforts are being made to strengthen case-finding through the following approaches:

(1) capacity-building for primary care doctors and other health staff:

- MoH conducting a capacity-building programme – hypopigmented patch has been identified as a key problem for dermatology;
- capacity building for general practitioners;

(2) good relationship between outpatient departments and leprosy care facility:

- initial capacity-building;
- all referrals acknowledged;
- non-cases referred back with an explanation;

(3) WhatsApp service extended to doctors for advice and referring patients as well as to the general public.

2.6.2 Orientation on annual request forms for donation of anti-leprosy medicine

Mr Dmitry Esin, Procurement Officer, WHO Headquarters

The Excel-based MDT request form contains the MDT requirement estimation model, which continues to evolve since the 2020 request year. MDT requirement estimation is based on:

- cases detected (relapse + re-treatment + new cases) in the last completed year;
- cases registered for treatment + cases under treatment (based on the most recent date available);
- stock data (stock-check date, stock at 3 levels, supplies on the way and medicines expiring in the next 12 months); and
- treatment protocol in place and planned treatment date.

It multiplies the number of cases registered for treatment and being under treatment by the half of the full treatment (6 blisters for MB and 3 for PB). For example, if there are 90 MB adult patients under treatment, they will need 90 MB adult patients x 6 blisters, i.e. 540 blisters. It calculates the number of blisters required for the treatment of cases that will be detected after the stock-check date and until the end of the supply year (or longer, if there is a need for a safety stock). The safety stock will provide protection against demand fluctuations, long supply lead time and other unpredictable situations. A decision is needed on how many months one will need safety stock for. Normally, it covers six (minimum) to nine months (maximum).

Change in treatment guideline from two-drug to three-drug regimen (2018 guidelines) for PB patients will affect the requirement estimation, if the shift was ensured less than 12 months before the stock-check date. In this case, it is necessary to calculate the need for the PB patients who started their treatment with the two-drug regimen. If the shift occurs after the stock-check date, it is necessary to calculate the need for two-drug treatment for the patients detected until the shift date and the need for three-drug treatment for the patients detected after the shift date. For these reasons, it is important that WHO remains informed about the intention to shift to the 2018 guidelines, one supply year in advance.

2.6.3 Role of surgery in leprosy experience, remaining challenges and the way forward

Dr Jerry Joshua, Schieffelin Leprosy Research and Training Centre (SIHRLC), Karigiri, India

Leprosy is caused by *M. leprae*. It affects the peripheral nerves and causes loss of sensation, muscle imbalance of limbs and eyelids, and some autonomic disturbances. Surgery offers important tools to improve the physical appearance and functioning of persons affected.

Problems requiring surgical interventions in leprosy include:

- neuritis;
- insensitive slowly disintegrating extremities due to ulcers and sepsis;
- insensitive slowly disintegrating extremities due to fractures and ligament injuries;
- the disintegrated foot or hand with contractures and tissue loss with ulcers;

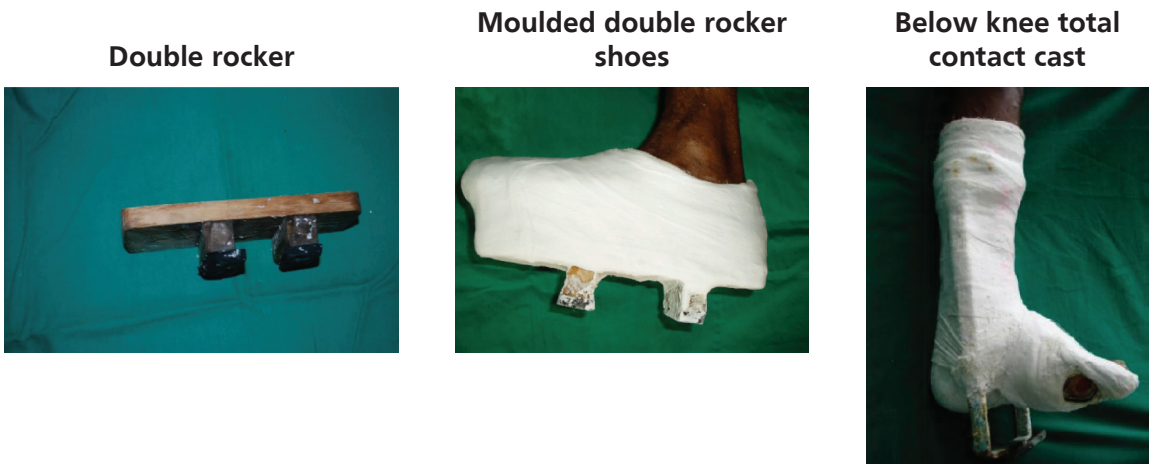
- the muscle-imbalanced hand or foot;
- paralysed eyelids; and
- other face deformities.

Indications for surgical intervention in neuritis include:

- pain and tenderness along the nerve;
- nerve abscess; and
- deterioration of nerve function despite medical management.

Insensitiveness may slowly disintegrate extremities due to ulcers and sepsis. Complicated ulcers are characterized by presence of infection, presence of a discharge, involvement of underlying structures, presence of slough and malignant change. While simple ulcers may be managed with rest, healing while walking with moulded double rocker shoes, total contact cast or window plaster cast and flap cover, complicated ulcers may need antibiotics, debridement, debridement and flap cover, ablations, and cover and amputations.

Fig. 3. Examples of different assistive shoes/casts for deformities due to leprosy



Soft tissue reconstruction can be carried out, for example, through toe web transposition flap for big toe base ulcer; toe web island flaps or reversed medial plantar artery flap for the first and second metatarsophalangeal ulcers; and medial plantar artery island flap for lateral border ulcer or heel ulcer. Muscle balance procedures can be used for ulnar/median/triple nerve/radial paralysis, food drop, claw toes and lagophthalmos. Other deformities that can be reconstructed may include boutonniere deformity, skin contractures and long flexor tightness of hand, tendo Achilles tightness, inversion deformity and fixed equinovarus deformity of foot, paralysed eyelids, bilateral lagophthalmos, and deformities of nose and eyebrows. Salvage procedures, such as Krukenberg procedure, are also available for mitten hands, totally destroyed hands or disintegrated feet. Assistive technologies can also be used; these include orthosis, prosthesis, rigid rocker footwear and customized insoles.

In India, annually, about 3000 to 3500 surgeries were being performed till 2017. Most of them were tendon transfers for hands and feet, and performed as per the interests of the department which served as the nodal point for reconstructive surgery in each state. However, no statistics were

available for other kinds of surgeries being performed. Because of lack of exposure of the professionals, reconstructive surgery is approached in a camp mode. Patients are often not able to afford the long hospitalization required, even though the surgery, treatment and hospitalization are free. Loss of livelihood and hidden expenses are the reason. To compensate for this loss, the Government of India has a scheme through which patients receive financial help to overcome this barrier.

Operational challenges include the following:

- neglect of debridement for ulcers, sinuses and infections;
- neglect of disintegrating limbs (salvage);
- neglect of offloading of wounds of the feet and high-risk areas of ulceration of limbs;
- footwear not being customized and therefore, not being protective;
- physiotherapy and occupational therapy services, essential to this, not always available;
- attention to disability only if and as long as it is among new cases;
- no data available on the total number of people affected by leprosy who are living with disability;
- the government financial scheme covering only reconstructive procedures;
- despite clear guidelines, the scheme is subject to interpretations by local staff;
- debridement surgeries of hands and feet not covered by the scheme; and
- amputation surgeries not covered by the scheme.

There are also technical challenges:

- prevention of impairment and disability with special reference to disintegrating feet;
- management of reactions and neuritis;
- correction of correctable deformity;
- salvage of the disintegrating extremity (prevention or postponing amputation);
- reconstruction of the disintegrated extremity;
- improved offloading devices; and
- restoration of pain.

There is a need to sensitize field workers, reconstructive surgeons (orthopaedic and plastic surgeons), orthotists and prosthetists to surgeries and podiatric principles. New technology also needs to be explored in customized offloading footwear – such as computer-aided design and computer-aided manufacture.

Finally, more research is needed on medical or surgical methods for the restoration of sensation, especially the sensation of pain. This is because unless the sensation of pain is restored, people (professionals and clients) continue to believe that medicines and dressings will save disintegrating limbs. Attention to biomechanics and offloading need to be continuous, and behaviour change also needs to be continuous and lifelong.

2.6.4 Surveillance of antimicrobial resistance in leprosy

Dr Subbanna Jonnalagada, Technical Officer, Global Leprosy Programme

WHO published an updated guide for surveillance of antimicrobial resistance in leprosy in 2017. There are two types of patients to be included in AMR for leprosy: (i) resistance among patients never treated before and (ii) resistance among those who have received treatment before (i.e. re-treatment cases). The guide recommends situation analysis for establishing a national surveillance system and also a scheme for AMR surveillance among designated treatment facilities, testing facilities, reference laboratories, national leprosy programmes, WHO Global Leprosy Programmes, Global Antimicrobial Resistance Surveillance System (GLASS) and External Quality Assurance Scheme (EQUAS) to provide quality standards for reference laboratories.

On 14–15 November 2022, WHO organized a workshop on strengthening laboratory services for AMR in leprosy in Karigiri, Vellore, India. The workshop ended with the following recommendations:

(1) Countries are encouraged to implement surveillance of AMR in leprosy and include this in their AMR national action plans, and report to GLASS (this will be facilitated by WHO).

(2) Introducing or re-introducing skin smear examination at designated clinical and treatment facilities will help easily follow the selection criteria for AMR screening.

(3) Countries implementing PEP should include for AMR surveillance all MB cases occurring after intake of rifampicin or any antibiotic as leprosy prophylaxis, in addition to the 10% of the new MB cases and all MB relapse cases.

(4) In addition to the 10% of the new MB cases, MB cases who have received PEP in the past (all) should be included for AMR surveillance.

(5) Technical guide should be reviewed, updated, and converted into e-training modules for facilitating capacity-building and implementation of AMR surveillance.

(6) Clinical management of leprosy patients detected with resistance should be improved.

- AMR-positive reports should be communicated to clinicians in a timely manner for further management.
- Mapping out such patients to identify associations with clinical, demographic and geographical locations is encouraged.
- Treatment outcomes need to be recorded for follow-up.
- National programmes are encouraged to support the implementation of second-line treatment, where required.

(7) Qualified SOPs from other disease models can be referenced for quality assurance in AMR and the reference laboratory should follow a quality management system.

(8) For improving laboratory quality assurance, WHO, WHO collaborating centres and other partners should support countries to implement quality management systems at designated treatment facilities, designated testing facilities and reference laboratories.

(9) Develop quality indicators for surveillance of AMR in leprosy.

(10) The templates for quality assurance at diagnostic testing facilities and clinical facilities need to be included in the new revised and updated technical guide.

(11) Develop a common and easy-to-use platform to adequately identify mutations known to confer antimicrobial resistance in leprosy

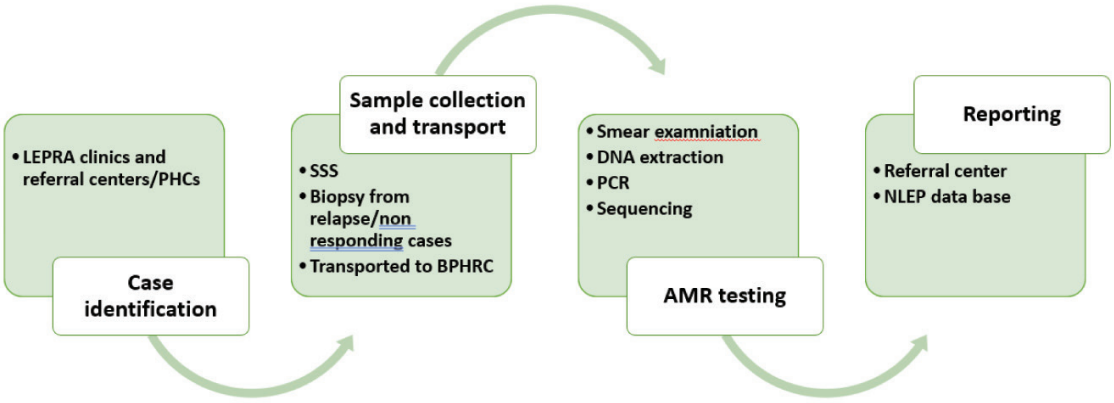
(12) Keep track of the progress of the new tests and innovative technologies to detect AMR in leprosy.

2.6.5 Antimicrobial resistance surveillance for leprosy – experience shared by an ILEP member NGO in India

Dr Aparna Srikantam, Director, LEPRA Blue Peter Public Health and Research Centre, Hyderabad, India

Blue Peter Public Health and Research Centre (BPHRC) is a research wing of Leprosy Relief Association (LEPRA), supporting its strategic objective of "evidence-led advocacy and system strengthening" and covering 156 districts of India. Different capacity is required for national reference laboratories (NRLs), supranational reference laboratories (SRLs) for molecular diagnosis, and district- and subdistrict-level laboratories. District- and subdistrict-level laboratories may not require high-level infrastructure, resources and technical expertise as NRLs or SRLs do, but all require a certain level of technology and standardized protocols. In LEPRA, BPHRC is an APEX laboratory, which has infrastructure for PCR and gene sequencing, and technical capacity to develop standardized protocols and training; it is also responsible for central data recording and coordination with other laboratories. There are referral laboratories across the state for case identification, silt skin collection and biopsy, if feasible, basic microscopy, specimen storage and transport, and community interphase for follow-up and repeat sampling. Peripheral subdistrict- or community-level laboratories will be responsible for case identification and community interphase. The typical workflow in the LEPRA laboratory network in India is shown in Fig. 4.

Fig. 4. Workflow in the LEPRA laboratory network in India



There are a number of operational challenges to strengthening leprosy AMR surveillance and the potential solutions are as follows:

(1) leprosy-specific laboratory capacity at the periphery:

   (a) augmenting the microscopy facilities at the subdistrict level;

   (b) technical hand-holding;

   (c) integration with TB microscopy;

(2) knowledge and practice gaps at all levels:

   (a) standard protocols;

   (b) trainings/capacity enhancement programmes;

(3) inadequate sequencing facility:

   (a) partnership with government institutes with sequencing facility;

(4) lack of uniform PCR protocols:

   (a) standardization and logistics, quality assurance;

   (b) better and simpler technologies;

(5) financial and human resource needs at both programme/field and laboratory levels:

   (a) AMR testing – a priority area;

   (b) investment case for donors for global-/national-level efforts – public–private partnership model, such as for tuberculosis.

The Regional Network of Laboratories is to provide technical assistance across the Region for infrastructure guidance; protocol development and capacity-building will also be required to strengthen AMR surveillance capacity across the Region.

2.7 Elimination of legislation on discrimination on the basis of leprosy, including against persons affected by leprosy, stigma reduction, social support and rehabilitation

2.7.1 Partners' experience of legislative work, stigma reduction, social support and rehabilitation for leprosy

Ms Mary O'friel, International Coordinator, IDEA, and Mr Amar Bahadur Timalsina, Global Network Coordinator at the International Association for Integration, Dignity and Economy Advancement (IDEA)

IDEA is an international organization founded in Brazil in 1994 by 50 individuals from six countries. It is composed of individuals who have faced the challenges of leprosy. IDEA network persons affected by leprosy around the world, who have experienced leprosy and other NTDS, empower each other, ensure human rights and promote inclusion. It establishes local and national organizations, conduct empowerment workshops, advocate for human resources addressing discriminatory legislation, policies and practices, and promote a positive image and terminology. It also conducts various capacity-building and leadership workshops, and even supports research.

Mr Amar B Timalsina shared his lived experience of leprosy, including his struggle with disability and stigma in his hometown, his career trajectory in leprosy, leading to the establishment of a school, and profound involvement in several initiatives for leprosy elimination eventually through IDEA Nepal.

The work of IDEA Nepal includes research – for example, assessment of the requirement of assistive technology device for improving appearance, functions and mobility – in places where persons affected by leprosy are involved in data collection. It also makes legislative efforts in partnership with the Leprosy Mission (TLM) Nepal; these include meeting Parliament members and conducting legal advocacy workshops for provincial leaders to abolish discriminatory laws.

Challenges to involving persons affected by leprosy and other NTDs in NTD networks include lack of accessibility due to remoteness of areas; lack of technology and infrastructure and language barrier; and lack of local associations or NGOs, to identify individuals as advocates. Nonetheless, IDEA Nepal is also expanding the target disease beyond leprosy to other NTDs, including kala-azar and lymphatic filariasis, by knowledge-sharing and gathering people affected by NTDs to discuss various topics, including medical issues, mental health, human rights, policy, advocacy and leadership.

2.8 Integration of leprosy elimination activities with other disease and health system functions for better community acceptance and sustainability

2.8.1 Integrated skin NTD approach: WHO Roadmap Framework and WHO-SEARO integrated skin NTD toolkit

Dr Rie Yotsu, Associated Professor, Tulane School of Public Health and Tropical Medicines, USA

In June 2022, WHO launched the WHO Strategic Framework for integrated control and management of skin-related neglected tropical diseases. It has details on how skin NTD integration can be implemented and required health care and resources, and practical tips on operationalization of skin NTD integration, including country experience.

Impact of skin NTDs on an affected individual is multidimensional, including long-term treatment, disability and deformity, stigma and discrimination, mental well-being, opportunities lost with regard to education, work and social lives, and resultant impact on families and guardians. The Framework promotes the following five objectives:

(1) Adapt and implement integrated skin NTD strategies based on local endemicity and needs.

(2) Strengthen person-centred skin NTD services and care.

(3) Enhance disease surveillance for skin NTDs and, wherever possible, other skin conditions.

(4) Strengthen monitoring and evaluation of outcomes and impact of integrated strategies.

(5) Enhance advocacy, coordination, partnerships and country ownership towards aligned targets.

Fig. 5 lists the key cross-cutting areas for skin NTD integration.

Fig. 5. Key cross-cutting areas for skin NTD integration

There are multiple ways of combining and integrating programmes, for example, within skin NTDs and among diseases with similar pathogens, diseases with similar disabilities and those with shared public health measures (e.g. mass drug administration, vaccines, nutrition, One Health and WASH) (Fig. 6).

Fig. 6. Mapping out potential combined and integrated programmes

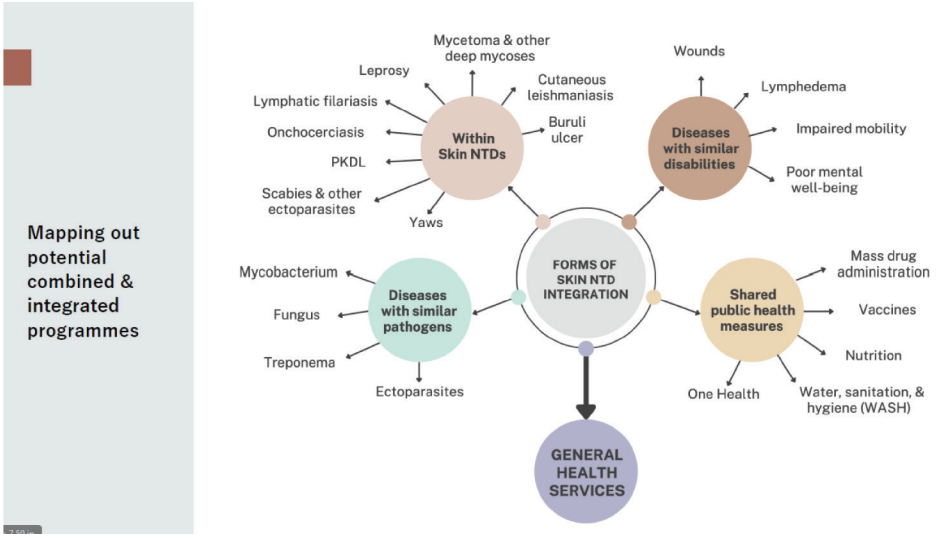
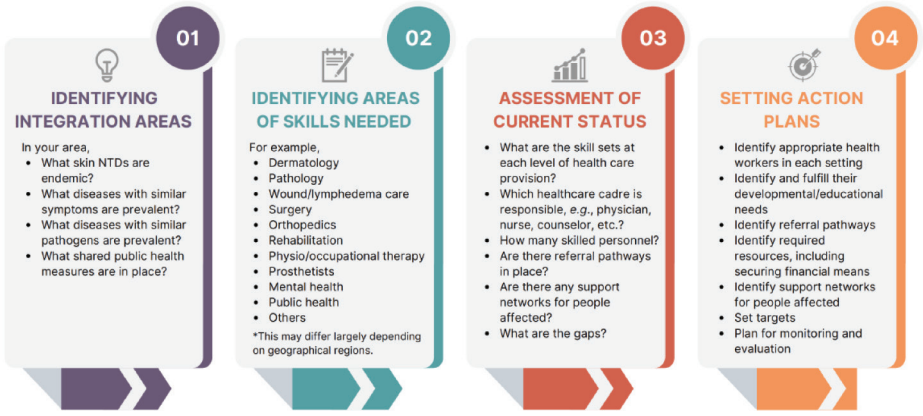


Fig. 7 summarizes the process for developing action plans for skin NTD integration.

Fig. 7. Process for developing action plans for skin NTD integration



Currently, WHO-SEARO is also developing a Regional toolkit for skin NTDs to strengthen health system capacity for case detection, diagnosis and response (treatment, case investigation, targeted mass drug administration or referral) with regard to skin NTDs in SE Asia Region countries. It comprises a training booklet, a flipchart and a poster. The booklet uses a symptoms-to-diagnosis approach with a flowchart to guide diagnosis.

2.8.2 Rolling out integration of leprosy elimination activities with other disease and health system functions for better community acceptance and sustainability in Bangladesh

Dr Tanzina Islam, Deputy Programme Manager, National Leprosy Programme, Directorate General of Health Services, Dhaka, Bangladesh

There are a number of skin NTDs prevalent in Bangladesh, including leprosy, post kala-azar dermal leishmaniasis (PKDL) and lymphatic filariasis (LF) for which there are national programmes, scabies and other parasitic infections of the skin, cutaneous leishmaniasis and mycetoma for which there are currently no specific national programmes. The integrated skin NTD approach was a new concept for Bangladesh and the first national consultative workshop was organized in October 2021 to develop a zero draft of national guidelines for integrated skin NTD approach. In December 2022, a pilot of the draft guideline (to finalize it) was implemented at two subdistricts (Mirzapur and Modhupur) of Tangail district where kala-azar and leprosy are co-endemic.

It started with a one-day central-level workshop to finalize the method and recording/reporting system for piloting the implementation of the integrated skin NTD approach at community and health facilities. It was attended by those who have expertise in skin NTDs (Kala-azar Programme, Lymphatic Filariasis Programme and Leprosy Programme), representatives from community-based health care, Upazila Health Complex (UHC), PHC and Management Information System of the Directorate General of Health Services, and relevant development partners. This was followed by peripheral-level training to orient peripheral-level health staff to implementation of the integrated skin NTD approach, targeting UHC and field staff.

Subsequently, skin camps were conducted in a village, where leprosy and kala-azar are co-endemic. Index case-based active case detection approach was utilized to identify additional cases of skin NTDs. Field health workers visited all designated households and screened all household members, and referred them to the medical camps, if any lump/patch/ulcer/swollen limb was found. At the medical camps, referred/self-referred cases were clinically evaluated and tested through rapid diagnostic tests (rK39), if PKDL was suspected. Dermatologists and medical officers then provided treatment of skin NTDs on the spot or referred complicated cases. Suspected patients with skin NTDs at health facilities were also screened.

As a result, 12 patients with skin NTDs, including scabies, fungal infection and contact dermatitis, were identified at the health facilities and 56 patients with a variety of skin diseases, including PKDL, fungal infection and impetigo, were identified in communities.

The challenges and the lessons learnt with regard to the operationalization of the integrated skin NTD approach in Bangladesh were as follows:

- selection of co-endemic areas;
- further technical guidance on implementation;
- the fact that it must be integrated into the PHC system;
- establishment of an "NTD corner" at district and subdistrict levels;
- capacity-building for medical professionals and health workers;
- need to ensure access to diagnosis and individual treatment for skin NTDs; and
- establishment of a proper referral system, common recording, reporting format and surveillance.

3 Recommendations

1. Recommendations to Member States

- Conduct programme reviews. Develop and implement the country-owned whole-of-society zero leprosy roadmap and costed action plan in all endemic countries, with involvement of partners, including persons affected by leprosy, in line with the new global targets.
- Enhance advocacy at all levels to ensure sustained programme funding by government and partner agencies.
- Foster national leprosy partnership to support implementation of zero leprosy roadmap and action plan.
- Introduce subnational accreditation of elimination of leprosy disease, i.e. interruption of transmission to acknowledge and motivate progress by adopting the Leprosy Elimination Monitoring Tool (LEMT).
- Transition to a digital system of recording and reporting individual patient registers, drug stock details and supply chain management.
- Ensure rollout of contact surveillance and listing of contacts for post-exposure prophylaxis through their inclusion in medical and pharmaceutical guidelines.
- Strengthen monitoring of adverse drug reactions as an integral part of patient management.
- Support routine capacity-building for health-care staff at all levels.
- Facilitate inclusion of persons affected by leprosy in strengthening leprosy services.
- Institutionalize mechanisms to combat stigma, and raise and sustain positive awareness of leprosy in communities and the health workforce.
- Adopt evidence-based policies and the Strategic Framework for skin neglected tropical disease integration.
- Incorporate mental health services in the Leprosy Programme. Ensure training in mental health and stigma reduction for all health staff, and counselling and psychosocial care for patients and family members.
- Strengthen the national programme capacity to facilitate access to assistive and protective technology devices, and rehabilitative services for persons in need.
- Work towards integrating rehabilitation and support services for people affected by leprosy with general health-care services.

- Engage or establish self-help groups at the community level to combat stigma and discrimination.
- Work with partners and associations of persons affected by leprosy for repealing discriminatory laws.
- Conduct operational/basic science research to improve leprosy interventions in collaboration with partners.

2. Recommendations to WHO

- Facilitate cross-border collaboration for data-sharing, case investigation and response using existing platforms, where feasible, including migrant population.
- Create indicators to monitor performance of surveillance during the pre- and post-elimination phases.
- Facilitate capacity-building for leprosy through workshops, digital learning platforms and other opportunities.
- Provide additional training and manuals in various languages on the multidrug therapy (MDT) supply chain, forecasting, ordering and monitoring.
- Complete the development of the Regional integrated skin NTD toolkit and roll out its use across the Region.
- Support antimicrobial resistance surveillance through strengthening laboratory capacity or/and establishing regional laboratory networks.
- Assist with obtaining loose rifampicin for single-dose rifampicin post-exposure prophylaxis, such as by establishing a donation programme, advocating to pharmaceutical companies and governments at the ministry level and creating a system for pooled procurement.
- Ensure availability and accessibility of instruments required for nerve function assessment.
- Work with Member States to compile, document and publish promising practices.
- Facilitate technical cooperation missions to countries to strengthen leprosy programmes.

3. Recommendations to partners

- Advocate for increased and sustained political commitment and resources to accelerate leprosy elimination.
- Ensure aligning and coordinating leprosy activities with national programmes, strategies and priorities.
- Support national programmes for strengthening leprosy-related skills of the health workforce.
- Support national programmes for enhancing reach of disability care, community-based or population-based rehabilitation services and occupational therapy.
- Support research on leprosy in line with national programme priorities.

Annex 1

Summary of breakout group discussion

Active case-finding and SDR-PEP

Country	Best practices	Challenges	Priority actions
India (central)	• Leprosy Case Detection Campaign: High-endemic districts with high PR/ ANCDR/G2D – 14-day active/ intensified case-finding with one male and one female community member	• Health is a state responsibility, hence, implementation is not uniform. • 1.42 billion targeted population	• Active case detection to be repeated twice a year to accelerate case-finding and search for the hidden cases
	• Focused Leprosy Campaign (FLC): the village or urban area where a G2D case is detected in low-endemic areas and then considered a hotspot • Targeted population to be examined: – In urban areas: 300 households surrounding the index case – In rural areas: all households of the entire village	• Geographical challenges: mountainous and desert areas • Sparsely distributed populations • Shortage of manpower	• Uniform coverage of services for case detection and case management in difficult-to-reach areas (universal health coverage target)
	• ASHA- Based Surveillance for Leprosy Suspects (ABSULS): ASHA reports suspects on monthly basis to the nearest primary health centre for confirmatory test by medical officers. They are involved in case-finding for many health programmes and the completion of zero reporting.	• ASHA is involved in many health programmes and sometimes leprosy slips down in terms of priority.	• Leprosy Programme should be constantly monitored by policy-makers at different levels.
	• Special Action Plan: specific plan aims to improve leprosy surveillance in "hard-to-reach" areas due to geographical, administrative, political or other reasons (e.g. slums, migrants). The action plan is implemented with the support of mobile/ boat clinics, outreach camps for immigrants and migrants, etc.	• Lack of appropriate transport facilities to reach population in difficult area • Suboptimal IEC materials and manpower	• Multistakeholder approach involving local community volunteers, forest and defence officials, self-help groups, etc.

Country	Best practices	Challenges	Priority actions
	• Integrated leprosy case-finding with Child Health and Adolescent Health (RBSK and RKSK) Programme: screening for 4 Ds – birth Defects, Disabilities, Deficiencies, Developmental delays – and NCD programmes (CBAC – Community Based Assessment Checklist)	• Irregular training and refresher training for Leprosy Programme trainers	• Strengthen coordination and integration between NLEP and other health programmes and initiatives.
	• Standardized contact definition: • Family contacts: all family members (except those living away from home for more than 9 months in last 1 year) Household contacts: all living in the same house as the index case Neighbour contacts: 3 houses on the right and left of the house of the index case and three houses in the front across the street Social contacts: Contact for three months (cumulative period) and 20 hours per week	• Lack of awareness in contacts coverage of PEP is low in some places. Refusal by contacts and refusal to give consent by index cases also encountered	
	• Scale-up of PEP coverage across India to the level of 100% for accelerating interruption of transmission through streamlining PEP initiative in the 2023–2027 National Strategic Plan Document under Pillar 2 • Provision of funds for procurement of rifampicin at the subnational level through the National Health Mission (PIP)	• Small procurements at local levels difficult in low-endemic settings, leading to shortages of rifampicin	• Procurement of rifampicin to be integrated with the National TB Elimination Programme

Country	Best practices	Challenges	Priority actions
West Bengal, Odisha, Maharashtra and Uttar Pradesh	• ACD in silent villages • Involvement of medical professionals for diagnosis and treatment of cases • Identification of one MO in each block as leprosy nodal officer (LNO) and block nodal leprosy worker with mobility support each month • Integration of ACD with other health programme (*sanchari* and *dustak*) • Involvement of CHO in all health and wellness centres for leprosy activities • GIS mapping of all leprosy cases • Analysis of G2D cases to trace the contacts and index case • One day per week to be kept as leprosy day at health centres	• Hard-to-reach areas • Lack of manpower • Difficult-to-reach migrant population • Suboptimal capacity in the procurement of medicine • Absence of rifampicin syrup for paediatric cases • Lack of training for manpower • Stigma and discrimination	• Regular and timely ACD activities • Regular supply of drugs for treatment and PEP • Timely release of fund for various leprosy-related activities • Involvement of PRI members and other department for IEC to increase awareness and reduce stigma • Training of the human resource involved in leprosy activities
Bangladesh	• Identification of the index case based on active case-finding activities in highly endemic/endemic districts/ areas (house to house), with verbal consent • Extended contact examination: Targeting 60 households in total (15 on each side) • Skin camps: one-day programme in a specific area at the subdistrict level • Special interventions: targeting the most vulnerable population living in specific areas, such as tea gardens, tribal areas • PEP is included in the costed National Strategic Plan and government's operational plan	• Suboptimal allocation of resources (trained human resources, financial expertise, partner) • Elimination of stigma • Availability of rifampicin for SDR-PEP rollout	• Resource mobilization – OP and donor budget • Integrated platforms – geographical distribution • Mapping for country hotspots (endemicity through geospatial mapping and DHIS2) • Raising community awareness to reduce stigma • Strengthening of ACSM activities (among local government and communities, religious leaders, etc.) • Strengthening referral mechanisms (including medicines for referred diseases) • Selection of highly endemic areas through geospatial mapping

Country	Best practices	Challenges	Priority actions
	• Development of technical guidelines and SOPs in consultation with all stakeholders • Regular organization of technical committee meetings • Utilization of existing cooperation between government and NGOs working closely together and ensuring no overlap • Involvement of persons affected by leprosy in all activities		• MoU or advocacy with the local authorities • Strengthening the Little Doctors Programme for bolstering contact tracing, mobilizing families, community and schools • Formation of the National Forum of persons affected by leprosy
Indonesia, Nepal and Sri Lanka	• GIS mapping to identify clusters with possible cases – on the basis of ring and house-to-house surveys • Differentiated approach of ACF – based on index case distribution – house-to-house (if cluster identified) or camp-based with standardized tools • Orientation to lower-level HFs up to FCHV • Integrated awareness raising and ACF programme • Leprosy-friendly villages – community sensitization involving people affected by leprosy • Established notification system from dermatology clinic to public health inspector • PEP with blanket approach in eligible areas – no need to disclose index cases and lead to less stigmatization • Seek consent from the index case before approaching the contacts • Proper counselling about benefits of PEP – also explain the effectiveness of the approach for preventing leprosy among contacts	• Data confidentiality issues • Unable to generate map for all cases – retrospective finding is difficult • Absence of mapping activity • Difficulty to be implemented in LLG due to resource constraint • Absence of specific implementation guideline on ACF/Nepal • High level of community stigma leads to several consequences such as loss of contacts. • High workload of health workers • Lack of channel/methods for disseminating messages related to leprosy • Suboptimal collaboration with community • Unsustainable commitment from local government, religious leaders – need to repeat several times to capture absentee population	• Adoption of skin NTDs approach for telemedicine and training for dermatologists and laboratory technicians • Mapping at the village level instead of the house level – maintains confidentiality • Mobilizing trained FCHVs and PAL • Inclusion of leprosy in skin disease camps, specific intervention to reduce stigma/contact approach • Proper incentives to FCHVs • Capture testimonies of PALs in video format and widely disseminate the video on social media, such as on YouTube. • Develop SOPs for self-training that can be utilized by local HWs • Seeking consent – ask the index case to list himself/herself – counselling focusing on benefits of early detection combined with PEP • Advocacy with local leaders involving PAL

Country	Best practices	Challenges	Priority actions
	• Separate programme guideline for PEP	• Unavailability of syrup rifampicin for children and unclear dosage for the syrup form • Communication issue with service providers regarding evidence of efficacy, risk of inducing cross-resistance	• Local procurement of MDT and rifampicin/Indonesia, to be coordinated with WHO for supply • PEP for high-burden areas due to lack of rifampicin supply • Prepare FAQs and widely disseminate using QR code and any other online apps – such as WHO skin app • Provide appropriate terminology to HWs beforehand – discuss common adverse events following treatment and PEP
Maldives, Bhutan, Timor Leste, Thailand	• Integrated screening for TB, HIV and leprosy among vulnerable populations, e.g. prisoners: Bhutan • AI used in screening activities – to refer suspected cases from rural areas: Thailand • High-endemic areas selected for active case-finding – school and community: Timor-Leste • Contact tracing is carried out for all cases – family, school/ workplace, community: Maldives • Integrated programme with other NTDs: Timor-Leste • Field team at the regional level carries out contact tracing – Thailand, Bhutan • Orientation for MOs and refresher trainings: Bhutan, Maldives • Dermatologist training includes leprosy – 1 week at Leprosy institute: Thailand • Partnership with NGOs – Timor-Leste	• Cases are followed up for 10 years, but SDR-PEP is not implemented: Thailand • SDR-PEP implemented only in pilot settings (Bhutan) • Drug (rifampicin) supply not adequate (Bhutan) • SDR-PEP not yet introduced in Timor-Leste • Contact tracing for only household member (Thailand) due to stigma • Lack of logistics for contact tracing – geographical access, travel: Bhutan – can lead to delays in case detection • Persistent challenge to maintaining capacity of leprosy workers for diagnosis in pre-elimination settings • Suboptimal government funding issues, diseases on the verge of elimination	• Present findings of pilot SDR-PEP to the Technical Committee to roll out nationwide SDR-PEP in Bhutan. • Implementation research and independent programme assessment: Bhutan • Developing communication materials on leprosy, contact tracing and SDR-PEP

Diagnosis, treatment, referral, management of cases, reactions, neuritis and disability

Country	Best practices	Challenges	Priority actions
India – West Bengal, Odisha, Maharashtra and Uttar Pradesh	• Use of ultrasound for measuring nerve thickness in medical colleges • Slit skin smear examination for diagnosis and classification of any difficult-to-diagnose leprosy cases during ACD • Digitalization of supply chain management of anti-leprosy drugs • Incentive to ASHA workers for detecting cases • Multiskilling of laboratory technician on slit skin smear examination and integration of leprosy services with other services • Participation of NGOs in-patient rehabilitation • Customized and colourful MCR footwear	• Lack of trained surgeons and trained physiotherapists • Suboptimal involvement of private practitioners • Lack of drugs required for reactions • Suboptimal involvement of social welfare department • Misuse of leprosy cases by union leaders for unnecessary litigation	• Hands-on training for local surgeons • Inclusion of RCS conducted in the private sector for reimbursement by the government • Upgrading of microbiology department of AIIMS for testing drug resistance
Bangladesh	• Training of health-care providers for suspect identification • Early detection – ACS, ECS, contact tracing • Participation of PAL • Availability of nationwide treatment centres (581) • Uninterrupted supply of anti-leprosy drugs • Training to HCPs • Availability of treatment register • Availability of system for following up on patients • Good referral network (from subdistrict up to the Central level) • Availability of guidelines from community- to tertiary-level referral	• Establishment of: – diagnostic laboratory facilities – functional validation system – facilities for drug resistance diagnosis – accompanying referral mechanism/ incentive for referral – reconstructive surgery and supply of assistive devices • Limited number of skilled HR • Suboptimal involvement of private practitioners (dermatologist) • Management of drug resistance cases	• Resource mobilization: NSP, OP • Scaling up laboratory facilities (diagnosis – drug-sensitive) • Ensuring regular training/ refresher training • Involvement of the Dermatological Society with the National Programme • Establishment of a diagnostic facility for drug resistance with WHO support • Maintaining the drug supply chain • Strengthening surveillance to maintain proper treatment, follow-up register, ensuring treatment completion and referral system

Country	Best practices	Challenges	Priority actions
	• Availability of national guidelines for case management • Availability of R&R system for reaction, neuritis and disability • Availability of drugs for reaction management	• Ensuring the completion of the treatment	• Ensuring "incentive for referral" is included in the OP • Remodelling of the organogram of the government leprosy hospitals, along with establishment of the facilities needed
Indonesia, Nepal and Sri Lanka	• Sri Lanka – only consultant dermatologist is allowed to diagnose and treat • Nepal – trained health workers (HWs, nurses) can diagnose and treat • Indonesia – GP can diagnose and treat in *puskesmas* / primary health centre – trained nurses can follow up for MDT • Referral of difficult-to-diagnose cases and complication management to higher centres • Health insurance covers the cost of referral by GP – transportation cost/Indonesia. • Severe cases managed at leprosy-dedicated hospitals and tertiary HFs by trained doctors and paramedics • All G2D patients have free health insurance/Nepal – get free assistive devices, including footwear (Nepal and Sri Lanka). • Reconstructive surgery is free of cost in Nepal – but long waiting time.	• Lack of dermatologists: only 83 in Sri Lanka; doctors prefer to go abroad • Poor access to leprosy services and referral facilities due to distance and geographical challenges in Indonesia • Possibility of misdiagnosis and misclassification • Less training available and high turnover rate among GPs • Low health insurance coverage in Indonesia • Stockout of MDT in Indonesia • Training more focused on diagnosis and reaction but less on complication management • Suboptimal rehabilitation services, including surgery facilities • Thalidomide only available at the central level in Nepal • Reconstructive surgery not covered in health insurance in Indonesia	• Screening carried out by medical officers and referral system including dermatologists to be established – satellite clinics in remote areas • Capacity-building and frequent refresher trainings – random case validation for misdiagnosed cases by expert • Provision of on-the-job training and ToTs • Policy amendment for short-term job placement to reduce the turnover rate among leprosy workers • Include leprosy training as part of the curriculum at the faculty of medicine. • Promote telemedicine for referral cases, e.g. reaction cases/complication management. • Training to paramedics in complication management with demonstration techniques • Training in nerve function test to paramedics using monofilament • Integration of reconstructive surgery and rehabilitation services into general health services, e.g. provision of physiotherapists at the PHC level

Country	Best practices	Challenges	Priority actions
Maldives, Bhutan, Timor-Leste, Thailand	• Clinical diagnosis and laboratory for confirmation • MDT for MB cases for 2 years (Thailand) • Perform PCR with nasal swab for the patient and contacts (Timor-Leste). • Carry out baseline investigation to monitor ADR. • Thalidomide stopped in Thailand for treatment of reactions – after pulmonary embolism developed in 2 patients (Thailand) • Training and involvement of VHWs for referral of symptomatic cases to hospitals	• Lack of AMR surveillance • Misdiagnosis (capacity of health professionals)	• Support for setting up AMR surveillance

Annex 2

Meeting agenda

Day 1: Tuesday 11 April 2023 (India Standard Time – GMT +5.30 hours)

Agenda 1: Opening session		
09:00–09:30	Opening remarks	*Dr Aya Yajima, Regional Adviser, CDS/NTD, on behalf of Dr Poonam Khetrapal Singh, WHO Regional Director for South-East Asia*
	Meeting objectives and expected outcomes	*Dr Aya Yajima*
	Introduction of the participants	*All*
	Appointment of the Chair and the Rapporteur	*Dr Zaw Lin, Technical Officer, CDS/NTD*
	Administrative announcements	*Ms Tanushri Mitra, Executive Assistant, CDS/NTD*
09:30–10:00	Global Leprosy Strategy 2021–2030 and global updates on new tools and guidance from the Global Leprosy Programme (GLP) (20 min. presentation + 10 min. discussion)	*Dr Pemmaraju Rao, Technical Officer, GLP*
Agenda 2: Country updates on leprosy situation and programmatic progress		
10:30–11:15	Global priority countries (15 min. each)	
	Bangladesh	*DGHS Bangladesh*
	India	*MoHFW India*
	Discussion	*The Chair*
11:15–12:15	Indonesia	*MoH Indonesia*
	Nepal	*EDCD Nepal*
	Sri Lanka	*MoH Sri Lanka*
	Discussion	*The Chair*
12:15–13:00	Low-endemic countries (15 min. each)	
	Thailand	*MoPH Thailand*
	Timor-Leste	*MoH Timor-Leste*
	Discussion	*The Chair*
14:00–14:45	Countries closer to the goal of interruption of transmission (15 min. each)	
	Bhutan	*MoH Bhutan*
	Maldives	*MoH Maldives*
	Discussion	*The Chair*
14:45–15:15	Overall discussion on country progress and challenges	*The Chair*

Agenda 3: Leprosy Elimination Monitoring Tool (LEMT)		
15:30–16:10	Zero leprosy: criteria and tools for elimination of leprosy (20 min. presentation + 20 min. discussion)	*Dr Wim H van Brakel, Chair, ILEP Technical Commission*
16:10–17:00	Country experience of use of LEMT (10 min. each) Maldives Thailand	 *MoH Maldives* *MoPH Thailand*
	Discussion	*The Chair*

Day 2: Wednesday 12 April 2023 (India Standard Time – GMT +5.30 Hr)

Agenda 4: Active case finding, contact tracing and preventive chemotherapy		
09:00–09:30	Current WHO Guidance on leprosy active case-finding, contact tracing and single-dose rifampicin for post-exposure prophylaxis (SDR-PEP) strategy and tools (15 min. presentation + 15 min. discussion)	*Dr Pemmaraju Rao*
09:30–10:30	Rolling out the SDR-PEP strategy (15 min. each) Enhancing effectiveness of the SDR-PEP strategy for curbing leprosy transmission Country experience: Indonesia Country experience: West Bengal, India Discussion	 *Professor Epco Hasker, ITM, Antwerp* *MoH Indonesia* *West Bengal, India* *The Chair*
10:45–11:00	Short orientation to DHIS2 leprosy case register	*TBD*
11:00–12:00	Breakout group discussion on good practices, challenges and next steps	
12:00–13:00	Plenary presentation and discussion on priority actions to roll out SDR-PEP strategy	*The Chair*
13:00–14:00	Lunch	
Agenda 5: Diagnosis, treatment, referral and management of leprosy cases, reactions, neuritis and disability		
14:00–14:30	Current WHO guidance and experience in diagnosis, treatment, referral and management of leprosy cases, reactions, neuritis and disability (15 min. presentation + 15 min. discussion)	*Dr Indira Kahawita, Base Hospital, Homagama, Sri Lanka*
14:30–15:00	Orientation to annual request forms for donation of anti-leprosy medicine (10 min. presentation + 20 min. Q&A)	*Mr Dmitry Esin, Procurement Officer, HQ/NTD*
15:00–15:30	Leprosy reconstructive surgery: experience, challenges and the way forward (15 min. presentation + 15 min. discussion)	*Dr Jerry Joshua, SIHRLC, Karigiri, India*

15:45–16:15	Antimicrobial resistance surveillance in leprosy Recommendations from the 2022 November WHO workshop on standardizing technique (10 min.) Partner's experience (15 min.) Discussion (20 min.)	*Dr Subbanna Jonnalagada, Medical Officer, GLP* *Dr Aparna Srikantam, LEPRA Society, India* *The Chair*
16:15–17:00	Breakout group discussion on good practices, challenges and next steps	

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