



सत्यमेव जयते
भारत सरकार

ACCELERATED PLAN FOR ELIMINATION OF LYMPHATIC FILARIASIS

2018



**National Vector Borne Disease Control Programme
Directorate General of Health services
Ministry of Health and Family Welfare
Government of India**



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Executive summary

Lymphatic filariasis (LF) is a serious public health problem in India. The disease is prevalent in rural and urban areas of 256 districts of 16 states and 5 union territories. Lymphatic filariasis is more prevalent among urban poor and affects all segments of rural population. The infection starts in childhood and accumulates through adulthood, resulting in irreversible chronic disease conditions such as lymphedema, elephantiasis and hydrocele. The disease inflicts stigma, mental suffering, social deprivation and economic loss and is a major cause of poverty in the affected communities.

The National Filaria Control Programme (1955-2000) operated only in few selected towns and cities and met with limited success. The Global programme to eliminate lymphatic filariasis, launched in 2000, provided a great opportunity to India and several other affected countries to effectively combat the disease. It envisages elimination of the disease through a two-pillar strategy (i) preventive chemotherapy in the form of annual mass drug administration (MDA) to interrupt transmission of the disease (ii) morbidity management and disability prevention measures to alleviate suffering among people affected with chronic disease condition.

India initiated steps to eliminate LF in 1996-1997, when a pilot project was launched in 7 districts. A National programme to eliminate lymphatic filariasis was launched in the year 2004 and annual single dose mass drug administration programme was introduced in 202 of the 256 endemic districts. By 2007, the MDA programme was further scaled up to cover all 256 districts. During the last two decades, the national programme made good progress. Of the 256 endemic districts, MDA was completed and transmission interruption accomplished in 94 districts. Another group of 25 districts is being validated for interruption of transmission. However, there are also a lot of concerns and challenges about the programme. A group of 137 districts continue to have transmission despite implementing >5-6 rounds of MDA. The implementation of the programme is ineffective, as evident from their failure to meet the transmission interruption criteria even after prolonged MDA, in many districts of larger and high burden states such as UP and Bihar, which are also with several highly endemic foci.

Starting from 2018, the national programme plans to implement an accelerated plan to give a new impetus to the ongoing activities and achieve the goal of LF elimination by 2020, in accordance with the World Health Organization (WHO) regional strategic frame work for control/elimination of Neglected Tropical Diseases (NTDs) and WHO NTD goals and timeline. The plan is built upon the national guidelines for elimination of LF (2009) and seeks to introduce newer intervention strategies and improve implementation of MDA and Monitoring & Evaluation and surveillance strategies. The plan envisages (i) constitution of a high level inter-ministerial committee to monitor the progress of the programme

(ii) strengthening of advocacy and social mobilization (iii) confirmatory mapping of uncertain areas using mini-Transmission Assessment Survey (iv) improved advocacy, social mobilization, training and supervision in all programme activities (v) implementation of enhanced MDA with emphasis on micro-planning and directly observed treatment, supported by adequate human and financial resources and supplementary intervention measures (vi) introduction of newer initiatives in districts with persistent transmission and/or poor implementation of MDA (vii) strengthening of monitoring and evaluation and surveillance system (viii) robust assessment of chronic disease burden (ix) development and implementation of plans for delivery of minimum package of care for all chronic disease patients (x) improved data collection and data reporting and consolidation of data and data management using integrated NTD database. The accelerated plan aims to improve the effectiveness of MDA, interrupt transmission in all LF endemic districts, increase access to recommended minimum package of care in all areas with known patients by 2020.

1. Introduction

Lymphatic filariasis (LF) is a mosquito borne infectious disease caused by nematode parasites of the order Filariidae. LF in man is caused by three species of filarial parasites – *Wuchereria bancrofti*, *Brugia malayi* and *Brugia timori*. Several species of *Culex*, *Anopheles*, *Aedes* and *Mansonia* mosquitoes are involved in transmission of LF. The disease is prevalent in 73 tropical and sub-tropical countries in South-east Asia, Africa, Mediterranean, South Pacific and South America regions.

LF is a disfiguring and debilitating disease and was ranked as second leading cause of disability globally. The disease is a cause of stigma, shame, psychological problems and social and economic deprivation. The affected individuals and families suffer from consequences of chronic and acute disease conditions and loss of work and employment opportunities and treatment costs. It was estimated that the annual economic loss due to LF in India was close to US \$ 1.0 billion.

LF is wide spread in India and 21 states and union territories are endemic for the disease. Highly endemic foci are present in several states, particularly Uttar Pradesh, Bihar, Orissa, Jharkhand and Andhra Pradesh. The disease is prevalent in rural and urban areas. A National Filaria Control Programme (NFCP) was launched in 1955, but its outreach was limited due to operational problems and resource constraints. Population growth combined with lack of control operations in rural and many urban areas lead to tremendous increase in endemic population size and number of infected people. However, the NFCP launched in 2004 a National programme to eliminate LF, following starting of the Global programme to eliminate LF (GPELF) in 2000. The programme is based on a mass preventive chemotherapy strategy and morbidity management plan recommended by the World Health Organization (WHO). The programme made good progress in many states and contributed to reduction of the disease burden. It, however, remained less effective and transmission continues to occur in a number of districts in several states. More effective strategies are required to interrupt transmission in all endemic districts and achieve elimination of LF by the target date of 2020. Hence, an accelerated plan to eliminate LF will be launched in 2018. The details of the plan are presented in this document.

2. Background

2.1. Epidemiology of LF

LF is a mosquito transmitted infectious disease caused by thread like nematode worms of the order Filariidae. The adult filarial worms live in lymphatic system of man. The life span of adult worms is 6-7 years and each female worm produces millions of microfilariae (Mf) during its reproductive life span of 4-5 years. The Mf appear in the peripheral blood during night time

(nocturnally periodic form) and are ingested by mosquitoes along with blood meal. Within the mosquito, the Mf undergo development through L1 and L2 stage and become L3 or infective stage larvae in 10-12 days. The L3 are transmitted from mosquito to man during blood feeding and they move to lymphatic vessels and undergo development to become adult worms over 2.0-21/2 year time. Such repeated infective bites result in patent infection in humans. The immune mediated inflammatory reaction of lymphatic walls to presence of adult worms precipitates acute clinical disease, which gradually progress into chronic disease conditions such as lymphoedema and hydrocele. Secondary bacterial infection causes acute ADL attacks and aggravates chronic disease condition, leading to development of elephantiasis. LF infection can be diagnosed by testing blood for Mf or immunological methods such as antigen or antibody detection. Transmission of LF can be interrupted by killing Mf and adult worms through treatment or efficient control of vector mosquitoes through various methods including personal protection measures. Attempts to control filariasis in the past, through chemotherapeutic measures and/or vector control met with limited success due to low commitment, scaling up challenges, operational issues and poor implementation.

2.2. Advances in diagnosis and treatment

Intensive research resulted in development of new treatment regimens, sensitive diagnostic methods and morbidity management measures. Single dose of DEC was found to reduce microfilaraemia dramatically and maintain the reduction for one year. Based on this, the annual mass drug administration (MDA) strategy was developed, which is feasible and can be effectively implemented across the endemic areas. Very sensitive antigen based diagnostic methods were refined and standardized and made available commercially, which eased the operational challenge of night blood sampling for infection assessment. Subsequently, antibody based diagnostic methods were also developed. Until recently, BinaxNOW Filariasis was the only immune-chromatographic test commercially available against Bancroftian filariasis infection. A new point-of-care rapid diagnostic test -Filariasis Test Strip (FTS) - is designed to detect in human blood the antigen (Ag) of *W. bancrofti*, globally the predominant parasite. The FTS has been evaluated in different countries and is now being used in mapping, monitoring and evaluation activities (WHO, 2017). A new combination of drugs is shown to be highly effective against LF infection in comparison to the current recommended regimen. WHO has recently recommended use of triple drug therapy in certain situations, which is likely to expedite elimination of LF (WHO, 2017).

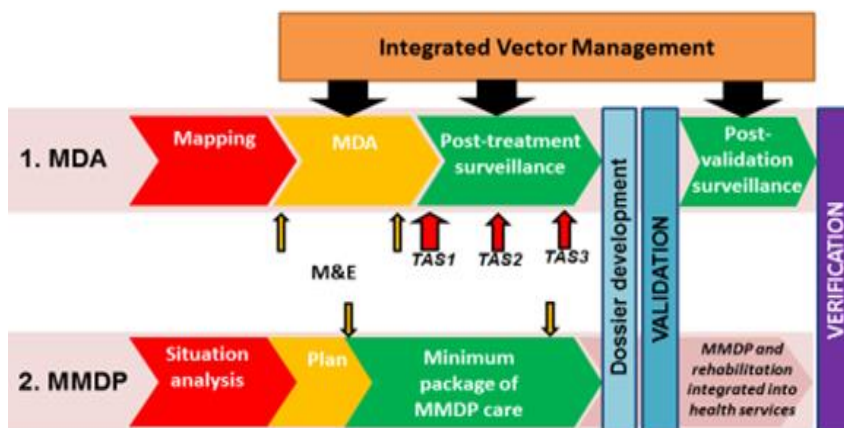
2.3. The Global Programme to Eliminate Lymphatic Filariasis

The WHO launched the GPELF in the year 2000. The strategy of GPELF consists of two pillars: (i) to stop the spread of infection (interrupting transmission); and (ii) to alleviate the suffering among people affected with chronic disease (preventing and controlling morbidity) (Figure 1). The recommended strategy to interrupt transmission of LF is annual single dose mass drug administration (MDA) in all districts and areas endemic for LF. The drugs used in MDA programme are a combination of DEC (6 mg/kg body weight) + ALB (400 mg) in endemic areas

free from onchocerciasis prevalence. The strategy recommended to alleviate suffering in chronic disease affected people is Morbidity management and disability prevention (MMDP) through self-care among lymphoedema patients that principally includes limb hygiene measures and surgical intervention for hydrocele.

Five to 6 rounds of annual MDA are required to interrupt transmission of LF. Each round of MDA should be 'effective' i.e. at least 65% treatment coverage should be accomplished. After MDA, the evidence for interruption of transmission is generated through implementation of the first transmission assessment survey (TAS 1) among children of 6-7 year age in each district. If the number of infected children found in TAS 1 is less than the threshold number (which is approximately 2% Ag or Ab prevalence), then the MDA is stopped. After stopping the MDA, post-MDA surveillance is initiated. This consists of two more rounds of TAS (TAS 2 and TAS 3). Simultaneously, the chronic disease burden should be estimated in all endemic districts, plans for delivery of care to chronic patients developed and each chronic patient provided minimum package of care. The evidence for providing care is generated through inspection of health centres and assessment of the quality of care provided. When all districts in a country complete TAS 3 successfully and minimum package of care is delivered to all patients with chronic disease, the country is deemed to have eliminated LF. Then the country prepares LF elimination dossier for validation of elimination of LF (Figure 1). An expert group constituted by WHO reviews the dossier and gives recommendation on country's claim of elimination of LF.

Figure 1. Different constituents and steps of LF elimination programme



2.4. Global LF situation

Globally, LF is the most commonly prevalent and high burden Neglected tropical disease (NTD). LF had been endemic in 73 countries, 1.1 billion population was at risk of infection and an estimated 129.82 million people were infected as on 1994 (WHO, 1994). The disease is widely distributed in South-east Asia, Africa, South Pacific region, Eastern Mediterranean and South America. In several countries, LF was a major public health problem and one of the leading causes of disability. Control of the disease is constrained by low priority, poor resources and unfeasible control options. Very few countries attempted and succeeded in control of the disease. However, the GPELF raised new hopes to contain the disease, as its strategies are feasible and affordable. Encouraged by this, several countries launched the national programme to eliminate LF (NPELF). Fourteen of 73 endemic countries started the programme in 2001, the first year of the GPELF operations, with a targeted population of 3.2 million. The programme made steady progress over the years. By 2016, the programme was in place in 55 countries, 975 million of 1,463 million population was included in MDA programme. Twenty countries completed MDA and their population no longer require treatment, 30 countries have implemented at least one round of MDA in all IUs and 16 countries implemented MDA in a proportion of IUs. Since 2000, a cumulative total of 6.5 billion treatments were delivered to >850 million population (WHO, 2017). As on 2017, 9 countries have been validated as having eliminated LF as a public health problem. MDA programme implemented during the initial 13 years, had cured or prevented 96 million cases of LF (Ramaiah and Ottesen, 2014). Thus, the GPELF has been making a steady progress and many countries are expected to achieve the goal of LF elimination in the coming years.

2.5. LF situation in South-east Asia region

LF is endemic in 9 countries including India in South-east Asia region (SEAR). It is the largest endemic region and accounted for 54% of the global burden of LF prior to launching the GPELF. Overall, 909 million of the 1,463 million population (62%) ever required PCT for elimination of LF live in the region. However, the region made impressive progress since the inception of the GPELF. By 2017, three countries – Maldives, Sri Lanka and Thailand – have successfully completed MDA and post-MDA surveillance and eliminated LF as a public health problem. Bangladesh has met the criteria to stop MDA in all endemic districts and is now in post-MDA surveillance phase. As on 2016, Myanmar has implemented MDA in all 36 districts, where it is required and Timor-Leste continue to implement MDA in all 13 endemic districts. Nepal completed and stopped MDA in nearly 50% of the districts and has been implementing MDA in the other districts. Indonesia is yet to scale up MDA to cover all endemic districts, but steps are being taken to achieve 100% geographic coverage (WHO, 2017). The details of the programme in India are given in the next section. As a result of impressive performance of the programme, the share of the SEAR in the global population requiring MDA declined from 63% in the year 2000 to 52% in 2016 (WHO, 2017) and the share in the global burden of disease declined to 32% in 2013, from 54% in 2000 (Ramaiah and Ottesen 2014). Nevertheless, concerted action in

the coming years is required to eliminate LF in the region due to large endemic population, fragile health systems in some areas and a number of logistic and operational challenges.

2.6. LF situation in India

LF had been widely prevalent and is a serious public health problem in India. According to the estimates made in 1994, India alone accounts for 43% of the global infected population (WHO, 1994). *W. bancrofti* is the predominant parasite, prevalent in all endemic states and transmitted by *Cx. quinquefasciatus* except (in Andaman and Nicobar alone, the vector is *Ae. niveus*). *B. malayi* is also prevalent in the country, but only in the state of Kerala, and is transmitted by *Mansonia* species. Nationally, 98% of the infections are due to infection with *W. bancrofti*. There are several highly endemic foci spread across the country. LF inflicts tremendous social and economic burden on the affected communities in the form of loss of work, employment and educational opportunities and treatment costs and stigma and psychological problems. The disease was estimated to inflict an annual loss of about US \$ 1.0 billion in India. The NFCP, established in 1955 to combat the disease, yielded only limited results. Its strategy – detection and treatment of Mf carriers and vector control – could be implemented only in limited number of urban areas and a vast majority of endemic population in rural areas could not be covered by the programme, due to lack of infrastructure and low priority for the disease.

LF is prevalent in 256 districts in 21 states and union territories (UTs) and, as on 2017, 630 million population live in the endemic districts. The strategy of GPELF – MDA and MMDP – provided a good opportunity to implement LF control measures in the entire country and eliminate the disease, as it is very cost-effective and eases several logistic constraints, associated with earlier control options such as ‘test and treat’ and vector control. For the first time, MDA programme provided an opportunity to the MoH to cover the entire population of endemic district with intervention measures and control and eliminate the disease in a time frame.

A pilot project to eliminate LF, using annual single dose MDA (DEC alone), was started in 1996-1997 in 13 districts of 7 states. This enabled the national programme to understand the logistics and operational aspects of the programme. The project was extended to 31 districts in 2002 and DEC+ALB combination therapy was implemented in some of the districts. In 2004, the national programme was launched, covering 202 districts in 20 states UTs. The programme had envisaged the target date of 2015 to eliminate LF. Subsequently, the programme was further scaled up to include all 256 districts and treat the entire population of endemic districts. Since 2007, the programme has been implementing DEC+ALB combination therapy in all districts. During the last 12 years, the programme achieved good progress in some states.

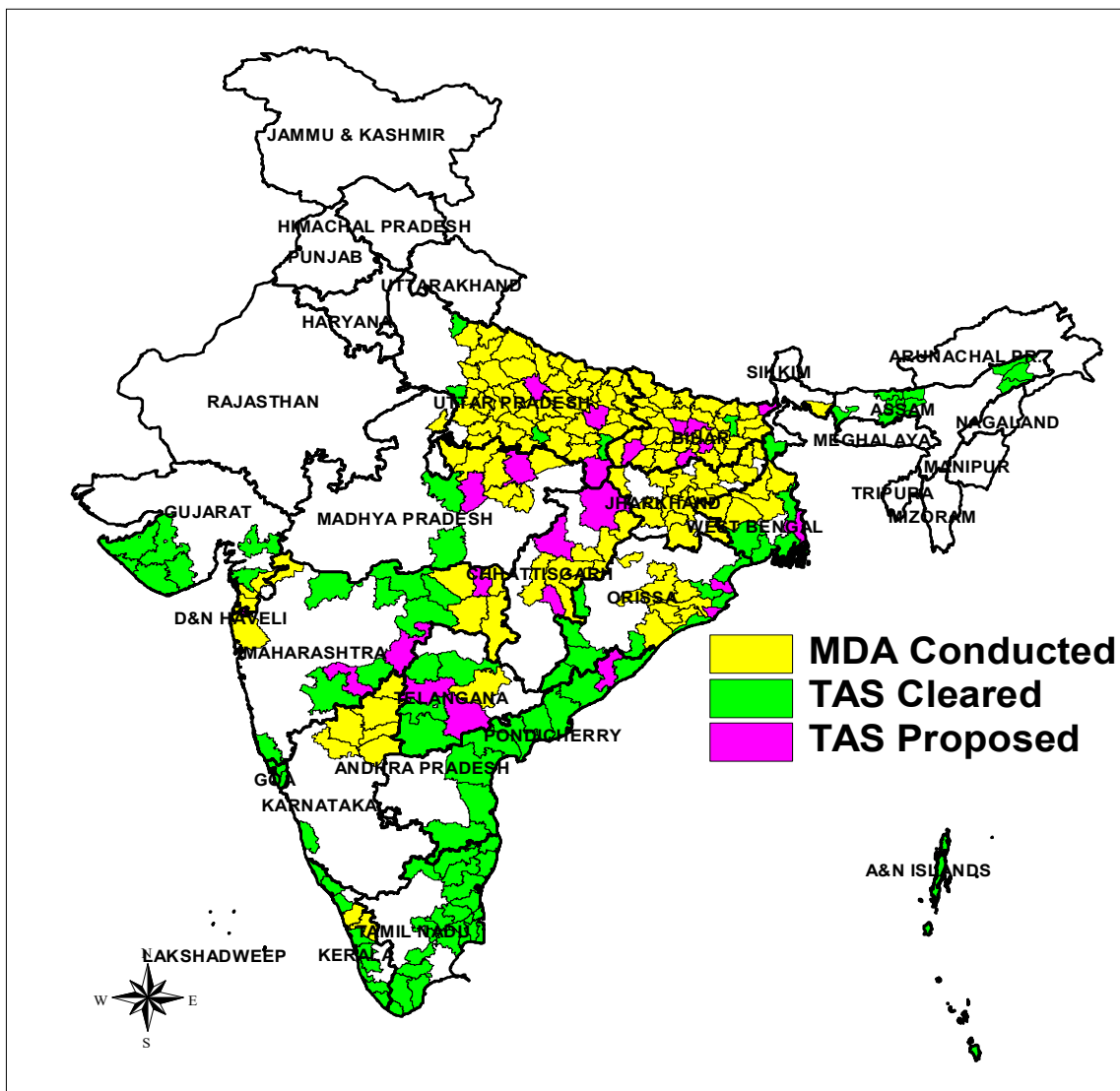
As on 2016, under the national programme, a total of 4.28 billion of treatments were consumed by 630 million target population in the endemic districts. As on 2017, of the 256 endemic districts (=intervention units (IUs)), 100 (39%) completed and stopped MDA, on the basis of TAS 1 results (some IUs include >1 EU). Another group of 25 IUs (10%) are to implement TAS 1 and

may possibly stop MDA soon (Figure 2). And, 133 districts (52%) would continue to implement MDA. Forty four of 133 districts failed TAS 1, which means transmission continues to occur above threshold level even after 5-6 rounds of MDA.

Though the programme made significant progress and covers the entire endemic population, there exist several concerns and challenges, which require resolution in the coming years. The programme should be revamped and implemented in a mission mode to reach the goal of LF elimination by 2020. Also, the programme needs to be strengthened to improve its overall performance and quality, with focus on the following:

- Strengthening advocacy at national, state and district level
- Develop and implement new social mobilization and communication strategies
- Develop and implement new capacity building packages
- To determine the endemicity status of uncertain areas
- Enhanced MDA using micro-planning and with directly observed treatment and strengthened supervision to achieve maximum compliance and treatment coverage, supported by tools such as Supervisor's coverage tool and coverage surveys
- Introduction and operationalization of new intervention tools such as IDA therapy to expedite the programme outcomes
- Streamlining of M & E activities per recommended guidelines and introduce new diagnostic tools
- Robust assessment of chronic disease burden and providing minimum package of care to people affected with chronic disease in all endemic districts
- To establish good data management systems and consolidate the available data
- To promote supplementary intervention measures such as vector control and DEC medicated salt
- Revisit the LF situation and reprioritize the areas for MDA in urban settings
- Develop a strategy to provide MDA for migrant and nomadic population

Figure 2. Status of MDA programme and TAS in India (2017)



3. Accelerated plan to eliminate LF

In view of the global target date of 2020, prevalence of infection above threshold level in many districts and several challenges faced by the programme, an accelerated plan to eliminate LF in the country is felt necessary. The details of the accelerated plan are discussed below. Achieving elimination will require improved diagnostic tools, vector control methods, integration of WASH interventions, and treatment and symptom management. Important learnings from previous efforts need to be summarized and applied to this new effort to improve the quality of the LF control program. Such areas include inter-sectoral coordination, sensitization of key stakeholders/partners/champions before MDA rounds, and collaboration of technical partners. APELF provides an opportunity to build upon learnings from the LF elimination guidelines issued in 2009, to focus on key program areas that require reinforcement as well as introduce new innovative approaches to comprehensively target elimination efforts.

3.1 Goal

Elimination of lymphatic filariasis (LF) as a public health problem by 2020, as envisaged by WHO-SEAR's strategic framework.

3.2. General objectives

- To accelerate interruption of transmission in all endemic districts using enhanced and innovative preventive chemotherapy strategies
- To provide a minimum package of care to all people affected with chronic disease to alleviate suffering
- To augment the programme activities towards preparation of LF elimination validation dossier

3.3. Specific objectives

- To strengthen advocacy and ownership of the program at all levels
- To implement confirmatory mapping of uncertain areas
- To strengthen communication and social mobilization
- To ensure enhanced MDA in all endemic districts
- To introduce new and innovative preventive chemotherapy strategies and strengthen supplementary intervention measures
- To strengthen monitoring and surveillance system
- To assess burden of chronic disease
- To strengthen the health system capacity to provide quality care for people affected with chronic disease
- To ensure quality data management at all levels

- To address the gender equity and disability related issues (no one should be left behind as per the theme of SDGs)
- To build stronger and sustainable partnerships
- To support operational research
- To initiate steps for preparation of dossier for validation of elimination of LF

3.3.1. Action 1: To enhance advocacy and ownership of the programme at all levels

The guidelines of the national programme (2009) had laid down structures such as Task Force and Steering Committees at state and district level to guide the programme implementation. Enhanced advocacy under APELF will target all potential stakeholders including government, technical institutes, and partners to engage in each step of program planning and implementation. Support and commitment at the highest level is required to strengthen commitment of all stakeholders to accelerate efforts towards elimination. Creation of new platforms to strengthen inter-ministerial coordination and explore linkages with other health programs and key influencers to scale effort in mission mode at different levels needs to be conceived.

3.3.2. Action 2: To implement confirmatory mapping in uncertain areas

Historically, 256 districts in 21 states and UTs were endemic for LF. Using these data, all the 256 districts are included in MDA programme and targeted for elimination of LF. It is suspected that low levels of LF may be prevalent in a few other districts in some states. It is also possible that some areas of the non-endemic districts bordering the endemic districts may also be endemic for LF. Hence, confirmatory mapping of the districts and areas suspected to be endemic for LF will be undertaken to ensure that no population with LF prevalence is left untreated. Such confirmation of LF status of the districts is essential, also from the perspective of preparation of the dossier for validation of LF elimination.

A new and robust method – **mini-TAS** – will be used in confirmatory mapping of the hitherto uncertain areas. Mini-TAS envisages testing of children of 9-13 years in schools (4th to 8th grade students) for Ag prevalence in uncertain districts (Gas, 2017). Ag prevalence among children is assessed using FTS. If the Ag prevalence among children is above the threshold level, the district will be declared endemic and included for MDA. If the prevalence is below threshold level, the district will be declared non-endemic.

A list of uncertain districts/areas will be prepared for each state jointly by the state and national programme and reviewed by an expert group. Mini-TAS will be conducted in districts and areas recommended by the group and endemicity status determined. Best practices will be adopted and followed in conducting mini-TAS. Separate and dedicated teams will be formed and trained in each state to conduct mini-TAS. It will be conducted in close collaboration with the departments of primary school education and secondary school education in each state.

Guidelines on the conduct of mini-TAS and data collection formats will be provided to all state programmes.

3.3.3. Action 3: To strengthen communication and social mobilization

The Accelerated Plan for Elimination of Lymphatic Filariasis (APELF) 2018 will require a detailed communication and social mobilization plan to spread messages about the disease, symptoms, transmission, and benefits of MDA. The role of communication lies in awareness generation, community engagement and mobilization efforts, which are crucial for achieving high compliance and coverage. All endemic states will need to adopt the revised communication strategy as part of their efforts to eliminate LF by 2020.

Communication and Social Mobilization Strategy

The communication and social mobilization strategy will include plans for community engagement, building an enabling environment across the board (from national to village level) and capacity-building for drug administrators with a focus on interpersonal communication.

Community engagement will be ensured by engaging panchayat raj institutions, religious leaders, social and community groups, women's groups, self-help groups, NGOs, community-based organizations (CBOs), and other networks of influencers in dialogue to inform, answer questions, clear misconceptions and build trust in the program. Schools and colleges will also be engaged in creating a conducive environment for LF elimination.

It has been well-established that treatment compliance is largely dependent on clear communication by drug administrators, which makes capacity-building of drug administrators indispensable. Administrators should be well-equipped to handle queries as well as resistance when communicating to their target audience about the disease, symptoms, adverse effects, drug dosage and exclusion criteria. Drug administrators should also be capacitated on morbidity management so that linkages can be ensured and all LF cases have access to required health services.

Social mobilization:

Social mobilization is essential to create awareness about and demand for MDA and, in select districts, about innovative strategies like IDA and use of fortified salt. It also includes promoting awareness about sanitation practices for water management to curb breeding of mosquitoes as well as improved personal hygiene through use of soap and water in lymphedema management. Key opportunities such as Village Health Nutrition Day, gram sabha meetings, and school morning assemblies should be leveraged to raise awareness about the disease and benefits of MDA with the aim of encouraging community participation in the program. Prerequisites for community mobilization by frontline health functionaries includes availability of locally-contextualized IEC material/packages and orientation of said functionaries for impactful mobilization.

A national-level advisory group will be constituted to help strengthen communication and social mobilization.

States will follow the national guidelines for communication and social mobilization. Other initiatives at the state level will include mapping of available platforms and channels and their reach, ensuring functionality and effectiveness of promoting social mobilization, developing social mobilization plans for every endemic district, coordination with key persons in select platforms and channels at the state level.

Social mobilization will be a key component during the planning, implementation and review stages of state-level meetings. There will be a review mechanism to oversee implementation of planned communication activities.

A sub-group of the State Task Force committee will review mass media (TV, Radio spots, newspaper etc.)/IEC and social mobilization planning with districts to ensure that timely awareness-generation activities are undertaken ahead of scheduled LF MDA rounds in the states.

Districts will develop district-level communication and social mobilization plans in consultation with key stakeholders with guidance from the state in a pre-decided format. The plans would focus on activities for mass awareness and mobilization along with timelines and budgetary requirements submitted to the state in keeping with timelines. Guidelines for drug administrators will need to reach them well ahead of the start of drug administration rounds.

Communication:

Communication activities can be broadly divided under the following components although they are closely linked to each other:

1. Build an enabling environment for APELF. This will entail:
 - a. Developing communication materials especially for the health care providers to supplement the new training packages. This will ensure that the health care providers at every level have a common understanding of the goals and objectives of the program and interventions that are being implemented
 - b. Creating a specific communication plan to address and to effectively handle internal and external communication during adverse events at the district and state level.
 - c. Pre-planning and implementing standard protocol to communicate with and manage the media. A point-person trained to address media queries at the district and state level will be identified.

Detailed commitment from development partners needs to be defined and their specific role in implementation of strategy will be worked out under the leadership of NVBDCP.

2. Develop media briefs and specialized APELF-related media kit. This will entail:
 - Ensuring that the media is well-briefed about the APELF launch and its rationale and has access to adequate and correct information, so that erroneous reportage is minimized
 - Contextualizing media kits (comprising LF factsheet, APELF factsheet, press note on upcoming APELF launch, and so on) by state IEC teams, with support from partners, in accordance with state-specific requirements to ensure standardized messaging about the program. Points to remember:
 - i. Schedule state-level media workshops at least 5-10 days prior to MDA rounds to sensitize journalists and encourage informed reporting
 - ii. Sensitize media with correct information about the program, with focus on need for treatment compliance, benefits, extent and nature of side effects in rare instances of heavy infection load, and disease management. Learnings from other public health programs like Mission Indradhanush, Measles-Rubella vaccine etc. will be adopted
 - iii. Underline the importance of fact-checking, especially if reporting adverse situations
 - iv. Designate single spokesperson from health department for information dissemination and media briefing
 - v. Monitor media reports regularly
 - vi. Conduct advocacy outreach with media house owners with the widest reach in districts
3. Launch APELF at the state and district levels ensuring participation of senior officials from relevant departments
4. Explore mobile technology, social and digital media and other innovative techniques to maximize communication efforts

3.3.4. Action 4: Ensure enhanced MDA in all districts

MDA is the principal strategy of the LF elimination programmes and its aim is to interrupt transmission of LF. Each endemic district should undergo at least 5 rounds of MDA (DEC+ALB) over a 5-year period, with a minimum treatment coverage of 65% (calculated with total population of IU/district as denominator) in each MDA round. The large scale MDA programme in India was initiated in 2004. During 2004-2017, the number of MDAs implemented in different districts varied widely, depending on starting date of the programme and number of MDAs required to interrupt transmission. As on 2017, of the 256 endemic districts, MDA has been completed and stopped in 94 districts and is being continued in 133 districts. Many of the 133 districts had received >6 rounds of MDA, yet LF prevalence continues to be high in a number of districts. Such high prevalence may be due to operational problems in MDA programme, poor distribution of drugs and poor compliance with treatment. Therefore, there is a need to

improve the quality of MDA to interrupt LF transmission and stop MDA and meet the goals of the programme by 2020.

The strategies viz. microplanning needs to be strengthened at district, PHC and village level to systematically implement the MDA programme in the entire district. Best practices for effective implementation of MDA will be adopted and these include a sound IEC campaign, social mobilization strategy and community leadership involvement. To ensure the treatment of all eligible population, directly observed treatment will be given high priority and implemented in all districts. This will be accomplished through active involvement of adequate number of drug administrators and supervisors, house to house drug administration, repeated visits to households to track and treat all family members, immediate coverage assessment by supervisors and mopping up operations where required.

Drugs will be administered in each village in a professional manner. The knowledge and abilities of the health workers and drug administrators will be strengthened through participatory training and printed guidance material. A multi-layer supervision will be deployed to monitor the treatment coverage and achieve desired levels of compliance with treatment at PHC, block and district level. NVBDCP will monitor and supervise MDA implementation including activities carried out by the partners, particularly in districts that are under prolonged MDA and with persistent infection. The PHCs will be prepared to manage any adverse events and steps will be taken – including sensitization of media – to counter any rumours about MDA programme. Each village will have a contact person with a contact mobile phone number to provide response to people and families affected with adverse events. The directly observed treatment strategy will be backed up by careful data recording of treatment details at family and village level and prompt consolidation and reporting of results from village to PHC to district level.

At the end of the MDA, a coverage survey will be commissioned in as many districts as possible to understand the actual treatment coverage achieved at district level and further improve the programme performance in the coming years. The results of the coverage survey along with reported treatment coverage data will be reviewed jointly by all stakeholders to facilitate their assessment of the programme. The coverage survey data and reported coverage data will be reviewed in state level and district level meetings and the additional efforts required for the next year will be discussed.

Generally, MDA in urban areas is confounded by poor awareness and low confidence about the programme, people's reliance on private practitioners for health care (treatment) and inaccessibility of households to drug distributors and significant heterogeneity in distribution of disease. The MDA programme in urban areas and migrant population groups will be reviewed and strengthened.

To implement quality MDA in all districts, the capacity of the health system will be strengthened by providing additional human and financial resources, good training and logistic support and utilizations of services of partners. NVBDCP will decide involvement of technical

experts and organizations to the needy states and districts, to guide the implementation of the programme.

The drug supply management will be improved to ensure on-time delivery of quality drugs and management of inventory at each district headquarter and health centre.

Quality data collection and prompt reporting of data will be given high priority. The health workers and drug distributors will be sensitized and trained to record and report accurately the drug delivery and drug consumption data. The PHC medical officers will be encouraged to coordinate the collection of data records from each village, consolidate and report the same to district headquarters promptly. The role of mobile communications in data transfer will be examined.

3.3.5. Action 5: To introduce innovative preventive chemotherapy strategies and strengthen supplementary measures

Further to enhance elimination of Lymphatic Filariasis, evidence based and feasible strategy on triple drug therapy may be undertaken in identified districts.

Extensive IEC/BCC campaign needs to be strengthened in this context. The district and the PHC level medical officers will be provided a Fact Sheet. Treatment coverage will be the key determinant of success of the programme. Hence, all steps will be taken for universal treatment as indicated. Directly observed treatment will be stressed upon.

A road map may be developed for effective implementation of MDA.

Supplementary intervention measures

Taking advantage of the global vector control response adopted by WHA in May 2017, vector control will be strengthened as a supplementary intervention to MDA programme. A collaboration will be established with Dengue control programme, JE control programme and Malaria control programme to promote vector control in all endemic areas, with emphasis on integrated vector management strategy (WHO, 2012).

DEC medicated salt is an effective intervention measure. Steps may be taken to consider DEC medicated salt as a supplementary intervention in districts that continue to have above threshold infection prevalence even after repeated MDAs. Detailed discussion on efforts will be made to resolve the issues related to production, supply and distribution of medicated salt.

The programme will work in close collaboration with the National Deworming Programme and share resources, knowledge and experience to improve the implementation of the LF MDA programme.

3.3.6. Action 6: To strengthen monitoring and surveillance system

M & E and surveillance are key components of the programme and play a very important role in making crucial decisions such as stopping the MDA. Hence, a dynamic and robust M & E and surveillance system will facilitate informed decision making.

Under the accelerated plan, the M & E will continue to be based on monitoring of infection status of adult population in sentinel and spot-check sites and outcomes of transmission assessment surveys (TAS) among 6-7 year old children. The scale of M & E in terms of number of sentinel sites and spot-check sites to be surveyed, the survey sample sizes and the frequency of surveys will be gradually aligned with the recommended guidelines. Assessment of Mf prevalence, using thick blood smear method, in sentinel and spot-check surveys has been the mainstay of M & E so far. The thick blood smear method is relatively a less sensitive technique in detecting infection and there are also concerns about the quality of Mf surveys. Poor quality surveys weakens the decision making process on stopping the MDA. In view of this, the SERO/WHO and RPRG recommended in 2017 to replace the Mf assessment with the Ag assessment, using FTS, in all countries of the region. Hence, all the future M & E surveys in sentinel and spot-check sites and any other similar surveys will include Ag assessment, using FTS.

The TAS for stopping MDA and post-MDA surveillance is to be conducted in EUs and the recommended population size of each EU is $\leq 2,000,000$. However, many endemic districts (IUs) have a population in excess of 4,000,000. So, each district will be sub-divided into EUs of about 1,000,000-2,000,000 each and each EU will have contiguous areas (WHO, 2011).

To improve and maintain the quality of the surveys, a national TAS cadre will be built through enlisting and training of qualified personnel from national programme and collaborating institutes (such as ICMR centres and NCDC) and development partners and state programmes. An effective supervision will be put in place to coordinate the TAS each time it is conducted under NVBDCP.

In the districts that failed TAS, the recommended response measures including assessment using WHO recommended tools like TAS check list will be implemented to analyze the operational and technical reasons for failure and determine the course of action for such districts (WHO, 2015). TAS 1 will be conducted in all districts, only after careful review of MDA treatment coverage data and sentinel site and spot-check site evaluation data and following the due process. TAS 1, TAS 2 and TAS 3 will be conducted whenever it is due and without any delay.

The M & E and surveillance data will be recorded in standard formats, consolidated soon after completion of TAS in each district and entered into data base.

A TAS 1, TAS 2 and TAS 3 time line will be developed for all endemic districts, after reviewing the current status of the MDA and surveillance data.

3.3.7 Action 7: To identify all people affected with chronic disease to facilitate treatment

MMDP is a very critical component of the LF elimination programme and its implementation per recommended guidelines is essential to begin the process of validation of elimination of LF. To implement MMDP strategy, the number and location of cases in each district will be assessed and mapped. The line-listing method will be used to identify and map the patients at community level. It will be explored to integrate this activity with leprosy detection and kala-azar case detection in co-endemic districts. In different states and UTs the health workers and partner agencies who will be involved in the disease burden assessment will be identified and trained. The training will focus on collection of hydrocele data carefully, as the affected people will be often reluctant to reveal their disease condition. The trained personnel will collect data under the supervision of the PHC, block and district level health personnel and a time line will be fixed to complete the activity. The collected data will be systematically organized and entered into the district, state and national level database. The community level and PHC level patient lists will be used by the health centres to provide minimum package of care to all the people affected with chronic disease.

3.3.8. Action 8: To strengthen the health system capacity to provide quality care for people affected with chronic disease

The health system will be prepared and strengthened to deliver a minimum package of care to all the affected individuals. All PHCs in LF endemic areas will be assessed and prepared to provide care for lymphedema management. In each district, the hospitals that have infrastructure to undertake the hydrocele surgeries will be identified and their capacity improved. These hospitals will be particularly designated to promote and undertake hydrocele surgeries. The role of each functionary in health centres and hospitals in relation to providing care for chronic disease patients will be defined. The recommended minimum package of care envisaged in GPELF includes treatment of acute ADL episodes, management of lymphedema, prevention of acute attacks and providing surgery for hydrocele.

All the health workers should be involved in MMDP and they will be trained on lymphoedema management and treatment and prevention of acute disease episodes. All the hydrocele patients under each health centre will be counseled to undergo hydrocele surgery in designated hospitals. The health centres will play active role in facilitating the surgeries and providing and post-surgery care. The district medical officer and the in-charge of the identified hospitals will be sensitized on the role and importance of hydrocele surgeries in LF elimination programme. States will be encouraged to provide incentives to health facilities and patients for hydrocele surgeries.

All the commodities required for MMDP activities will be budgeted for and procured by each district health administration. The lymphoedema patients visiting the health centres for treatment will be provided training on lymphoedema management, education material and

necessary medicines. They will be encouraged to practice home based lymphoedema management measures and this should be supervised and reported by the health workers.

A comprehensive data management system for MMDP services will be developed and used in all health facilities, which is important also from the perspective of preparation of dossier.

MMDP policies will be reviewed and updated from time to time and all the improvements in the guidelines (for example Direct inspection protocol) will be incorporated into the programme. Gender equity and disability issues of patients will be addressed by the programme.

3.3.9. Action 9: To ensure quality data management at all levels

An IT based data flow mechanism needs to be explored to ascertain the quality of data and improve the data management (de Souza et al., 2016).

From time to time, data analysis will be undertaken to assess the progress of the programme, facilitate informed decision making process and plan future course of action. The outcome of analyses will be shared with all stakeholders and through display in programme website.

3.3.10. Action 10. To build stronger and sustainable partnerships

The strengths of national and international partners of the programme will be leveraged and their expertise harnessed to conduct training courses, refine the programme implementation, undertake joint supervision, introduce new diagnostic and intervention tools and strategies and establish strong data management systems. Steps will be taken to expand the pool of partners and collaborators from various parts of the country to meet the resources required to implement quality MDA and MMDP activities and strengthen M & E and surveillance activities. The role of each partner will be identified and regular coordination meetings will be held with the national programme.

3.3.11. Action 11: To support operational research

The programme will enhance collaboration with local and international research institutions, NGOs and medical colleges and seek their active support for resolution of operational problems through research and training. The important areas of research identified by the programme include:

- i. improvement of compliance of MDA
- ii. feasibility of introduction of triple drug therapy
- iii. development of criteria to identify areas for targeted MDA in urban areas
- iv. development of feasible and cost-effective post-TAS surveillance strategies

- v. standardization of threshold level of pre-TAS 1 Ag prevalence, assessed using FTS, for sentinel site and spot check sites
- vi. development of innovative data transfer and data management tools and systems

3.3.12. Action 12: Preparation of dossier for validation of elimination of LF

There are 21 endemic states and union territories in India. The status of the programme differs widely across the states. While a majority of districts in some states are implementing MDA, it is completed and stopped in some states and post-MDA surveillance is under progress. As state after state completes and stops MDA and surveillance activities are put in place, steps will be initiated to prepare a dossier document.

The dossier document will be prepared using the templates and guidelines provided by WHO. All the programme managers of all the states will be provided with copies of the dossier templates and encouraged to provide all the information required for the dossier. All the data for all endemic districts will be consolidated and summarized in the dossier document. The dossier document will be updated from time to time to facilitate the preparation of the final dossier document.

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Abbreviations

Ab	Antibody
Ag	Antigen
ALB	Albendazole
DEC	Diethylcarbamazine citrate
EU	Evaluation Unit
GPELF	Global Programme to Eliminate Lymphatic Filariasis
IEC	Information, education and communication
IU	Implementation Unit
IVR	Ivermectin
LF	Lymphatic Filariasis
M&E	Monitoring and Evaluation
MDA	Mass Drug Administration
NFCP	National Filaria Control Programme
M & E	Monitoring and evaluation
MMDP	Morbidity Management and Disease Prevention
Mf	Microfilaria
SEAR	South-east Asia Region
NTD	Neglected Tropical Diseases
TAS	Transmission assessment survey
WHO	World Health Organization

Glossary

Adverse event (AE) following mass drug administration (MDA)

A medical incident that takes place after MDA and is suspected to be but is not necessarily caused by the medicines used in the intervention. Some AEs, after investigation, may be found to have been caused by the medicine. Such AEs will also be referred to as adverse drug reactions or side effects. Note: AEs are often categorized by severity in clinical studies. While the severity grade may vary, for the outcomes reviewed in these comparisons, the following classifications were used:

Antibody

A protein produced by the human immune system in response to a foreign substance (antigen) to fight off infection. An antibody reacts specifically with the antigen that triggered its formation and its function is to facilitate removal of the antigen from the body.

Antigen (Ag)

Any foreign substance that stimulates the human immune system to produce antibodies.

At-risk population

Total population in the endemic implementation unit(s).

***Brugia malayi* area, *Wuchereria bancrofti* area**

Geographical areas with established transmission of the disease caused by the respective parasite.

Clinical case of lymphatic filariasis (LF)

Case in a resident of or long-term visitor to an endemic area, with hydrocoele, chylocoele, lymphoedema (elephantiasis), chyluria, haematochyluria, haematuria, hypereosinophilia or tropical pulmonary eosinophilia syndrome for which other causes have been excluded.

Complete microfilaraemia (mf) clearance

Occurrence of zero microfilariae detected in sampled blood following treatment. Designated as a “critical” outcome in the recommendation formulation process).

Critical cut-off threshold

The threshold of infection prevalence below which transmission is likely no longer sustainable, even in the absence of control interventions. The transmission assessment survey estimates this threshold by the number of antigen-positive or antibody-positive cases.

Disability

Inability to adequately or independently perform routine daily activities such as walking, bathing and toileting; the negative aspects of the interaction between a person with a health condition and his or her context (environmental and personal factors)

Drug coverage

Proportion of individuals, expressed as a percentage, in a targeted population who swallowed a drug, or a combination of drugs.

Effective coverage

Drug coverage during MDA where $\geq 65\%$ of the total population ingested the medicine.

Elephantiasis

Severe or advanced lymphedema.

Elimination as a public health problem

The achievement of specific and measurable targets for infection and disease set by the World Health Organization and when reached, continued actions are required to maintain this status. Surveillance will be required to ensure infection remains below target thresholds and to verify interruption of transmission.

Endemic area

Implementation unit where a proper sample of the population has an antigenaemia or microfilaraemia positivity rate equal to or greater than 1%.

Epidemiological coverage

Proportion of individuals who have ingested the MDA drugs among the total population in the implementation unit. Minimum epidemiological coverage considered effective for reducing LF transmission is $\geq 65\%$.

Filarial infection

Presence of adult filarial worms in lymphatic vessels or of microfilariae in blood.

Geographical coverage

Proportion of administrative units that are implementing MDA of all those that require MDA.

Hydrocele

Excess fluid inside the scrotal sac that causes the scrotum to swell or enlarge.

Implementation unit (IU)

The smallest administrative unit in a country which is used as the basis for making decisions about implementing MDA. The IU must be defined before mapping takes place. For LF, the implementation unit is normally the district.

Interruption of transmission of lymphatic filariasis

Reduction in the prevalence of infection to a level where continued transmission and recrudescence are not expected.

Lymphatic filariasis (LF)

A parasitic disease of humans caused by nematodes (worms) of the Filarioididea family. *Wuchereria bancrofti* cause the majority (90%) of human infections, which are mostly acquired in childhood; *Brugia*

malayi and *Brugia timori* cause the remainder. *Anopheles*, *Aedes*, *Culex* and *Mansonia* mosquitoes are the main vectors responsible for transmission. Mosquitoes serve as biological hosts that both develop and transmit the parasite during blood-feeding and establish the infection in humans.

Lymphatic system

The delicate network of nodes and vessels that maintain the delicate balance between the tissues and blood in humans. The lymphatic system is an essential component of the body's immune defense system.

Lymphedema

Swelling caused by the collection of fluid in tissue.

Macrofilaricide (for LF)

A drug that displays destructive properties against the adult worms in the body of people with LF.

Mass drug administration (MDA)

A modality of preventive chemotherapy in which anthelmintic medicines are administered to the entire eligible population of an area (*e.g.*, state, region, province, district, subdistrict, village) at regular intervals, irrespective of the individual infection status.

MDA round

Distribution of antifilarial medicines to the target population during a defined time period. Normally, MDA activities may not be conducted simultaneously throughout a country, so a "round" may take one to two weeks or more before being completed at a national level. An "effective MDA round" or reaching "effective coverage" during an MDA round is defined by epidemiological coverage $\geq 65\%$ in an implementation unit.

Microfilaraemia (mf)

Presence of microfilariae in the blood.

Microfilaraemia prevalence

Proportion of persons with microfilariae in blood.

Microfilaraemia prevalence reduction

Percent reduction in mf prevalence.

Microfilariae

Microscopic larval stage of LF parasites that circulate in the blood and are transmitted by mosquitoes.

Microfilaricide (for LF)

A drug that displays destructive properties against microfilariae in the blood of people infected with LF.

Morbidity

Clinical consequences of infections and diseases that adversely affect the health of individuals. Lymphatic filariasis causes chronic morbidity through damage to the lymphatic system, kidneys, arms, legs or genitals (especially in men).

Neglected tropical diseases (NTD)

A group of primarily infectious diseases which thrive in impoverished settings, especially in the heat and humidity of tropical climates. They have been largely eliminated elsewhere and thus are often forgotten. WHO focuses on control of 19 NTDs: buruli ulcer, chagas disease, dengue and chikungunya, dracunculiasis, echinococcosis, foodborne-trematodiasis, human African trypanosomiasis, leishmaniasis, leprosy, lymphatic filariasis, mycetoma, onchocerciasis, rabies, schistosomiasis, soil-transmitted helminthiasis, taeniasis/cysticercosis, trachoma and yaws (endemic treponematoses).

Pharmacovigilance

The science and activities relating to the detection, assessment, understanding and prevention of adverse effects or any other possible drug-related problems. Pharmacovigilance is an arm of patient care, aiming to make the best use of medicines for the treatment or prevention of disease. Good pharmacovigilance will identify the risks and the risk factors in the shortest possible time so that harm can be avoided or minimized.

Pre-transmission assessment survey (pre-TAS)

Follow-up assessments of sentinel and spot-check sites after five effective rounds of MDA. 'Passing' pre-TAS is defined as <1% microfilaraemia or <2% antigenemia in sentinel and spot-check sites. If pre-TAS is passed, an IU may progress to the TAS.

Preventive chemotherapy

Preventive chemotherapy is treating populations at high risk of neglected tropical diseases, to prevent transmission or reduce morbidity of those affected by the diseases, with quality assured medicines.

Sentinel site

A geographical area, with a population of at least 500 people, selected in order to collect parasitological data to monitor the success of the programme. It should remain the same throughout the course of the programme. Sentinel site assessments are conducted (along with spot-check site assessments) at baseline, at the mid-term (optional) and during the pre-TAS (pre-transmission assessment survey).

Serious adverse events (SAE) following MDA

Any untoward medical occurrence that at any dose results in death, requires hospital admission or prolongation of existing hospital stay, results in persistent or significant disability/ incapacity, or is life threatening; cancers and congenital anomalies or birth defects should be regarded as serious; medical events that would be regarded as serious if they had not responded to acute treatment should also be considered serious. (In the studies reviewed, any Grade 4 or 5 AE or any overnight admission to a health facility was considered an SAE.

Spot-check site

A geographical area, with a population of at least 500 people, selected in order to collect parasitological data to complement data collected in sentinel sites. Spot-check sites should be chosen for each assessment and will change over the course of the programme. Spot-check site assessments are conducted (along with sentinel site assessments) at baseline, at the mid-term and during the pre-TAS (pre-transmission assessment survey).

Surveillance

The ongoing, systematic collection and evaluation of data describing the occurrence and spread of disease. The part of the programme aimed at the discovery, investigation and elimination of continuing

transmission, the prevention and cure of infections, and the final substantiation of claimed absence of transmission.

Target population (LF target population = eligible population)

Population in an implementation unit that is targeted for treatment. In the context of lymphatic filariasis, the target population for mass drug administration is the same as the population eligible to receive the medicines, according to the criteria for drug safety, which is usually 80 to 90% of the total population.

Transmission assessment survey (TAS)

A survey designed to measure whether evaluation units have lowered the prevalence of infection to a level where recrudescence is unlikely to occur, even in the absence of MDA interventions. TAS is a decision-making tool to determine when MDA can stop.

Validation (of the elimination of LF as a public health problem)

Validation is the process of documenting the elimination of LF as a public health problem through a validation dossier and receiving approval for the achievement from the World Health Organization. Validation is not a permanent state and does not represent an end to programme activities. While some activities, such as MDA, may no longer be required, programmes should continue to undertake post-validation surveillance and ensure the minimum package of care for patients remains available within the health care system.

