



## POLICY BRIEF

# Planned Settlements as a Tool for Elimination of Lymphatic Filariasis Vectors

### Key messages

- Lymphatic filariasis (LF) is a disease of public health concern that affect a number of people in middle and low income countries.
- Rapid urbanization and haphazard settlement with no proper drainage and sanitation facilities lead to increasing number of mosquito vectors.
- LF is transmitted by mosquitoes and *Culex quinquefasciatus* is among the potential vectors.
- In our study, 99% of mosquitoes collected from unplanned settlements were *C. quinquefasciatus*.
- The Ministry of land and human settlements is recommended to plan settlements according to the population growth demand, and if possible upgrade the existing settlements.

### Executive Summary

Lymphatic Filariasis (LF) is a disfiguring disease caused by thread like worms known as *Wuchereria bancrofti*. Common LF disease conditions are hydrocele and elephantiasis. LF is

transmitted by infected mosquitoes, causing acute and chronic symptoms. Globally 120 million people are at risk, about 40% of the burden is in Sub Saharan Africa (Hotez and Kamath, 2009) and within Tanzania,

over six million people are at risk (NTDCP unpublished).

*C. quinquefasciatus* is a potential vector mosquito species that transmit LF in both urban and rural areas (Rwegoshora et al., 2005). This mosquito species prefers to breed in polluted water and puddles. Uncovered pit latrines are most common form of onsite waste management especially in unplanned settlements and increase the risk of LF transmission. Context-specific approaches are required to reduce the abundance of this mosquito vector in LF endemic areas. Planned settlement should be taken into consideration in order to reduce the transmission and eliminate LF which is a public health concern.

## **Background**

LF is an infectious disease that spreads through mosquito bites. Some people have no symptoms while others may have inflammation, swelling or fever (Hotez and Kamath, 2009). Filariasis can lead to lymphedema (fluid retention)

or hydrocele (swelling in the scrotum). LF can be prevented by avoiding mosquito bites. It is common in tropical climates. The last decades experienced a considerable increase in urbanization in Sub-Saharan Africa, and it is estimated that over 50% of the population will live in urban areas by 2040 (UN Habitat, 2009). Rapid growth of cities combined with limited economic resources often result in informal settlements and slums with favorable conditions for proliferation of vectors of LF (Alirol et al., 2011). In Dar es Salaam, which has grown more than 40 times in population during the past 55 years from 129,000 in 1957 to 5.4 million in 2022 (Census, 2022). More than 65% of the residents in Dar es Salaam live in un-planned areas (UNHSP, 2008). In 2010, 62% of the urban population in Sub-Saharan Africa was living in slums, which are urban areas where households lack access to safe water, adequate sanitation, sufficient living space, durable housing and security of tenure (UN Habitat,

2011, UN-DESA, 2012). Such conditions provide favorable habitats for breeding of disease vectors and for transmission of many of the neglected tropical diseases, including LF which can have severe negative consequences for human health (Mott et al; 1990; Knudsen and Sloof, 1992; Utzinger and Keiser, 2006). Tanzania has also faced rapid urbanization, with much of it happening in Dar es Salaam, the commercial capital.

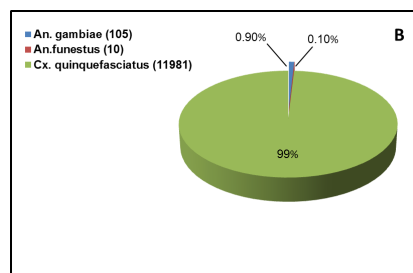
A cross sectional study was conducted by the National Institute for Medical Research in four wards in Ilala City Council. The CDC light traps were used to collect mosquitoes in households. The findings showed that over 99% of existing mosquitoes were *C. quinquefasciatus*. We found that unplanned settlements contribute significantly to breeding sites of *C. quinquefasciatus*.

### Policy gap

It is expected that the recommended policy will be

taken into consideration by the responsible Ministry. The implementation depends much on Ministries budget and priorities.

Evidence from similar studies conducted in different parts of the world shows that the proposed intervention might contribute significantly to the elimination of LF as a public health problem (Erlanger et al., 2005, Castro et al., 2010, Alirrol et al., 2011)



A chart showing number of different species of mosquito caught during the study time

### Policy options

1. Ministry of land and human settlements to be proactive in urban planning which is responsive to population growth and settlement demands.

2. Ministry of land and human settlements to create awareness on importance of building in planned areas.
3. Local governments to maintain the available sanitation and drainage facilities.

### **Implementation consideration**

1. Ministry to budget for and enforce settlement planning.
2. Ministry and stakeholders to campaign to community members on importance of living in planned settlements.

### **Competing interest**

The author declare that she has no competing interests.

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## Glossary

**CDC** Centre for Disease Control

**LF** Lymphatic Filariasis

**NTDCP** Neglected Tropical Diseases Control Programme

## About the Institute

The National Institute for Medical Research is a public health research institution established by the Act of Parliament No. 23 of 1979 with the mandate to carry out, co-ordinate, monitor and control health research in the United Republic of Tanzania.



