



POLICY BRIEF

Enhanced mass drug administration coupled with vector control strategies can accelerate lymphatic filariasis elimination efforts in Tanzania

Key messages

- Lymphatic filariasis (LF) is a chronic mosquito-borne parasitic infection prevalent in many developing countries.
- Mass drug administration (MDA) is the main strategy for LF elimination in Tanzania.
- Implementation of MDA intervention in Tanzania for nearly two decades have not resulted in LF elimination in some settings.
- Evidence from Tanzania and elsewhere have shown the value of integrating MDA and vector control activities for LF elimination.
- To accelerate LF elimination efforts, we recommend inclusion of mosquito vector control and an enhanced MDA strategy aimed at increasing drug uptake targeting people that serve as reservoir of infection.
- The proposed mosquito vector control interventions can be easily implemented by community members and easily scaled-up to other areas.

Background

Lymphatic filariasis (LF), a disfiguring and disabling disease caused by a mosquito-borne parasitic infection, is a major public health problem in many developing countries. LF

impairs the lymphatic system and can lead to the abnormal enlargement of body parts, causing pain, severe disability and social stigma. In sub-Saharan Africa, LF is caused by *Wuchereria bancrofti* and it has been estimated that more than 45 million people are

affected in this region¹. A Global Programme to Eliminate Lymphatic Filariasis (GPELF) was launched in 2000, targeting elimination of LF in all endemic areas by using mass drug administration (MDA) strategy by 2020. MDA is aimed at clearing *W. bancrofti* worm burden in infected individuals and prevent onward transmission, a strategy commonly known as "transmission control". In Tanzania, it was estimated that 34 million people are at risk and 6 million people are affected by LF². In 2000, the Tanzania National Lymphatic Filariasis Elimination Programme (NLFEP) initiated the implementation of annual MDA with a combination of ivermectin and albendazole. The current National strategic master plan for neglected tropical diseases (NTD) control programme (July 2021-June 2026) target elimination of LF by 2030³. However, despite the effort to

deliver MDAs in Tanzania for nearly two decades, transmission is still ongoing along the coastal areas. The Tanzanian NTD master plan for 2021 - 2026 indicated that by 2021/2022, some villages in seven councils in the country still require MDA intervention³. Although effective, MDA intervention is faced by challenges including drug distribution inefficiencies, and systematic non-compliance leading to sub-optimal drug coverage⁴.

A study conducted in coastal areas of Tanga, Tanzania has shown that people infected with *W. bancrofti* microfilaraemia may remain infective for 26 years or longer⁵. In this regard, the population of infected individuals in the hot spot areas need to be identified and treated. On the other hand, the potential role of including vector control to complement MDA strategy to accelerate LF elimination have been well documented^{6,7}.

Thus, complementing the MDAs with mosquito vector control strategies will significantly accelerate LF elimination efforts in the remaining transmission hotspots. Of particular relevancy, a study conducted in Zanzibar that integrated MDA with vector control targeting *Culex quinquefasciatus* caused a reduction in mosquito infective bites per person per year and *W. bancrofti* microfilaria prevalence by 99.7% and 79.6%, respectively⁸. *Cx. quinquefasciatus* is the current main LF vector in coastal areas of Tanzania as previously documented^{9,10}.

Policy options

1. Delivering Enhanced MDA

Achieving and maintenance of high drug coverage is crucial so that infected individuals are treated to interrupt LF transmission. High drug coverages (minimum effective coverage 60%-70%) can be achieved by improving the current drug delivery strategy that specifically targets

reservoirs of LF infection. The cost of LF MDA is supported by donors and no additional costs will be needed in the implementation of the improved drug delivery strategy.

2. Integration of MDA and community-led vector control

The most appropriate means of controlling *Cx. quinquefasciatus* is targeting immature stages by application of larvicides and/or environmental management because adults are resistant to most insecticides. Integration of vector control to an enhanced MDA has the potential to suppress proliferation of *Cx. quinquefasciatus* and clearance of *W. bancrofti* in infected individuals, respectively. The proposed vector control can be easily scaled-up and replicated in other areas by community members with minimum level of training. Adding vector control is expected to increase costs in the existing intervention, but this will be

justified by reduction in nuisance biting and accelerate LF elimination efforts.

Implementation considerations

To accelerate LF elimination efforts in the remaining hot spot areas, we recommend the Ministry of Health, through the NTD Control Programme to implement interventions targeting *Cx. quinquefasciatus* in addition to an enhanced MDA strategy.

Cx. quinquefasciatus larval stages develop mainly in habitats containing organic polluted water such as septic tanks, cesspits, pit latrines, drainage canals and open puddles close to human habitations (peri domestic habitats). Due to the nature of

Cx. quinquefasciatus breeding habitats, involvement of household owners is key to success in the proposed intervention. In this regard, the communities in endemic

areas will contribute to the control by paying modest cost for larviciding, repair of broken sanitary structures, clearing and repair of broken drainage canals and environmental management (destroy few open habitats that support breeding). Expanded polystyrene beads are potential larvicide of choice for wet pit latrines. Cost sharing in the community has been applied successfully in waste management in urban areas. The cost sharing will make control of

Cx. quinquefasciatus sustainable and owned by the communities.

On the other hand, the NTD control programme should conduct community mobilization and advocacy to increase the community awareness on LF transmission and the rationale of MDA strategy. To increase efficiency in drug distribution, the NTD program should conduct training to the

community drug distributors and improve planning and delivering of MDA. In identified hot spot areas, the community members should be screened and infected individuals identified and treated to clear reservoir of the infection. MDA intervention will also target adult males, peasants/fishermen and recent immigrants, a population which has been reported to have low drug uptake in Tanzania and hence serve as reservoir of infection.

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