

Partnering with Countries to Achieve Lymphatic Filariasis Elimination

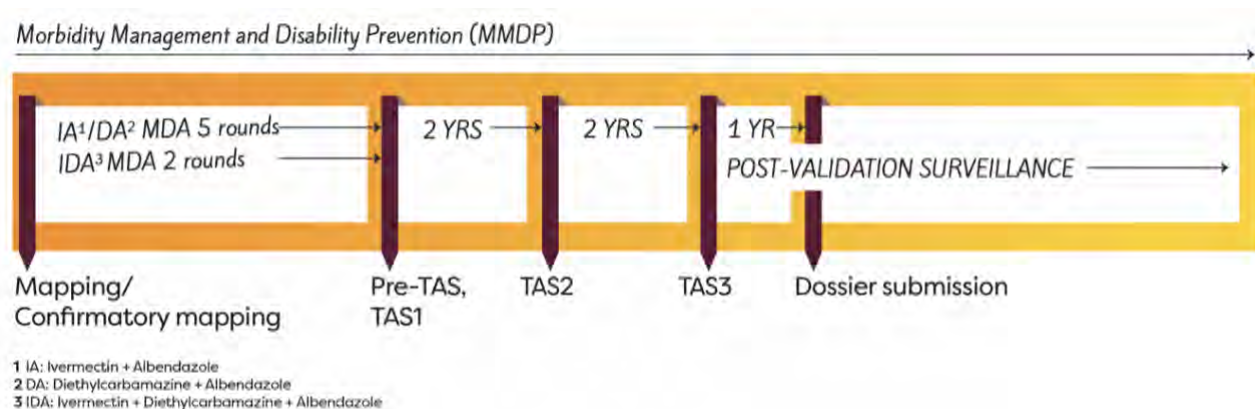
Introduction/Background

Lymphatic filariasis (LF) is caused by parasitic filarial worms *Wuchereria bancrofti*, *Brugia malayi*, and *Brugia timori*. It is transmitted by *Anopheles*, *Culex*, *Aedes*, and *Mansonia* mosquitoes. The most common visible clinical manifestations of LF infection are lymphedema and hydrocele, which can be debilitating and associated with stigma. The World Health Organization (WHO) established the Global Programme to Eliminate Lymphatic Filariasis (GPELF) in 2000 to provide strategic direction to eliminate LF as a public health problem and coordinate the global response to support endemic countries to achieve elimination of the disease.¹

The GPELF has outlined strategic plans and published guidelines to assist countries in setting up programs to implement interventions to interrupt transmission of LF infection through mass drug administration (MDA) and alleviate the suffering of persons with lymphedema and hydrocele by providing clinical management and preventing disability. The key programmatic phases of LF elimination are as follows:

- 1 mapping to determine where the infection is endemic,
- 2 treating endemic areas by MDA and managing affected persons,
- 3 conducting impact assessment surveys to determine infection prevalence has been reduced to levels where transmission is unsustainable, and
- 4 conducting post-validation surveillance (see Figure 1).

FIGURE 1: Lymphatic Filariasis Elimination Phases



¹ WHO 2010. Progress report 2000–2009 and strategic plan 2010–2020 of the global programme to eliminate lymphatic filariasis: halfway towards eliminating lymphatic filariasis.

GPELF also galvanizes and coordinates global initiatives to provide technical assistance, develop and provide medicines and diagnostic tools, and provide funding for implementation and research to support LF elimination programs. As a result, there are often resources available through WHO, global, and bilateral initiatives that endemic countries leverage to implement the required interventions to eliminate LF as a public health problem. However, setting up robust programs for elimination of LF has been a daunting task for most endemic countries. First, LF elimination is accorded a low priority in the health agenda in favor of high-burden diseases such as malaria, childhood infections and malnutrition, and maternal health problems, which have a higher mortality rate. Consequently, LF programs lack political support, and domestic resource allocations are limited. Second, weak health systems in endemic countries make it challenging for LF elimination programs to deliver interventions to at-risk populations. Despite these challenges, the GPELF can boast of achievements in reducing the risk of LF transmission that are unparalleled in global public health. A total of 19 of 72 LF-endemic countries have achieved elimination of LF as a public health problem, and infection has been reduced by about 74% globally.²

USAID's Act to End Neglected Tropical Diseases | West Program (Act | West) provides funding and technical assistance to 11 West and Central African countries (Benin, Burkina Faso, Cameroon, Cote d'Ivoire, Ghana, Guinea, Mali, Niger, Senegal, Sierra Leone, and Togo) to eliminate or control five neglected tropical diseases: lymphatic filariasis, onchocerciasis, trachoma, schistosomiasis, and soil-transmitted helminthiasis. Currently, LF is still endemic in ten countries. The disease was eliminated in Togo as a public health problem, and in 2017, the country received recognition from WHO for its achievement, making it the first country in Africa to receive WHO recognition. Togo's achievement has been a source of motivation to other countries of the feasibility of LF elimination in Africa. This technical brief outlines approaches used by Act | West to support LF endemic countries to achieve LF elimination; highlights key challenges across LF programs; and describes how Act | West supports countries to address the challenges, share best practices and lessons learned, and sustain country progress.

Approach used by Act | West to support countries in achieving LF elimination

Act | West provides technical support to the national neglected tropical diseases programs to implement quality endemicity/confirmatory mapping, MDA, MDA impact assessments, and surveillance, as well as to analyze and use program data for decision-making. This support includes training of Ministry of Health staff, providing supportive supervision, facilitating the use of tools and guidelines, and enabling learning across country programs. Where countries make less-than-expected progress toward elimination of LF as a public health problem, Act | West uses technical assistance to unravel causes and bottlenecks and facilitate sustainable, locally-led solutions. The most common challenges are low MDA coverage, persistent transmission of infection, poor quality and management of data, and insecurity hampering program implementation.

² WHO 2023. Global programme to eliminate lymphatic filariasis: progress report, 2022. Weekly epidemiological record. No 41, 2023, 98, 489–503 <https://www.who.int/publications/i/item/who-wer9841-489-502>.

Methods implemented to support Act | West countries towards LF elimination

Act | West in-country program operations and technical teams provide ongoing program management and technical support. Act | West in-country support is provided by Helen Keller Intl in six countries (Burkina Faso, Cameroon, Guinea, Mali, Niger, and Sierra Leone), FHI 360 in four countries (Benin, Cote d'Ivoire, Ghana, and Senegal), and Health Development International in Togo. The in-country teams coordinate additional technical assistance support for countries from Act | West regional and headquarters-based LF, monitoring and evaluation, supply chain management, quality improvement, and health systems strengthening technical teams.

Technical assistance is delivered through country visits and field supportive supervision, webinars, online meetings, and portfolio-wide workshops. Act | West's technical assistance has covered review of MDA and survey data to identify sub-districts and communities with low treatment coverage or where focused intervention may be required. As well, technical assistance encompasses implementation of quality impact assessments (transmission assessment surveys), adoption of new WHO guidelines, cross-country sharing of best practices, methods for deploying program improvement tools such as the Supervisor Coverage Tool (SCT), and investigation and response to persistent LF transmission. Act | West supports development of protocols for mapping and impact assessment surveys (transmission assessment surveys (TAS) and pre-TAS) and provides supportive supervision for quality survey implementation. To facilitate sustainable morbidity management and disability prevention (MMDP) services, Act | West supports countries in collecting reliable LF morbidity data for planning MMDP services, integrating MMDP services into health care systems, developing MMDP strategic plans, facilitating inclusion of MMDP into pre-service health care training curriculum, and monitoring the quality of MMDP services.

Mapping LF endemicity

All ten LF-endemic countries have completed baseline mapping, and MDA has been initiated in all endemic districts. The earliest mapping was conducted in Ghana and Burkina Faso in 2000, and the last remaining districts were mapped in Cote d'Ivoire and Guinea in 2016. Though the recommended mapping protocols were generally used in all countries, there were variations in the population size, administrative level used as the evaluation unit, and diagnostic tools used. Districts or regions were used as survey units for mapping, and antigenaemia and microfilaraemia prevalence were the dominant mapping approaches. To ensure that no endemic areas remained untreated, in 2020–2022, Act | West facilitated a review of mapping methods in all ten countries to identify gaps in mapping data. About 50 districts with uncertain endemicity were identified in four countries: Cote d'Ivoire, Ghana, Guinea, and Niger. The districts were remapped in 2020 and 2023 using the more robust WHO LF confirmatory mapping protocol. The results of remapping showed two new endemic districts in Ghana and none in the other three countries. While a few more districts will be remapped in Niger in 2024, so far, none of the remapping surveys show an untreated focus of LF transmission that might be a source of recrudescence as countries make progress towards elimination.

Conducting high-coverage MDA

Mass drug administration is the key intervention to stop transmission of LF and achieve elimination. All eligible persons (≥ 5 years) in LF endemic areas are treated annually with an appropriate medicine regimen (albendazole and ivermectin, diethylcarbamazine and ivermectin, a combination of all three medicines, or

albendazole only). However, when only a limited proportion (< 65%) of the at-risk population in LF endemic districts take the treatment in each annual MDA, the untreated cohorts may constitute a high parasite density reservoir, thus contributing to ongoing transmission despite MDA. This results in a delay in achieving elimination and is a waste of resources, as MDAs that do not achieve at least 65% coverage of at-risk populations do not count.

Act | West supports all facets of the chain of activities for effective MDA, including planning at all levels of the health system, including the sub-district and community levels: social and community mobilization, supply chain management of MDA commodities, effective supervision, and post-MDA reviews to identify lessons learned and improve subsequent MDAs. Additionally, MDA coverage data is analyzed by sub-district to identify sub-districts and communities with low coverage for mop-up treatment and implementation of specific strategies to enhance coverage. This has shown to be very useful in districts with persistent parasite transmission to identify and target untreated communities or hard-to-reach populations with specific interventions. In Sierra Leone, for example, sub-district MDA coverage analysis highlighted sub-districts and communities where MDA coverage was low, despite districts meeting effective coverage overall. The sub-districts were targeted for enhanced community mobilization and supervision in repeat MDA after failed pre-TAS, resulting in improved coverage in targeted sub-districts and special populations in Burkina Faso, Ghana, and Sierra Leone. Act | West facilitates the implementation of a coverage evaluation survey (CES) at least once in each endemic district prior to eligibility for pre-TAS. The findings of CES are used to better target sections of the population found to be less compliant with treatment, and the CES also provides insight into the most effective channels for social mobilization.

Since 2020, Act | West countries have been trained to use the Supervisors' Coverage Tool (SCT) as part of MDA monitoring, especially in districts with a history of low treatment coverage and persistent LF transmission. The SCT helps identify low-treatment communities for revisits while MDA is in progress. Community drug distributors (CDDs) are directed to revisit these areas to provide treatment to untreated residents.

After receiving training, the Niger NTD program used the SCT as an MDA supervision tool during the 2019 MDA in two districts (Arlit and Iférouane) in the Agadez region, where MDA coverage was historically low due to insecurity, frequent population movement, vast geography of the districts, and difficult terrain. The SCT was implemented by local supervisors with support from district, regional, and central-level supervisors. The MDA coverage was found to be poor or inconclusive in nine of the 31 supervisory areas where SCT was applied. In response, social mobilization was enhanced, CDDs were redeployed from areas with good coverage to support mop-up MDA, and supervisors visited more frequently. The two districts ultimately reported epidemiological coverage of 78% and 82%, respectively. In addition, the program found that SCT implementation by the health center supervisory staff strengthened the quality of supervision and made the reported data more credible. Moreover, the SCT increased ownership and accountability of the MDA campaign among the local health staff and helped raise awareness and commitment at all levels toward the goal of high MDA coverage.

In Sierra Leone, Burkina Faso, and Ghana, Act | West supported investigation of sub-districts with low treatment coverage and districts with persistent LF transmission in three, five, and eight districts, respectively. Community members and leaders, social groups, CDDs, and health workers were engaged through interviews, focus group discussions, and community dialogues to determine barriers to successful MDA. Barriers identified across these countries included unsuitable timing of MDA (rainy season, planting,

or harvest time), inadequate CDD training and supervision, ineffective social mobilization, and hard-to-reach communities. Additionally, in Sierra Leone, access to nomadic populations and ethnic power dynamics in relation to communication and language barriers were identified. In Ghana, a low CDD-to-population ratio, poor CDD training, and limited days for MDA were also identified. In Burkina Faso, findings identified limited MDA knowledge of town criers who were tasked to inform communities about impending MDA and CDDs not adhering to directly observed treatment in MDA. Response strategies included employing appropriate social mobilization channels for specific ethnic groups, developing social mobilization materials and messages in additional languages, using community leaders in messaging, collaborating with communities to select the best time for MDA, using population density as a factor to assign number of CDDs, and hiring motorbikes for CDDs and supervisors to access hard-to-reach and large, sparsely populated communities. In Ghana and Sierra Leone, a quality improvement model was also implemented to enable districts to iteratively test and modify strategies to continuously improve program quality and MDA coverage. Most districts recorded MDA coverage above 65%, and persistent transmission districts have either passed pre-TAS and TAS1 or witnessed a marked reduction in infection prevalence.

Quality impact assessment surveys

Pre-TAS and TAS are recommended to monitor the effect of MDA on infection prevalence in the population and decide when to stop treatment. Transmission assessment surveys are also used as a surveillance tool during the four-year post-treatment surveillance phase to validate the decision to stop treatment in a district. Act | West requires supported countries to develop survey protocols to guide pre-TAS and TAS surveys, and Act | West technical advisors support countries in developing or reviewing survey protocols to ensure conformity with WHO guidelines, best practices, and quality standards. All 10 LF endemic countries have received in-person training or TA support from Act | West technical advisors during training of program and survey teams.

Field visits during survey implementation provide practical support to implement surveys and use diagnostic tools appropriately to obtain valid results. Mali, Burkina Faso, and Cameroon have been supported in the use of innovative strategies to conduct pre-TAS/TAS in insecure areas by collaborating with regional and district security authorities and by training and deploying health workers at the sub-district level to conduct the surveys using small survey teams known and trusted by the communities. At the same time, regional and national level staff supported and supervised the survey process remotely via a WhatsApp group. Positive tests recorded by survey teams are validated via photos of FTS tests shared on the WhatsApp group.

Since 2019, Act | West has promoted and supported training of countries to use electronic data collection (EDC) platforms for LF surveys. All countries now use the ESPEN collect, ONA, ODK, or country-specific applications to collect and report survey data, which is stored directly on a remote server. This has facilitated real-time monitoring of survey data, enhanced data security, and facilitated data analysis and timely availability of results for decision-making and next steps. Act | West supports countries in analyzing LF survey data and initiating the appropriate response. Following failure of TAS1 in 2018 in one evaluation unit (with four districts) in Benin, Act | West supported the NTD program to review the data to identify the communities where children who tested positive via FTS lived. The communities were engaged to discuss the findings, social mobilization was enhanced for the additional MDAs, and a CES was conducted to validate MDA and the effectiveness of social mobilization communication channels. The treatment coverage improved, and the districts have subsequently passed pre-TAS and TAS1 and stopped treatment.

Preparing for validation of LF elimination

Once LF-endemic countries have achieved and sustained LF prevalence below the elimination thresholds and provide access to hydrocele and lymphedema management services in all endemic administrative units in the country, a dossier must be submitted to WHO for review, approval, and recognition of elimination of LF as a public health problem in the country. This LF validation dossier documents methods and results of LF endemicity mapping, MDA, impact assessment surveys, and MMDP services. It also includes plans for post-validation surveillance. It requires data and information collected prior to or since the establishment of the LF elimination program in the country, which for most countries would be about 15–25 years.

Over the program life, staff changes occur, and data management and storage platforms change multiple times with a risk of loss of data and historical information needed for the validation dossier. To safeguard program data and facilitate timely submission of the dossier, Act | West provides technical assistance to countries to organize and secure all LF program data and initiate drafting of a validation dossier before all activities for LF elimination are completed in the country. Act | West LF technical backstops have conducted LF validation orientation workshops for all ten LF-endemic countries from 2019 to 2023. Four countries (Benin, Burkina Faso, Cameroon, and Mali) have developed draft validation dossiers that encompass all LF activities and results to date. Depending on each program team's availability, the first draft is produced by the LF program staff or a consultant. The draft dossier is updated annually with reports and new activity data. In this way, countries will be ready to submit the validation dossier in less than six months after post-treatment surveillance surveys and morbidity services assessments in the final districts are completed.

Three Act | West countries (Benin, Cameroon, and Mali) stopped treatment in all LF endemic districts between 2021 and 2022, and four more countries are expected to do the same in 2024. Benin and Mali are scheduled to submit LF validation dossiers to WHO in 2025. All Act | West-supported countries, except one, are on course to eliminate LF as a public health problem by 2030.

Challenges and gaps

Persistent transmission

Despite the successes of LF elimination in Act | West supported countries, progress towards LF elimination has been delayed in Burkina Faso, Ghana, Niger, and Sierra Leone due to persistent transmission of LF infection in a few districts despite completing five or more rounds of ivermectin and albendazole MDA with effective treatment coverage. These districts have failed pre-TAS more than once or failed a TAS1. In response, Act | West supported the countries to understand and address the causes of persistent transmission. First, the survey method, tools, and results were reviewed to exclude quality and methodological shortfalls and elucidate the epidemiology of infected persons. MDA data were analyzed by implementation sub-units (sub-district and community) to identify sub-populations with low treatment coverage despite effective overall coverage for the district population. At the same time, qualitative methods were used to understand social factors. This approach has led to a reduction of infection prevalence to a level where transmission is unsustainable in more than half of the districts with persistent transmission, and the remaining districts have witnessed a downward trend in infection prevalence.

Insecurity

Insecurity in several areas of four Act | West countries (Burkina Faso, Cameroon, Niger, and Mali) has stalled progress toward LF elimination over the past five years. The countries have not been able to conduct scheduled pre-TAS and TAS surveys in these affected districts. However, over the past three years, these countries have developed innovative methods that rely on offsite training of local health personnel to conduct the surveys with remote technical support from central-level staff and implementing partners. Improvement in the security situation is necessary to complete all required surveys.

Post-validation surveillance

More than half of LF-endemic districts in Act | West countries have completed the final post-treatment surveillance survey (TAS3). While countries wait for the remaining districts to complete TAS3, there is a need for post-validation surveillance (PVS) to be instituted in districts that have passed TAS3 for early detection of and response to recrudescence of transmission. For PVS approaches to be effective, they must be sustainable and integrated into national health system surveillance platforms. Act | West will provide TA for countries to select, adapt, pilot, and scale up the best PVS strategies as the remaining districts complete TAS3.

MMDP data collection and reporting

While all 10 LF endemic countries supported by Act | West have made progress towards interrupting LF transmission, the same cannot be said for MMDP. A few countries have yet to collect reliable morbidity data for all endemic districts, and financing MMDP services, especially for hydrocele surgery, remains a gap for most patients. In response, most countries are in the process of integrating MMDP services into universal health packages and removing financial barriers for patients accessing MMDP services. Reporting MMDP data to WHO has been limited in some cases. Act | West is supporting countries in collecting reliable MMDP data, developing strategic plans for deploying MMDP services, and conducting service availability and quality surveys to identify service gaps and inform action. Countries are also supported to report burden and service data to WHO annually using the WHO epidemiological reporting form (EPIRF).

Implementation of country Sustainability Plans will facilitate continued mainstreaming of MMDP services by building capacity through pre-service training of health workers and removing financial barriers to services through the inclusion of services in national health insurance and universal health care packages. Act | West will facilitate countries' adoption of the revised WHO LF Monitoring and Evaluation guidelines through training and technical assistance. Over 50% of LF endemic districts in the 11 Act | West-supported countries have passed TAS3. To sustain these gains and ensure timely detection of recrudescence and response, Act | West will support countries in developing and piloting post-validation surveillance plans and scaling up to include all districts that have passed TAS3. Act | West will continue to create platforms for cross-country program learning and cross-border collaboration on MDAs and surveillance.

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