

Neglected People, Neglected Diseases

Towards Elimination of Lymphatic
Filariasis and Onchocerciasis in
Sub Saharan Africa

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Neglected tropical diseases (NTDs) affect more than 1bn of the poorest and most marginalised people globally.

The World Health Organisation (WHO) describes neglected tropical diseases (NTDs) as “ancient diseases of poverty that impose a devastating human, social and economic burden on more than 1 bn people worldwide, predominantly in tropical and subtropical areas among the most vulnerable, marginalised populations.”¹ NTDs are not neglected because they are insignificant, NTDs are neglected because they are insignificant to the affluent. Approximately 20 NTDs affect more than 1bn of the poorest and most marginalised people globally as a consequence of the environmental and socioeconomic conditions in which the poor live. Lymphatic filariasis (LF) and onchocerciasis are two NTDs targeted for global elimination.¹

The resources dedicated to NTDs are not proportionate to the global burden, which affects more than 12.6% of the world’s population. According to the WHO, NTD interventions are among the “best buys” in global public health, offering highly cost-effective interventions with far-reaching economic and social benefits.¹ It is estimated that for every US\$1 invested in preventive chemotherapy for NTDs, the net benefit to individuals could be up to US\$25

in avoided out-of-pocket payments and lost productivity.²

Among the reasons for the neglect or lack of global focus on NTDs is a lack of awareness of the diseases and the scale of their impact. “When you say neglected tropical diseases, people think that they are rare diseases when actually they are among the most frequent diseases in the world and affect millions of people.” says Dr Maria Rebollo Polo, lead Global Program for Onchocerciasis Elimination, World Health Organisation, adding that although NTDs result in high levels of morbidity and mortality the impact is mainly felt in the sub-Saharan Africa region.

Ending NTDs would be a high-impact and low-cost contribution to the grand convergence, aiding significant strides toward universal health coverage and social protection for the most vulnerable. “As these diseases are closely linked with poverty, they can be used as effective indicators to gauge the success of health systems in terms of equity,” says Dr Donald Bundy, professor of epidemiology and development, London School of Hygiene and Tropical Medicine.

Eliminating NTDs is explicitly embedded in Target 3.3 of the UN Sustainable Development

Goals for 2030 (SDGs), which aims to end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases by 2030.³ Programmes such as ESPEN and other disease-

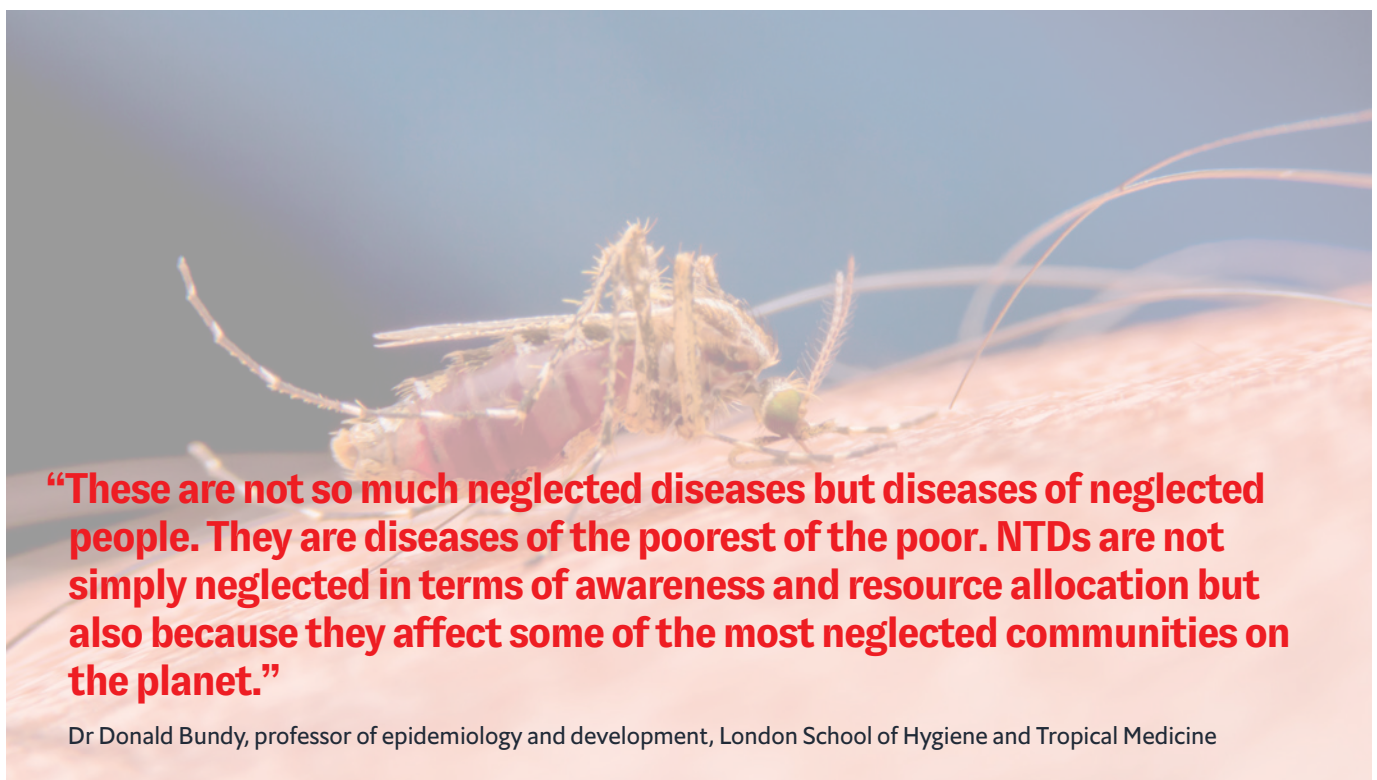
regional, and national health organisations, although covid-19, among other unforeseen circumstances, has disrupted the progress of these programmes and the implementation of interventions against NTDs.⁴

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specific elimination programmes have also been launched by the WHO and other global,

The covid-19 pandemic has disrupted the implementation of essential health services for NTDs, including supply chains for NTD health products, resulting in a decline in preventative chemotherapy treatment coverage. However, unforeseen circumstances such as the pandemic are not and will not be the only challenge: local epidemics, political instability, migration, consequences of climate change and antimicrobial resistance also complicate existing programmes and will require mitigation action by policymakers and public health authorities.¹



“These are not so much neglected diseases but diseases of neglected people. They are diseases of the poorest of the poor. NTDs are not simply neglected in terms of awareness and resource allocation but also because they affect some of the most neglected communities on the planet.”

Dr Donald Bundy, professor of epidemiology and development, London School of Hygiene and Tropical Medicine

Lymphatic filariasis and onchocerciasis are two of the 20 diseases considered in the WHO’s list of NTDs that are targeted for elimination.

Lymphatic filariasis (LF), or elephantitis, is a parasitic disease caused by three species of microscopic, thread-like worms and spreads from person to person by mosquito bites.⁵

While most infected people are asymptomatic and will never develop clinical symptoms, a small percentage of people will develop clinical manifestations years after being infected, in the form of lymphedema, caused by improper functioning of the lymph system that results in fluid collection and swelling. This swelling

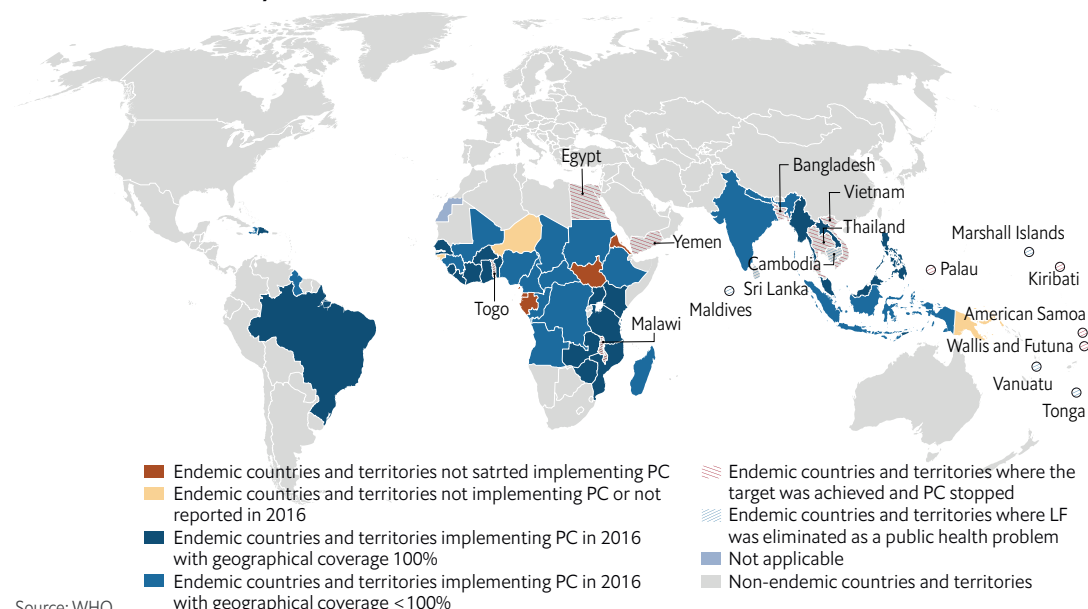
predominantly affects the legs but can also occur in the arms, breasts, and genitalia.⁵

Over 860m people in 50 countries are at risk of LF and require preventative chemotherapy to stop the spread of infection; 31 of these countries are in the African region. In 2018 it was estimated that over 51m people were infected with LF, representing a 74% decline since the start of the WHO’s Global Programme to Eliminate Lymphatic Filariasis in 2000.⁶ Despite the rapid decline in infected cases, only 24% of endemic countries met the WHO 2020 target of elimination of LF as a public health problem.¹ The WHO has set three indicators to measure progress toward its 2030 target for LF elimination:

Indicators	2023 Sub-target	2030 Target
Number of countries validated for elimination as a public health problem	23/72 (32%)	58/72 (81%)
Number of countries implementing post-MDA or post-validation surveillance	37/72 (51%)	72 (100%)
Population requiring MDA	330m	0

Source: World Health Organisation NTD Road Map (2021-2030)

Distribution of lymphatic filariasis and status of preventive chemotherapy (PC) in endemic countries, 2016



Source: WHO.

Onchocerciasis, or river blindness, is a parasitic disease caused by the filarial worm transmitted by repeated bites of infected blackflies that breed along fast-flowing rivers and streams.⁷

Infected people may show symptoms such as severe itching and various skin changes and may also develop eye lesions that can lead to visual impairment and permanent blindness.⁷

The Global Burden of Disease Study estimated in 2017 that at least 220m people

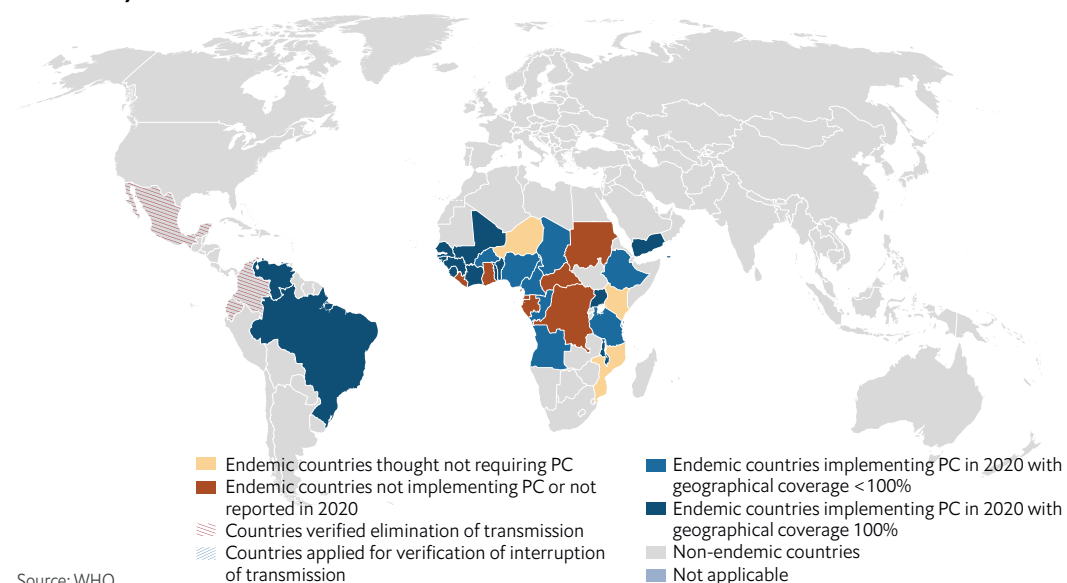
required preventive chemotherapy against Onchocerciasis, 14.6m of infected people already had skin disease and 1.2m had vision loss.⁴

Sub-Saharan Africa is disproportionately affected, with 99% of infected people living in 31 African countries.⁴ While four countries in the Americas and Yemen have eliminated transmission of onchocerciasis, no country in Africa has reached this stage.¹ The WHO has set four indicators to measure progress toward its 2030 target for onchocerciasis elimination:

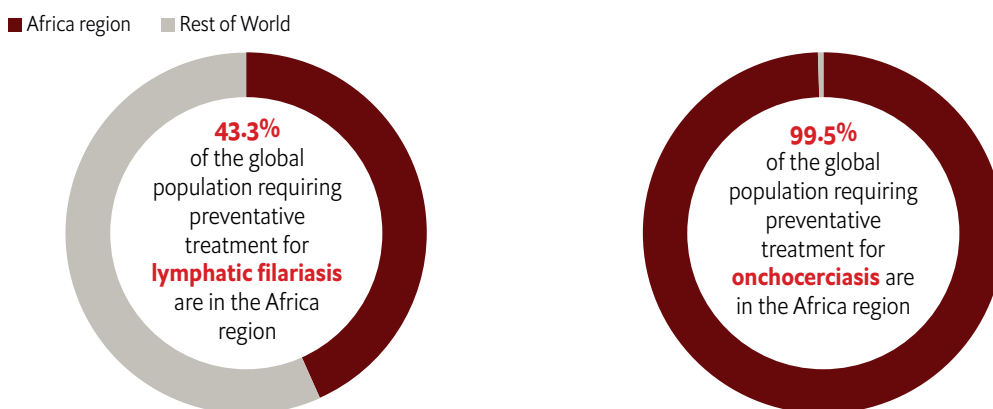
Indicators	2023 Sub-target	2030 Target
Number of countries verified for interruption of transmission	5	12
Number of countries that stopped MDA for ≥50% of population	10	>16
Number of countries that stopped MDA for 100% of population	6	>12

Source: World Health Organisation NTD Road Map (2021-2030)

Distribution of onchocerciasis and status of preventive chemotherapy in endemic countries, 2020



The African region has the highest collective burden of filariasis



Sources: Cano J, Basáñez M-G, O'Hanlon SJ, et al. Identifying co-endemic areas for major filarial infections in sub-Saharan Africa: seeking synergies and preventing severe adverse events during mass drug administration campaigns. *Parasites & Vectors*. 2018; 11(1): 70 (8).

The African Region has the highest collective burden of LF and onchocerciasis globally

It is estimated that over 250m people live in areas of LF and/or onchocerciasis transmission in Sub-Saharan Africa. Of these, 96m live in areas co-endemic for both LF and onchocerciasis (based on 2015 population estimates).⁸ This collective burden provides opportunities for integrated control programmes and elimination interventions, which also extend to other NTDs.

There are common core strategies to support the elimination of LF and onchocerciasis; they include:^{1, 4, 6}

- preventive chemotherapy in the form of mass drug administration (MDA), which involves administering an annual dose of medicines to the entire at-risk population;
- integration with water, sanitation and hygiene (WASH) programmes;
- vector control through integration with other mosquito-borne infectious diseases; and
- morbidity management through surgery, hygiene and skin care measures, and exercises

to manage the disease and prevent progression to more advanced stages.

Eliminating lymphatic filariasis and onchocerciasis can prevent unnecessary suffering and contribute to the reduction of poverty

The loop between poverty and NTD infection is an endless one, as each increases the prevalence of the other. Most sub-Saharan communities affected by NTDs are of low socioeconomic status with limited access to healthcare resources. NTDs pose a sizeable economic burden to individuals, families and communities. Previous studies conducted in sub-Saharan Africa demonstrate that the economic impacts of NTDs such as LF and onchocerciasis are likely to be underestimated owing to stigmatisation.

The marginalisation, impact on quality of life and other challenges faced by those living with LF and onchocerciasis cannot be overstated. The debilitating physical manifestations caused by infection with LF and onchocerciasis often force individuals to abandon work, leading to a loss in family income.



Many of the communities in which these diseases are endemic are reliant on agriculture production. Agriculture productivity is reduced when individuals cannot work due to physical disability, and geographical zones that should be the most productive, such as rivers, are also abandoned.⁴ “Large areas in Africa that were across rivers were abandoned because of the presence of river blindness,” says Dr Rebollo Polo. She adds that while, in theory, these should be the most productive areas “onchocerciasis is transmitted by flies that breed and grow in the rivers. So the entire population has to abandon the rivers or communities around the rivers because of the prominence of river blindness.”

The impact of climate change may actually contribute to the decline in infection rates of onchocerciasis. “Climate change is also having an impact, particularly for [onchocerciasis] where endemic areas are usually close to a body of water—rivers/lakes are disappearing due to climate change, which is bringing numbers down,” says Dr Bundy.

Issues with diagnosis, drug fatigue, national and local government commitment, sustainability of funding, and data collection are among the key barriers to elimination

Significant progress has been made towards eliminating LF and onchocerciasis in Sub-Saharan Africa over the past 20 years, largely owing to a combination of factors, including the development of single-dose treatment strategies and medicine donations. However, challenges to reaching elimination persist, including issues around diagnosis, drug fatigue within local populations, national and local government commitment, sustainability of funding, and fragmented data collection.^{4,9}

The drugs administered through MDA—the current core strategy to eliminate LF and onchocerciasis—require at least 12-15 years of annual treatment in endemic areas, corresponding with the lifespan of the adult worm.⁴ According to Dr Alexander Debrah, professor of parasitology and global health,

“The two main challenges for eliminating LF and [onchocerciasis] are that we don’t have a drug that can kill the adult worms, and we don’t have sensitive diagnostic tools to actually detect the parasites now that the infection has gone down drastically.”

Dr Alexander Debrah, professor of parasitology and global health, Kwame Nkrumah University of Science and Technology

Kwame Nkrumah University of Science and Technology, a university in Ghana, this has led to fatigue in many communities, leading some individuals to discontinue or decline annual treatment. “In the same community, people have been taking the drug for 15 or 20 years, and then there are others who have not been taking it at all,” says Dr Debrah. “When these people live in the same community, there will be reinfection. So we need social sciences [and] public health people to actually identify these people and then find out why they are not taking part in the MDA and then come out with what we can do to convince these people to take these drugs.”

Lessons learned from Togo, one of the first countries in Sub-Saharan Africa to eliminate LF as a public health problem (the second being Malawi in 2020), demonstrate that strong political commitment, integration with existing health interventions and collaboration among key stakeholders and partners are critical

success factors. Togo also implemented joint programmes for malaria and LF through grants provided by the Global Fund to Fight AIDS, Tuberculosis and Malaria.⁹

In Ethiopia, the integration of NTD programmes with community health workers has proven successful in reaching the most vulnerable populations and promoting prevention and health-seeking behaviours.¹⁰

As countries in Sub-Saharan Africa shift from control to elimination, effective surveillance strategies will become essential. “The NTD area has achieved momentum in recent decades, and numbers for both LF and oncho are falling,” says Dr Bundy. “We are within reach of elimination, and we will get there. There is a clear timetable for the elimination of these diseases. However, we need to get much better at data monitoring and integration and continue to move forward in a quantitative way.”

Considerations for elimination: a collaborative approach

While substantial advances have been made towards the elimination of onchocerciasis and LF in Sub-Saharan Africa, many endemic areas are still experiencing ongoing transmission. In order to achieve elimination in the region, different stakeholders will have a role to play to overcome political socio-economical, societal and geographical barriers:

- Government—must continue to create healthcare frameworks and policies that embed promotion and prevention of LF and onchocerciasis, prioritise access to and provision of care and treatment to the most vulnerable populations, and drive multi-sectoral collaborations and partnerships.
- Pharmaceutical companies—must continue not only to donate drugs, but also invest in research and development of effective and innovative diagnostics and medicines, and develop robust approaches to facilitate access.
- Global and public health organisations—must work closely with governments and not-for-profits to raise awareness through health promotion and education campaigns on prevention and compliance in treatment, develop ambitious but achievable roadmaps to elimination, and raise funds for high-impact projects in endemic geographies. In addition, these organisations must provide support and advocate the de-stigmatization of disfiguring NTDs such as LF and onchocerciasis.
- At-risk populations—must remain compliant in taking their treatments as per the prescribed regimens.

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- Dr Maria Rebollo Polo, lead Global Program for Onchocerciasis Elimination, World Health Organisation

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