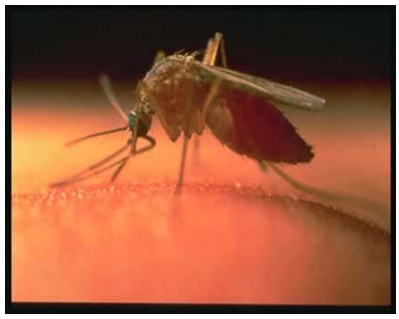
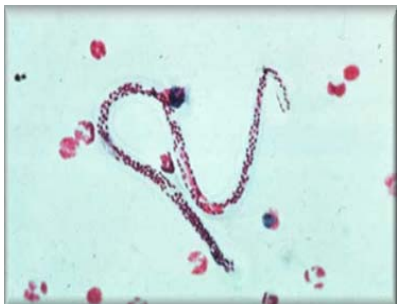
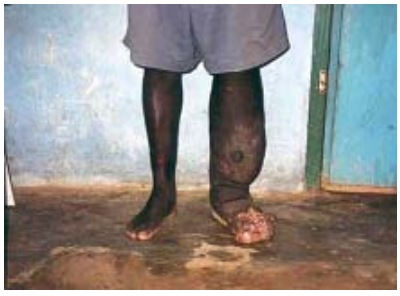
Tool Kit for the Elimination of Lymphatic Filariasis

A guide to implementation for health professionals in Indonesia

Tool Kit Handbook







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ABBREVIATIONS

ADL	Adenolymphangitis
CDC Unit	Communicable disease control unit within the health authority, also called P2M
CHW	Community health workers
DEC	Diethylcarbamazine
DHA	District Health Authority
DMO	District Medical Officer
ELF	Elimination of Lymphatic Filariasis
EPI	Expanded Programme for Immunisation
GAELF	Global Alliance for the Elimination of Lymphatic Filariasis
GFATM	Global Fund for AIDS, Tuberculosis and Malaria
GSK	GlaxoSmithKline
GTZ	German Agency for Technical Cooperation
HH	Household
ICT	Immuno-chromatographic test
IDP	Internally Displaced Persons
IDR	Indonesian Rupiah
IU	Implementation Unit
KAPB	Knowledge, Attitude, Practice and Behaviour Survey
LF	Lymphatic Filariasis
LQA	Lot Quality Assurance
MDA	Mass Drug Administration
MF	Microfilaria
Mfd	Microfilaria density
Mf %	Microfilaraemia prevalence
MoH	Ministry of Health – or Department of Health at the central level in Jakarta
MUI	*Majelis Ulama Indonesia* (National Islamic Organisation in Indonesia)
NGO	non-governmental organisation
NTT	East Nusa Tenggara province
P2M	Pemberantasaan Penyakit Menular or Disease Control Unit
PHC	Primary Health Centre
POSKO	Health or general information post

PKK	Indonesian women's group
PKM	*Penyuluhan Kesehatan Masyarakat* or Health Promotion Unit
PPS	Population Proportionate Sampling
RT	Neighbourhood
SISKES	*Sistem Kesehatan* / GTZ Project for assistance to the District Health Authority following decentralisation
TDR	Research and Training in Tropical Diseases
TOT	Training of Trainers
TPE	*Tenaga Pembantu Eliminasi* / Volunteer drug distributor
TPP	*Tenaga Pembantu Pengobatan* / Volunteer drug distributor
UI	Universitas Indonesia
WHO	World Health Organisation

FOREWORD & ACKNOWLEDGEMENTS

Lymphatic filariasis (LF) remains a serious public health challenge in Indonesia and our neighbouring countries. The disease is still particularly prevalent in Aceh and NTT provinces of our country despite continuous efforts in elimination over the last few years.
The combined efforts of central, provincial and district authorities supported by the GTZ Technical Assistance Team of SISKES NTT have led to a strengthening of our LF elimination campaign in recent years. For instance, the newly introduced mass drug administration is slowly showing its impact with constantly decreasing microfilaria rates in selected sentinel sites in Alor island. The LF awareness of Alor's rural population is increasing and the district's health services are on high alert. Specialised surgery on patients with scrotal oedema has been successfully performed in the district hospital.

The publishing and dissemination of the new LF Took Kit and this Handbook are further milestones in our elimination efforts and I would like to thank all partners involved for their concerted efforts in the production of this important document.
Particular gratitude goes to Dr. I Nengah Darna and his team in the Indonesian Ministry of Health in Jakarta for their continuous support, guidance and inputs.
We are grateful to SISKES Project's GTZ Technical Assistance Team and their consultant Alison Krentel for giving leadership to the entire process involved in the production of this document. Without their guidance and assistance it would have been extremely difficult for us to complete such a challenging task in the given timeframe. We also would like to thank WHO for their ongoing support and their generosity in making available relevant materials.
Deep appreciation goes to all Alor and Pantar island based partners involved in our recent activities. A large number of health staff has been associated with this exercise along with their patients. It is difficult to singly out such persons for acknowledging their contributions. We therefore collectively thank them and all other colleagues involved as well as the GTZ Technical Assistance Team for enabling us to publish this document.
I wish that this document will inspire all those working in LF and will ultimately serve all those individuals still suffering from this ancient disease.

Kupang, 29th January 2005

On behalf of The Head of NTT Provincial Health Officer,
Head of Communicable Disease Control Section
Provincial Health Office NTT

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INTRODUCTION

Background

Over the last four years, the German Agency for Technical Cooperation (GTZ) SISKES Project, University of Indonesia, Berhnard-Nocht Institute Hamburg, the governmental health authorities (specifically the Disease Control and Health Promotion Units) from Alor District and East Nusa Tenggara Province (NTT) and the Indonesian Department of Health have worked together to conduct innovative operational research which has provided useful and relevant information for the national elimination of lymphatic filariasis (ELF) programme. Among the various studies and activities conducted include the following: a hospital based clinical trial on the use of diethylcarbamazine (DEC) and albendazole for *Brugia timori* and *Wuchereria bancrofti* infections; a community based trial on use of DEC and albendazole for *B. timori* infections based on the recommended doses for mass drug administration; medical anthropological studies on the local perception of the disease in one district; development of a pilot mass drug administration (MDA) and health promotion campaign; and regular monitoring knowledge surveys. These combined activities have been recognised both locally and nationally as contributing to the development of the LF elimination programme within Indonesia.

Based on these experiences, district health authorities in eastern Indonesia, who having heard of these experiences, wanted to implement similar programmes in their own districts. This enthusiasm served as an impetus to combine the operational research and field experience in NTT province with Indonesian ELF programme guidelines and objectives in order to develop a Tool Kit which would serve as a guide for beginning and implementing LF elimination at the district level. The Tool Kit is designed to be practical and easy to use. Its contents have been conceived by staff from the Department of Health Lymphatic Filariasis Elimination Unit, staff from the NTT Provincial Health Department Health Promotion Unit and Disease Control Unit, the Lymphatic Filariasis Elimination Section from the Health Department in the District of Alor, GTZ technical staff and an international consultant. The team relied heavily on existing guidelines from the World Health Organisation (WHO), namely “Preparing and Implementing a National Plan to Eliminate Lymphatic Filariasis” and “Monitoring and Epidemiological Assessment of the programme to eliminate Lymphatic Filariasis at the level of the Implementation Unit” as well as the Indonesian Department of Health Series Books 1 – 7 outlining the LF Elimination

programme guidelines for Indonesia. Additional sources included "Basic Lymphoedema Management"[1] and "New Hope For People with Lymphedema"[2].

Background of the LF Elimination Campaign

Why are we concerned about eliminating lymphatic filariasis?

Lymphatic filariasis (LF) is one of the oldest and most debilitating diseases the world has known. Ancient medical texts from China, India and Persia mention the disease; while Egyptian ancient statues and Japanese wood-block illustrations show persons disfigured by the chronic manifestations of lymphatic filariasis.[3] For centuries, people have suffered from the acute and chronic symptoms of LF.

Lymphatic filariasis has been identified as the second leading cause of permanent and long-term disability in the world.[4] In Indonesia, those infected with LF can be bedridden for up to five weeks per year due to acute symptoms of filarial infection, representing 11% of productive working time. For poorer families, total economic loss due to disability with LF is equivalent to 67% of the total monthly household expenditure. The average economic loss per LF case is 735.380,- Rupiah[5] each year (including treatment and drugs, economic loss due to lost productivity, loss of productive time for those caring for chronic cases).[6] In Indonesia, LF causes major economic loss to the infected individual and the family. There is also a significant psychological effect of this disease. Those persons living with chronic manifestations may suffer alienation from their family and their communities; they may have difficulties finding a husband or wife and LF can inhibit their ability to have children.

With the introduction of the Global LF Elimination Campaign in 1997, the world community is committed to eliminate this disease by 2020. Since LF affects primarily those in poverty, the elimination of this disease will greatly improve the economic potential for those countries where LF is endemic. Elimination requires commitment from national and local governments and communities to comply with the mass drug administration proposed

[1] Dreyer G, Addiss D, Dreyer P and Norões J (2002) *Basic Lymphoedema Management: Treatment and Prevention of Problem Associated with Lymphatic Filariasis.* Hollis NH: Hollis Publishing Company.
[2] Dreyer G. *New Hope For People with Lymphedema.* NGO Amaury Coutinho and the Division of Parasitic Diseases, CDC Atlanta.
[3] Dean M. (2001) *Lymphatic Filariasis: The Quest to Eliminate a 4000-Year-Old Disease.* Hollis NH: Hollis Publishing Company.
[4] World Health Organization (1995) World Health Report "Bridging the Gap" Geneva.
[5] Equals about $ 81 USD (1 USD=9,129 Rupiah)
[6] Gani A (2000) Draft: Laporan Penelitian Analisis Ekonomi Filariasis. Ditjen PPM & PLP, Direktorat PP-BB, Departement Kesehatan.

by the Global LF Elimination programme. Elimination of LF is possible and feasible – so let's join the international and national efforts and eliminate it from your district too!

What is lymphatic filariasis?

Lymphatic filariasis is a parasitic worm transmitted by mosquitoes that affects and disturbs the lymphatic system of the human body. When the female mosquito bites a human, the infective larvae (stage L3) drop down from the mosquito through the proboscis and enter into the human through the bite wound of the mosquito. Once inside the human, these larvae migrate to the lymphatic system of the human, that part of the body that provides protection against infection and disease. In the lymph system, it takes the larvae between 3 – 12 months to mature into adult worms. The male and female adult worms mate in nests located in the lymph system. Each female adult worm produces millions of microfilariae (MF) during the course of her lifetime of 7 years or more. The presence of these adult worms and the MF they produce cause damage to the lymph system by interrupting the passage of lymph fluid and the circulation of immune cells. Consequentially, the fluid collects and causes lymphoedema or swelling in the legs, arms, breasts and genitals. When the adult worm dies, it further obstructs the drainage of the lymph system and permanently disrupts the lymph system.

The millions of MF produced by the adult worms migrate to the peripheral blood at night, as is the case in nocturnally periodic species found in Indonesia (*B. Timori* and *W. Bancrofti)*. These MF are taken up by the biting female mosquito where they take 10-20 days to develop into infective larvae (L3). Since mosquitoes only live between 7 – 21 days, depending on weather and predators, many MF will never become infective larvae (L3) and many who do become infective larvae will not make it to a human host. For this reason, the transmission of LF is considered to be inefficient since MF survival is only 50:50 from MF until the L3 stage.[7]

Global LF Elimination Campaign

The Global Alliance to Eliminate Lymphatic Filariasis (GAELF) campaign strives to eliminate lymphatic filariasis as a public health problem globally by 2020. Lymphatic filariasis (LF) is endemic in over 80 countries worldwide, including the Indonesian archipelago. It is estimated that a billion people worldwide are living at risk of LF infection with an estimated 120 million already infected. The World Health Assembly adopted in

[7] Dean 2001.

1997 the resolution to eliminate LF by proposing a two pillared strategy: to interrupt transmission and to reduce the effects of disability caused by chronic manifestations of the disease.

The LF elimination programme intends to interrupt transmission of the worm through the drastic reduction of microfilaria in the human body, thus reducing the transmission potential in mosquitoes. The drugs proposed for this treatment are low cost or free for countries which have joined the elimination campaign. There are two methods for drug distribution: mass drug administration (MDA) of two drugs for a minimal of five consecutive years to the entire eligible population or MDA using diethylcarbamazine (DEC) -fortified cooking salt. In the Indonesian programme, the national guidelines have decided to use MDA with two drugs: diethylcarbamazine and albendazole (recommended in areas where onchocerciasis is not co-endemic, as is the case in Indonesia). Indonesia is dominated with *Brugia timori* and *Brugia malayi* infections and side effects in persons with either of these two infections are more likely to occur than in those with bancroftian filariasis; so, as a result, paracetamol is co-administered with DEC and albendazole to reduce possible side effects. These drugs are safe for use in the general population with the exception of pregnant women, children under the age of 2 years and those who are severely ill. The Indonesian national programme excludes breastfeeding women in the MDA as well, differing from the international guidelines. Because this is a Tool Kit for Indonesia, breastfeeding women will be excluded from the MDA, however it should be noted that there may be future revisions to this policy.

In order to prevent and to reduce the disability caused by LF, the programme has two primary objectives:

1. To prevent new infections through mass drug administration (MDA);
2. To reduce the permanent disability caused by the disease by encouraging patients and their families to practice home-based care case management and to provide surgery for hydrocele where feasible within the health system.

The LF Elimination programme in Indonesia

Lymphatic filariasis was first reported in Indonesia in 1889[8]. There are three types of filarial worms present in Indonesia:

- *Wuchereria bancrofti*
- *Brugia malayi*
- *Brugia timori*

From these three types of filarial worms, *B. malayi* has the widest distribution in Indonesia. *B. timori* is only found in eastern Indonesia; namely Timor Island, Flores, Rote, Alor and a few other small islands in East Nusa Tenggara province.

In Indonesia, there are 23 species of mosquitoes within 5 genus types which transmit the disease. All species are nocturnal, meaning that the microfilariae circulate at a peak between 12 – 2 am. During the day, microfilariae will not be visible in the peripheral blood (blood taken in finger-prick survey) as the microfilariae (MF) stay in the respiratory organs.

According to MF rates from 2001, the provinces of Papua, Aceh, Maluku and NTT have the highest MF rates in Indonesia (ranging from 6.9 – 11.6). In a Rapid Mapping survey conducted in 2000 by the Department of Health, Aceh province reported 1908 chronic cases of LF and 1706 chronic cases in NTT province. These two provinces represent the largest reported concentration of chronic cases in Indonesia.[9]

History of LF elimination in Indonesia

Since lymphatic filariasis was discovered in Indonesia, there have been advances in some endemic areas of the country in eliminating the disease. Some of these advances can be attributed to medical and health services interventions (DEC administration), while others are purely the result of the disappearance of the vector due to environmental factors (urbanisation, cultivation of swamplands, etc.). In the past, the health services used a dosage of 5 mg/kg body weight of DEC for 10 days. Following this protocol, the authorities

[8] Oemijati S (1999) "Current Situation of Filariasis in Indonesia and its control." WHO Indonesia internal paper.

[9] It should be noted, however, that less than 50% of the questionnaires were returned to the Department of Health; thus these are reported figures.

revised to use of a lower dosage of DEC (100 mg once per week) for a period of 40 weeks. At this time, many people in the community did not begin the required treatment due to low understanding of the drugs' importance; while those who began the treatment, often experienced side effects which were frightening and resulted in them stopping the treatment before the 40 weeks were terminated. These past experiences with low dose treatments resulted in low compliance and sometimes traumatised people at the village level. It is largely known that patients with brugian filariasis suffer more acute side effects from treatment than those with bancroftian infections.[10] Indonesia has a large percentage of brugian infections throughout the country.

Some landmarks in the Indonesian LF programme:

1. National Control Programme began in 1970 and used the standard low dose of 5 mg/kg body weight and encountered side effects in patients.[11]
2. 10 ***B. malayi*** patients treated with Hetrazan: all patients experienced side effects[12].
3. Treatment using DEC in villages in South Sulawesi, on 100 patients with ***B. malayi*** infection, 88% experienced side effects.[13,14]
4. A trial in Karakuak, West Flores, NTT province where ***B. timori*** is endemic, dosage used 3x 100mg for treatment of a village with a population less than 100. Following day, it was reported that nearly everyone was unable to get up from their beds, cook or bathe due to fever.[15]
5. On Buru Island, low dosage treatment was used to treat those in a village with an MF rate of 43%. The team from the central level was nearly killed by these villagers

[10] Supali T, Ismid IS, Rueckert P & Fischer P (2002a) Treatment of *Brugia timori* and *Wuchereria bancrofti* infections in Indonesia using DEC or a combination of DEC and Albendazole: adverse reactions and short-term effects on microfilariae. *Tropical Medicine and International Health,* 7**,** 894-901.
[11] Oemijati, 1999.
[12] Partono F, Hudojo, Oemijati S, Noor N, Borahima & Cross JH (1972) Malayan filariasis in Margolembo, South Sulawesi, Indonesia. *Southeast Asian Journal of Tropical Medicine and Public Health* 3: 357.
[13] Putrali J & Caleb JM (1974) Mass treatment of filariasis in Sidondo, Central Sulawesi. *Bulletin Penelitian Kesehatan* 2:13-16.
[14] Putrali J, Kaleb YM, Van Peenen PFD & Saroso JS (1975) Mass treatment of Malayan filariasis in the Gumbassa irrigation area of Central Sulawesi. *Southeast Asian Journal of Tropical Medicine and Public Health* 6:206-210.
[15] Partono F, Purnomo, Soewarta A & Oemijati S (1984) Low dosage diethylcarbamazine administered by villagers for the control of timorian filariasis. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 78:370-2.

six months later when they returned. The villagers complained that they could not work for two months after the treatment due to fever, adenolymphangitis (ADL).[16]

6. In Palu valley, Central Sulawesi, dosage used of 100 mg weekly for 30 weeks, followed by daily dosage of 100 mg given for a period of 10 days. MF rate decreased from 19% to 2% in one year. [17]

7. In Nunkolo village (District of Timor Tengah Selatan), NTT Province, the health authorities tried to administer DEC salt to the general population. MF rate decrease from 14% to 2% in one year. This attempt however was not continued since there was ongoing local production of salt and the cost of DEC was too expensive to sustain the project.

8. A GTZ assisted study with University of Indonesia and Berhnard Nocht Institute is the first systematic research to assess the effects of single dose treatment using DEC and Albendazole on *Brugia timori*. Final results of the cohort will be available at the end of 2005; however preliminary results show that the killing effect of the drug combination is equally efficient in *B. timori.* The geometric mean mf count decreased on day 7 after treatment from 257 MF/ml to 8 MF/ml in *B. timori* infected patients treated with DEC and Albendazole. [18]

Low dosage treatments in Indonesia have not resulted in the elimination of LF over the last 34 years; therefore a single dose regimen, according to the new WHO guidelines introduced in 1999, has been adopted by the national ELF programme in order to increase compliance and simplify distribution.

Plans and objectives

The Indonesian national programme has been in existence since 1970. The Ministry of Health estimates that there are 150 million people living at risk of LF infection. The first round of mass drug administration (MDA) according to the new GAELF guidelines began on a national level in 2002 and treated an average of 79% (range of 59-96.5%) of an at risk population of over 250,000 people.[19]

[16] Oemijati, 1999.
[17] Ibid.
[18] Supali et al, 2002a.
[19] WHO (2003) Global Programme to Eliminate Lymphatic Filariasis: Annual Report on Lymphatic Filariasis 2002. Geneva, World Health Organization.

Currently the Indonesian ELF programme follows the international recommendations to interrupt transmission of the worm by drastically reducing the microfilarial load in the human body, thereby reducing the transmission potential in mosquitoes. The main objective of the programme is to reduce the MF rate in Indonesia to below 1%. In order to do this, the ELF programme uses the recommended two pillared approach for elimination of LF: mass drug administration, using a combination of DEC and albendazole in Indonesia where onchocerciasis is not co-endemic and the reduction of disability for those suffering from chronic symptoms of LF.

The national programme plans to treat 60 million persons by 2010.

Purpose of the tool kit

The purpose of this tool kit is to provide a practical and comprehensive guide to LF elimination at the district level. It should provide background information, instructions on how to conduct baseline surveys, reporting mechanisms, practical tools for advocacy and fundraising at the district level, training guidelines, procedures for socialisation at the community level and the organisation of MDA, monitoring procedures and evaluation of cessation of LF transmission.

This kit will serve as a supplement to the central and provincial level training programmes and as a guideline for training at the district level. Modifications to the technical aspects will be provided in future editions, subject to changes and to the approval of the central level and working team.

Target audience

This tool kit targets district health authority staff (in particular, the District Medical Officer, head of the district disease control unit, LF elimination, pharmacy, health services and health promotion) and provincial LF programme managers. Within the decentralised system, provincial LF programme managers provide technical guidance, training, supervision and coordination for the district health teams. Ideally, there should be one person at the provincial level whose responsibility is LF elimination and who has a sufficient budget to visit the districts within the province who have begun or who intend to begin the elimination programme.

At the district level, this tool kit will provide the elimination team a detailed explanation of the steps which should be undertaken to eliminate the disease. There should be one person at the district level who is responsible for the coordination and supervision of the LF programme in their district and who should involve those other relevant health staff members (pharmacy, health promotion, health services) in the technical aspects and implementation of the programme.

Since LF elimination requires commitment from local government and community for a minimal period of 5 years, it is essential from the beginning that persons responsible at both the province and district levels are committed to remaining in their posts throughout the course of the programme. Frequent changes to personnel may result in delays and extra costs to the programme. This tool kit will provide a guide of standards and lessons learnt for these persons during the course of their tenure as managers of the LF programme, either at district or provincial level. It will also provide a guideline for mentoring visits in between districts.

The central authorities are also a target audience for this Tool Kit. The guidelines outlined here represent the the most recently updated standards accepted for LF elimination in Indonesia. This Tool Kit will also assist in TOT (Training of Trainers) workshops for provincial authorities.

Objectives of the tool kit

The objectives of the tool kit are as follows:

1. To outline the necessary steps in the LF elimination programme in simple, practical and relevant terms;
2. To standardise the technical guidelines for all districts and provinces;
3. To encourage multisectoral teamwork within the district health teams;
4. To provide a guideline for technical training from the central and provincial health teams;
5. To combine all necessary reporting and monitoring forms into one CD; and
6. To make available the necessary tools to conduct advocacy and to develop local specific promotional materials.

How to use this Tool Kit

This tool kit begins each chapter with the objectives for that chapter and what you should be able to understand and perform by the end of the chapter. In some sections, there will be inserted grey boxes entitled "Learn from field experiences…" which will give you concrete examples from programmes throughout Indonesia. Each chapter will conclude with a list of those important points to remember. Wherever you see this symbol "☮" there are relevant materials included in the accompanying CD.

Accompanying CD and materials

The accompanying CD includes the following materials:

- All relevant reporting and monitoring forms which are approved by the Department of Health, LF Elimination Section
- Laboratory Bench Aids for the diagnosis of filarial infections (WHO – Geneva)[20]
- Training module for district level health staff (2 days)
- Training module for drug distributors (1 day)
- Drawings specific to LF which can be used in promotional materials
- Photographs of LF (worm, mosquitoes, chronic manifestations of the disease)
- Copy of promotional materials (brochure, flipchart, poster, sticker) developed through assistance of GTZ project with health authority partners from the NTT Provincial Authority and Alor District.
- Slides to assist with advocacy to the District Government
- Report on economic burden of LF (Professor Ascobat Gani)
- Sample timeline
- Sample budget

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Chapter 1: PREPARATION

This chapter outlines the steps necessary for preparation of the LF elimination programme at the district level. If you are interested in beginning LF elimination in your district, then it is assumed that you suspect there to be LF transmission in your area due to information on the existence of chronic cases of the disease or to previous reports of MF rates. This chapter will guide you in determining if there is ongoing transmission and if your district can be considered to be endemic (MF rate >1%) thus qualifying it for mass drug administration (MDA).

By the end of this chapter, you will be able to:

1. **Understand the definition and importance of the Implementation Unit (IU) and determine which approach to the IU you will use;**
2. **Conduct baseline surveys in your district to know the number of chronic cases and the MF rates in 4 villages and map the results;**
3. **Report the findings of the baseline survey to the appropriate persons;**
4. **Conduct preliminary advocacy to the district government and secure their initial support for LF elimination in your district;**
5. **Report the baseline findings to the provincial and central level authorities;**
6. **Prepare technical training for the health staff in your district.**

1 Responsibilities of the government at three levels

1.1 National programme level at the Department of Health, Jakarta

The national programme is responsible for the following tasks:

- Development and maintenance of the national technical guidelines;
- Training of trainers and training of provincial and district health staff;
- Monitoring and evaluation;
- Recording and Reporting;
- Liaison with international bodies (WHO, GSK, etc.);
- Procurement of Albendazole from WHO;
- Provision of drugs for management of side effects; and
- Direction or supervision of national research projects related to LF.

1.2 Provincial level

The provincial level is responsible for coordinating the districts and ensuring that they are following the national standards for the elimination campaign. In particular, they are responsible for:

- On the job training for the baseline survey;
- 6 days training at the district level for district health staff;
- Monitoring;
- Assistance with logistics and drug distribution;
- Evaluation; and
- Development of health promotion materials (recommended).

It is also important to have a multisectoral body at the provincial level that can review and advise the national and provincial programmes.

1.3 District Level

The district level responsibilities are outlined in this Tool Kit in detail from the baseline survey to preparation, training, mass drug administration, chronic case management, monitoring and evaluation.

2 Starting up

2.1 General context

Before beginning LF elimination, it is important that you and your team understand the extent to which LF occurs in your district area. Based on the baseline information you will collect in this chapter, you should be able to determine if you need to conduct mass drug administration according to national and international guidelines. If your district is found out to be endemic for LF, these beginning steps are important since they will determine the costs as well as the duration of the elimination campaign. The general context includes the determination of the IU size and the conduct of baseline information which will give you an idea about the extent of LF in certain areas of your district.

2.2 How to assess LF in your district? (Baseline information)

In order to assess LF in your district, there are three steps which you must do and which are outlined here:

1. Review of existing information;
2. Rapid survey of chronic cases;
3. Blood smear survey to assess MF rate.

The information gathered at this stage, providing your district is endemic for LF, will be the baseline information by which monitoring and evaluation will be measured.

2.2.1 Review existing information on the distribution of LF in your district

Before conducting any surveys in your area, it is important to review existing information concerning LF in your district. Some possible sources might be:

- NGO reports or health interventions;
- Medical research;
- Historical reports;
- Medical and health authority records;
- Well-known local names for the disease.

Learn from field experience…

In Alor District, the District Health Authority used existing information from research conducted by the University of Indonesia, BNI Hamburg and SISKES on LF prevalence in two village areas: Mainang and Wolwal. By using the research team's data, the district saved both time and resources in determining the extent to which LF existed in their district: in Mainang up to 27% of persons were found to be MF positive. (Supali et al. 2001)

2.2.2 Rapid survey from the District to Puskesmas working areas

In order to assess the presence of LF in your district, you will first need to conduct a rapid survey on the presence of chronic cases of LF in your health area. The Rapid Survey ☮ will be distributed by the District Health Team to the health centres. The health centres will work together with key persons (teachers, village leaders, religious leaders and community health workers) to identify how many persons suffer from the chronic signs of LF infection, namely elephantiasis and hydrocele. For each village, the number of cases reported should be calculated for hydrocele and elephantiasis. There is no need to record the name of the persons. It is useful to record the age of the person, since if there are primarily older persons with lymphoedema, then it is possible that there is no longer ongoing transmission. (The presence of persons with elephantiasis suggests that this area could have been endemic for LF at one time or currently is.)

Following receipt of this survey, the District Health Team will begin to have an idea of how many chronic cases are present in their health area. The results of the Rapid Survey should be compiled into one report and sent to both the province and national levels for reporting. Based on these results, the provincial team will need to send personnel to the district level to conduct an on-the-job training on the correct methodology for the blood survey to check the MF rates.

2.2.3 On-the-job training and blood survey

As mentioned in point 2.2.2., the provincial team will send health staff to train and work together with the District Health Team in conducting the blood survey necessary to test the MF rate in the population. The participants of the District team should include laboratory, disease control and health promotion staff. The team should review the results of the Rapid Survey and choose the four villages where there is the highest number of chronic cases reported as the locations for the blood surveys. Normally in those areas where there is hydrocele or elephantiasis present, it is expected that there is greater than 5% microfilaraemia-positive. In each of these four villages, 500 persons should be screened using 20 µl of finger-prick blood which should be dried on a slide, stained and examined under a microscope according to the standard procedure. (See Bench Aids ✇ and Department of Health guidelines). Because all three species found in Indonesia are nocturnal, blood must be collected between 12 – 2 am in order to be able to see the circulating microfilariae (MF). Night blood collection requires increased operational support from the District Health Authority. It also requires that people in the villages understand why they are giving blood. The health promotion unit should also participate in the night blood collection so that there is adequate socialisation to the village leaders and to the community members themselves. Without this communication component, it may be difficult for health staff to test the 500 persons required in each village. Socialisation should occur one day prior to the blood smear survey.

If the results of the MF survey show ≥ 1% microfilaraemia positive, than your district is endemic for LF transmission and qualifies for mass drug administration according to national and international guidelines.

2.2.4 Combining the results

Once you have results from the two surveys, you should combine them into the following table for reporting.

Village	Chronic symptoms of LF		MF rate	Total population
	Hydrocele	Lymphoedema		
1				
2				
3				
4				

If the mf rate in one of these villages is above or equal to 1% then your area is endemic for LF and qualifies for mass drug administration (MDA).

2.2.5 Mapping

Once the two surveys (Rapid Survey and Blood Smear Survey) are completed, then the District Health Team should map the results for the district. The mapping should be done for both clinical cases and for MF rate detected by the blood survey. Wherever possible, these results should be combined with existing health data mapping in order to better integrate LF elimination with existing disease control and public health activities.

The district map should differentiate between reported clinical cases and the MF rate for the four villages where the blood smears were taken. The map should also include previous information on LF which may have been collected in the initial assessment (see 1.2.1.). Those areas which are confirmed to have either positive MF rate or the existence of chronic cases should be marked red. Those areas where it seems that there is no ongoing LF transmission should be marked green; and those areas which are still unknown should be marked grey. It is not necessary to determine for those grey areas if they are positive for LF or not since you have already determined in the blood smear surveys that your district is endemic for LF and thereby it qualifies for MDA.

The map is essential to know which areas you will need to concentrate your efforts for disability reduction for chronic cases. For those districts which will adopt an accelerated step-by-step MDA, they will be able to identify which sub-districts are red and have the highest transmission so that they can begin the MDA first there and then accelerate to other sub-districts from there. The map will also assist the district when in the final stages of

evaluation it will be necessary to test those areas which during the baseline surveys had the highest MF rates.

Once the mapping has been completed of the MF surveys and the district has been declared endemic (LF prevalence ≥ 1), then the entire district is considered to be at risk for LF transmission.

2.3 Determination of the Implementation Unit (IU)

2.3.1 Why IU is important and what it means?

The Implementation Unit (IU) is defined as the designated level of the administrative unit in a country, for which the decisions to administer to the entire population with anti-filarial drugs is taken if the IU is determined to have endemic transmission.

The IU in Indonesia is the district level; except in those areas where LF distribution is much focalised, in which case the IU may be a smaller unit, like the sub-district. However, since generally the district is the IU, we will continue to refer to the IU as the district throughout this document. Therefore, the District Medical Officer and the District Health Authority will be responsible for the implementation of the programme for the entire district. The Indonesian programme has determined two possibilities for mass drug administration at the implementation unit (IU) level:

1. All-at-once MDA for entire IU: If the district is capable and has the finances, they can begin mass drug administration to treat all individuals regardless of infection status[21], across the whole IU or district at the same time. The benefits of this approach are that training and socialisation can be done at one time and the entire MDA campaign across the district will last for a five to six year period. This approach is particularly appropriate for those districts whose populations are small. It is recommended to use this approach for the following reasons:
    a. Socialisation is maximised and people are aware of the MDA across the district;
    b. Monitoring and evaluation guidelines are designed for the district as IU;
    c. Cheaper since it lasts for 5-6 year period;

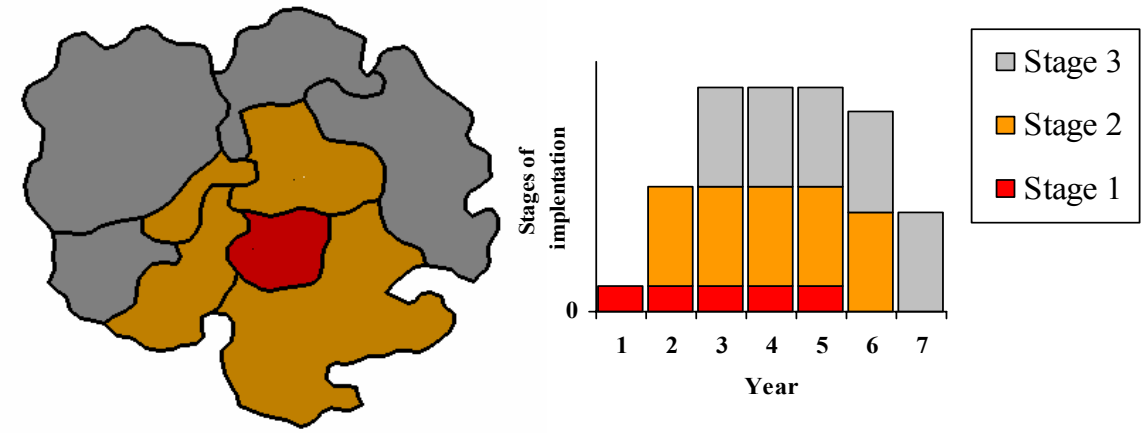
[21] With the exception of those who are pregnant/breastfeeding, under 2 years or severely ill. This will be discussed in detail in subsequent chapters.

d. Epidemiologically, this is the best option: to reduce transmission across the whole IU at once;
e. Logistics and drug procurement are easier.

2. Accelerated step-by-step MDA: If the population in the district is large or if funding from the district government is limited, it is recommended to use the district as the IU for monitoring and reporting purposes; however the implementation will begin in the sub-district with highest MF rate and then adjacent sub-districts will be added with each subsequent round. All sub-districts should be covered within 5 years of the start of the implementation. The following diagram outlines the process with red representing the areas of high MF rates, and the 2nd and 3rd stages introduced around the red or first area. The benefit of this approach is that if funding is limited in the beginning of the programme, then MDA can begin anyway. Another benefit is that if the population is very large in individual sub-districts, then efforts can be more concentrated from the district level in supervision, logistics and coordination at the sub-district level.

Major drawbacks to this approach include:

a. Uncertainties in adapting the monitoring and evaluation guidelines;
b. Increased overall costs since the step-by-step could take up to 7 years (see diagram);
c. Sub-districts may not understand why they do not receive the treatment whilst neighbouring sub-districts receive it (loss of district-wide momentum);
d. Epidemiologically less effective in elimination.



2.3.2 Determination of the IU size

Based on the above information, you will need to decide on which approach you should use for your district (All-at-once or step-by-step). This decision should be taken in coordination with the province level who can advise on the drawbacks and benefits of both approaches. It is recommended, wherever possible, to treat the entire IU at one time, since this will reduce costs and is the better approach from an epidemiological perspective as well.

Regardless of which approach you choose to use, you should still conduct the baseline survey for the whole IU (or district).

2.4 To whom should we report the baseline survey results? (District, Provincial and Central level)

Once the results are known from the two surveys, you should report the findings to the District government, who will be responsible for providing funds for the LF elimination programme and to the provincial and central health authorities for planning, training and drug procurement. Concise and timely reporting will reduce the overall length of the programme. The following table outlines briefly the objectives of reporting to each level and what should be expected from the reporting:

Who?	What?	How?	Why?
District Government (Budgetary Committee in Parliament, District Regent, District Head of Planning)	- What is LF? - What are the economic consequences of LF? - How much LF is in your district? - How can we eliminate LF?	- Film - Slides with photos - Report from Prof Ascobat Gani - Map of LF prevalence and chronic cases	- To solicit financial and political support for the 5-7 years required to eliminate LF. - To introduce the concept of MDA and to prepare for the submission of the Strategic Plan.
Provincial Health Authority	- Results from the MF survey - Mapping from the MF survey and the chronic cases - Support from the district government (intended financial support)	- Map - Epidemiological results	- To plan for training of district health team by the provincial level. - To show that there is financial and political commitment from the district government for the LF programme.

Department of Health, LF Elimination Section	- Results from the MF survey - Mapping from the MF survey and the chronic cases - Support from the district government (intended financial support) - Total population data for the district	- Map - Epidemiological results - Census data	- To show that there is financial and political commitment from the district government for the LF programme. - Give population numbers so that the central level can order albendazole for the district MDA.

2.4.1 Advocacy to the District government

Advocacy to the District level is essential to the success of your elimination programme. Since Indonesia now operates under a decentralised system, the district government will be ultimately responsible for financing this campaign for the duration of the 5-7 years it will take to ensure elimination. Many of the politicians in your district may have never heard of LF or understand what a financial burden it is for their constituents. It is recommended that you to contact the provincial authorities before beginning advocacy in order to solicit their support in your advocacy activities. In the first contact with the District government, it is recommended to stress the following points:

1. What is LF? (A parasitic worm transmitted by mosquitoes.)
2. LF is a problem in your district. (Show map and give epidemiological survey results.)
3. LF is a public health concern which has a significant financial burden for your district. (☮ Compile results from Prof. Ascobat Gani's report.)
4. It is possible to eliminate LF through a five-year mass drug administration treating the entire population over the age of 2 years; with the exception of pregnant and breastfeeding women and severely ill persons.
5. Indonesia's national commitment to LF elimination.
6. The combined drug combination will also kill 5 kinds of intestinal helminths; thereby directly improving the health and nutrition of the population, particularly the school age children.

2.4.1.1 Materials

In order to keep the information session with the district government relevant, simple and informative, it is recommended to keep scientific and medical information to a minimum and concentrate more on disability, economic consequences, the possibility to eliminate the disease and the additional anti-helminth benefit of albendazole.

Suggested materials include showing the brief film (18 minutes) prepared for the District of Alor, the brochure as well as use of slides prepared with this Tool Kit. If possible, it is recommended to have a member of the provincial or central level health team present during the meeting for additional support.

This first meeting is intended to inform and to get promised financial support for the programme once the strategic planning and budget is submitted. It is also recommended to have political support from the district government so that the sub-district and village governments follow in supporting this initiative.

(☮ Please see the additional material provided in the Tool Kit CD under the folder title "First Round Advocacy to the District Government" which includes photos, slides and Prof. Ascobat Gani's report.)

Learn from field experience…

In Alor District, the District Health Team first presented the results of their surveys on the presence of LF to the District Regent in a closed meeting. Following this meeting, they continued with advocacy to the other important government members such as Planning Department and the Local Parliament health commission. As a result, they have secured funding of over 100.000.000,- Rupiah (~$11,000 USD) per year to support the 5 year elimination programme. This represents almost 10% of the District Health budget, showing the importance the government has placed on LF elimination.

2.4.2 Provincial level

Reporting to the Provincial health authority is essential so that they can begin to plan when the training for the district health staff can take place. The provincial level staff will come to the district level in order to conduct a week-long training on how to implement MDA in

your area. Following the training, the provincial team will offer continuous support and monitoring throughout the course of the MDA in your district.

2.4.3 Central level

As a district or IU, you must also report your findings directly to the central level so that they know that your district is endemic and that you intend to conduct LF elimination. In this report, it is essential that you include the findings of the epidemiological survey and the Rapid Survey as well as confirmation from the district government that they will support both financially and politically LF elimination for the 5-7 years. Make sure that you include the most recent population total for your district so that the central level will be able to order the right number of drugs.

It is preferable to report to the central level before July in order to plan for the following year. The central level orders albendazole from WHO after July and they can include your order so that you can begin MDA the following year. Remember that albendazole is provided free of cost by GlaxoSmithKline so your district will not need to pay for albendazole during the course of the elimination programme. You will however have to pay for DEC at the district level (<100 Rp per tablet)[22] or enter it into the District Procurement Schedule.

3 Technical Training for the District health staff and health centre staff (1 week)

Once you have reported the findings and the central and provincial levels are aware of your intention to eliminate LF from your district, you will need to train your health staff. The province level will send someone to conduct a week-long training for the District Health Team and health centre staff. The training combines the elements in this Tool Kit with practical field experience. The Tool Kit will not go into details about the content of the training since it serves as a complement to the training and the technical information is included here in full detail.

The following headings will be covered in your training:

- Information on LF
- Planning
- Preparation of the mass drug administration campaign

[22] Cost for generic drug = Rp. 9.350,- / 100 tablets of 100 mg or $1 USD / 100 tablets

- Mass drug administration
- Monitoring
- Evaluation

3.1 Findings from the endemic areas

The first part of the training will review the findings from your own district. It is important that the health centre staff also realise the extent to which LF is present in your district so that they can effectively transmit the information to members of the community and to the sub-district government.

Depending on the strategy chosen for MDA (step-by-step or all-at-once), the findings of the endemic areas will determine how to begin the MDA. If the district chooses to use the step-by-step approach, then they will first need to focus on the sub-district with the highest MF rate.

3.2 MDA, case management, awareness, experience in the field

In this section, the training will review:

1. Criteria for the MDA – all persons living within an endemic IU are considered at risk for LF and therefore will be treated once per year for a minimal period of five years. Those persons who are exempt are: pregnant and breastfeeding women, children under the age of 2 years and those who are severely ill. Protocol for drug distribution is the following:

Age	**DEC (100 mg)**	**Albendazole (400 mg)**
2 – 6 years (pre-school)	1 tablet	1 tablet
7 – 12 years (primary school)	2 tablet	1 tablet
13 – adult (high school +)	3 tablet	1 tablet

Drugs for side effects will also be provided to the health staff. In this training, the team will also explain about the potential for side effects: what to expect and when and the need to report only those side effects which are considered severe (indicators for severe side effects are: requiring hospitalisation, severe incapacitation or death).

2. Case management for those who are suffering from chronic manifestations of LF (hydrocele and elephantiasis) will be treated with DEC (100 mg) 3 x 1 per day for 10 days in the first year the MDA is begun and then in subsequent years, they will join the regular MDA and take the doses prescribed. It should be noted however, that most patients with chronic manifestations (i.e. hydrocele and elephantiasis) are normally amicrofilaraemic which means that they have no living worms; hence DEC treatment will not affect them.

3. How to build awareness in the community about the MDA and how to ensure that coverage is high (>80% from the total population).

4. Practical field exercises

3.3 Disability reduction and prevention

1. Chronic case management of elephantiasis and hydrocele
2. Different stages of elephantiasis of the leg and how they should be treated
3. Necessity to involve the family in the training
4. Surgery for hydrocele

4 Points to remember from Chapter 1

- ☑ The ***Implementation Unit*** (IU) is defined as the designated level of the administrative unit in a country, for which the decisions to administer to the entire population with anti-filarial drugs is taken if it is determined to have endemic transmission.
- ☑ In Indonesia, the IU is the district.
- ☑ There are two methods for conducting mass drug administration (MDA) in the district: ***step-by-step*** and ***all-at-once***. It is strongly recommended to conduct all-at-once if the IU is capable, willing and has the financing.
- ☑ Baseline information on LF prevalence should be conducted in the form of ***Rapid Survey*** to the health centres and this information reported to LF Unit at the provincial level.
- ☑ After on-the-job training with province is completed, ***Blood Smear Surveys*** in those 4 villages with the most chronic cases should be conducted to measure MF rate.
- ☑ Results from the baseline surveys should be ***mapped*** for the entire IU.
- ☑ If the ***LF prevalence rate is ≥ 1%,*** then the IU is endemic for LF and qualifies for MDA.
- ☑ The mapping and baseline results should be reported to the province health authority, the central level LF Unit and to the district government for advocacy purposes.
- ☑ ***One-week training*** by provincial health teams at the district level to begin LF elimination.

Chapter 2: STRATEGIC PLANNING

Development of a strategic plan is important to the success of LF elimination in your district. The plan will provide your team with an overview of the timeline and budget and will outline the individual activities required for each of the programme's steps: preparation of MDA, MDA, monitoring and evaluation. This strategic plan will also serve as a proposal to the district government to request financing for the duration of the campaign.

By the end of this chapter, you will be able to:

1. **Understand the different approaches for drug distribution and know how to decide which approach is best for your district;**
2. **Develop a timeline of activities for the 5-6 year duration;**
3. **Procure drugs for the MDA;**
4. **Cost the entire elimination programme for the 5-6 year duration;**
5. **Include the necessary information in the strategic planning proposal to submit to the District Government for financing;**
6. **Identify other potential funding sources to supplement District funds.**

1 Development of strategic planning

1.1 Inner- and Inter- sectoral collaboration

Before beginning the discussion on strategic planning, it is recommended that you organise a working group within the District Health Authority. It is suggested to include staff from the following:

- Planning Unit
- Disease Control Unit
- Health Promotion Unit
- Pharmacy
- Health Services
- Others as appropriate

If there is an NGO or a religious organisation that is active in health activities within your district, it may also be useful to include them in the working group, especially if you plan to

involve them in socialisation and drug distribution. Including other sectors will increase coverage and improve ownership of the LF elimination programme by the community.

1.2 SWOT Analysis

Before planning takes place, it is recommended to conduct a SWOT analysis. It would be useful for you and your working group to discuss together the Strengths, Weaknesses, Opportunities and Threats that concern the elimination activities. It is suggested that you brainstorm together and list the different ideas as they come up. Then it is useful to combine them into the following table (an example has been included for your information):

Strengths/Opportunities Many health staff present / LF elimination may empower health staff	**Weaknesses/Opportunities** Educational training is limited / LF elimination may empower health staff
Strengths/Threats Many health staff present / Motivation of staff is low	**Weaknesses/Threats** Education training is limited / Motivation of staff is low

You will need to focus some resources and find solutions for the Weaknesses / Threats box. This discussion is best done in the working group.

1.3 Decide on an approach for drug distribution

We need to decide on an approach for drug distribution that will be the most appropriate and effective for your district. Remember that it is necessary to treat **all of the eligible persons** in your district so it is important that you choose the best approach to maximise coverage and population compliance. Achieving a high coverage will depend on the following:

- Availability of DEC and albendazole in the correct quantities before the MDA;
- Efficiency of the drug distribution system;

- Motivation of the drug distributors;
- Education, understanding and commitment to eliminate LF in the communities;
- Commitment of the political persons and local government.

Remember! The person who distributes the drug should always supervise the person taking the drug.

In the following section, there is a general overview of some suggested approaches. They are followed by the criteria that you and your team should consider in order to identify the correct approach. Please read the whole section first before making a decision. By identifying the combination of approaches to use at the beginning, you will be able to budget and plan accordingly.

1.3.1 Different approaches

1.3.1.1 Drug distribution via health centres and village drug posts

One way to distribute the drugs is through the decentralised health system – i.e. through the Primary Health Care centres and sub-centres. This approach requires that health centres are adequately staffed and have transportation to the villages within their geographic areas. If there are active village health posts which distribute drugs for malaria or other common illnesses, then these village drug posts can be used for LF drug distribution. This approach places the whole responsibility for distribution on the health staff and will be too labour intensive for many districts, particularly where health centres are understaffed. The other drawback of this approach is that it does not involve the community in drug distribution; reducing community empowerment and ownership of the campaign.

1.3.1.2 Booth distribution

In each village area, booths are set up in places where the community can easily access them. Drug distributors, whether they are health workers or volunteers, then administer the drugs through the booths. It is advisable to have drinking water available so that the community can take the treatment directly in front of the health staff and volunteers. This approach requires strong communication to the community so that they are informed of the days the booths with be open. Additionally, this approach relies heavily on the willingness of the community to take the treatment. This may be a good option for urban areas where

mobility in the population will be high. One of the benefits of this method is that people will be inclined to join in taking the treatment as they see other persons in the community taking the treatment.

1.3.1.3 Special population groups

Drug distribution can be done to special groups of the population such as: inpatients in hospital, prisoners, students who are in school, offices, industries, displaced persons in refugee camps, commercial establishments., etc. It is recommended to combine this method with another method, such as house to house or booth distribution, so that those who are not part of a special population will not miss the treatment.

1.3.1.4 House to house

House to house distribution requires drug distributors to travel from house to house administering the drugs to those persons who are home at the time. This is a particularly good method for sweeping to locate those persons who may have missed distribution through another method, like booth or distribution to special population groups. It requires enough drug distributors so that the entire village or area can be covered. If this is the sole method of distribution to be used, then it is important to find out when people are usually at home and ensure that they will be home on the day of distribution. One of the benefits of this method is the relative ease of recording.

1.3.1.5 Areas of community aggregation

In your area, it may also be useful to distribute the LF drugs to areas where the community comes together naturally – such as market places, bus stations, religious gatherings, festivals, cultural celebrations or other activities where the community congregates. These locations will also be useful for socialisation purposes before drug distribution begins.

1.3.1.6 Comparison of the different approaches

The following table describes the benefits and weaknesses of each distribution method:

Approach	*Benefits*	*Drawbacks*
Health centres and village health posts	- Maximisation of the health system	- Very large project (labour intensive) for the health staff to do alone - Does not involve community or stakeholders and this is necessary for ownership and motivation
Booth distribution	- People will be more motivated to take the treatment when they see others doing the same - Do not need many health staff and drug distributors - Good option for urban areas	- Will still need to be combined with another method to reach those who do not come to the booths - The location of the booths must be socialised ahead of time so that people will come there
Special population groups	- Easy to reach people for both socialisation and MDA - Good option for urban areas	- Certain people will not be part of the groups and will have to be reached by house to house
House to house	- Ease of reporting - Ease to directly watch people take the treatment - Personal approach and drug distributor can give detailed information if needed, adapted to the local circumstances - Good for sweeping	- Time consuming - Needs many drug distributors - May be difficult for some rural villages where houses are spread apart
Areas of community aggregation	- Useful for socialisation - People are motivated by seeing someone else take the drugs - Combine with stakeholders' instruction (churches and mosques) - No need to gather people together	- Will still need to combine with house to house distribution or another method as some people will not be reached in these areas

1.3.2 Timing of MDA

It is recommended that MDA be organised over a short period of time within the IU. This maximises the socialisation and the momentum of the community awareness. If it is not possible to organise the MDA within a day or a week, then the MDA can be staggered over

a two-month period. The communities through their representatives should be part of the decision as to when MDA should take place. You may need to follow a national or provincial directive on the specific two months (July / August in particular) you may be required to distribute the drugs.

1.3.3 Criteria and process for decision making

It is likely that your team will decide to use a combination of the approaches mentioned above; however there are certain criteria that you should consider in your decision-making.

1.3.3.1 Remoteness of villages

Before deciding how drug distribution should take place, it will be important to consider the remoteness of the villages in your district. Remote villages may require a specific approach in order to ensure that they are reached by the MDA. It is especially important to consider how socialisation pre-MDA should be conducted. In these areas, it may be necessary for the health staff to directly distribute the drugs on pre-arranged days since communication with the village may be difficult.

Learn from field experience…

There are some villages in Alor District which are located several hours by foot from the nearest road. In these villages, the health staff came to the village on Sunday when they knew the villagers would be at church. Following the service, they were able to give information on LF and then directly they distributed the LF drugs. They maximized this opportunity by also combining other health activities like: immunization, distribution of vitamin A and iodized salt.

1.3.3.2 Capacity of health staff and health facilities

The capacity and availability of the health staff will be important in determining how they will implement both socialisation and MDA. For instance, in some remote areas, there may be limited numbers of health staff present and it may be necessary to add supplemental support and supervision from district health staff.

The condition of the health facilities is particularly important in terms of the transport available and in working condition at each health facility. This will determine how involved the health centre staff can be in socialising MDA and conducting MDA in the villages and will also determine how much time will be required for the activities.

1.3.3.3 Capacity of community health workers

If you decide to use community health workers (CHW) or "kaders" in Indonesia to distribute the drugs, it will be necessary to know how many of the existing CHW are still active. In many villages only a percentage of CHW are still active; therefore you will need to find additional persons (drug distributors) who can assist them in drug distribution. The LF programme may serve as a way to motivate those CHW who are still active.

1.3.3.4 Payment of Drug distributors

If you are going to use CHW and drug distributors, you will need to decide if you are going to pay them for their activities and if so, in what form. In some districts, CHW are paid for each person they treat. The risk of this method is that there may be over reporting from CHW in order to increase the amount of money they receive. Another risk to consider is the overall cost of payment per individual treated; the total cost will probably represent the largest part of your budget. The benefit of paying CHW is their increased motivation to assist with MDA.

Other forms of incentives you may want to consider include: t-shirts, uniforms, badges, key chains, hats, bags or health promotion material like mosquito nets, mosquito repellents or other health related items. You may then want to include a small monetary fee to cover transport costs for each CHW. The costs of such items will cost considerably less than payment to each voluntary drug distributor for each person treated.

1.3.3.5 Strength of village government

Consider the strength of the village governments when discussing the distribution strategy that you want to use. If the village government is weak or where there is political disintegration, the district or local health staff will need to have a greater presence during socialisation and MDA since the health staff will not be able to rely upon the power of the village government. This is especially important since MDA could be used as a political tool to sway people away from accepting treatment. These areas may need additional finances for monitoring and sweeping activities.

1.3.3.6 Assess potential partners for drug distribution at the district level: religious institutions, schools (Ministry of Education), NGO, civil society, District government, etc.

Together with your team, you should also consider the different agencies and government institutions which may be useful in both socialisation and drug distribution. For example, if

you decide to distribute through schools, you will want to involve the Department of Education. Additionally, if there are NGO active in your district, you may want to consider how they may be able to integrate LF activities within their existing programmes. Civil society can also be involved in both socialisation and drug distribution. Recommendations for civil society groups include: District Health Councils, women's groups, farmer's cooperatives, etc.

Involving partners in socialisation and drug distribution will reduce overall costs.

1.3.3.7 Differentiation of approach for rural and urban areas

Because persons living in urban areas are highly mobile, you will need to discuss the best approach for both socialisation and drug distribution. You may want to consider the use of print or electronic media in order to inform people about LF, the elimination programme and when and how the drugs will be distributed. You may also need to stress that even though there may not be any visible cases in the city (i.e. perception that it is only a rural disease); there is still a risk of infection so everyone must participate in the treatment campaign (with the exception of pregnant/breastfeeding women, children <2 year and severely ill persons). You may need to include additional costs in your planning and costing for urban areas as it is generally more difficult to achieve good coverage due to high mobility of people.

1.4 Time frame

The following section outlines the necessary steps in the timeline and will give you an idea of how long these individual steps will take to complete. It is not a definitive guide as there may be localised differences in timing for certain activities, but it should serve as a guide for your strategic planning.

Please see the following table for a generalised view.

	Activity	Year 1				Year 2				Year 3				Year 4				Year 5			
		Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4
1	Preparation of MDA for the Implementation Unit																				
A	Procurement of drugs																				
B	Procurement of slides & lab materials																				
C	Preparation of promotional materials																				
D	Ordering promotional materials																				
E	Census at the village level																				
F	Training of health staff																				
G	Training of drug distributors																				
H	Refreshing for drug distributors & health staff																				
2	MDA																				
A	Socialisation at the sub-district level																				
B	Socialisation at the village level																				
C	Drug distribution																				
D	Sweeping																				
E	Recording & reporting																				
3	Monitoring																				
A	Choose 2 sentinel sites from baseline data																				
B	Choose 2 spot check sites																				
C	Reported coverage																				
D	Surveyed coverage																				
E	Procurement of lab materials																				
F	Blood survey in sentinel & spot sites																				
4	Evaluation																				
A	Procurement of ICT cards																				
B	Procurement of laboratory materials																				
C	Blood smear in sentinel & spot sites																				
D	Check ICT cards in 2-4 year olds (sent/spot)																				
E	Blood smear in 5-10 additional sites																				
F	Check ICT cards in 2-4 year olds (5-10 sites)																				
G	Check ICT cards in 300 children																				
H	Check ICT cards in 3000 children																				

YEAR 1

1.4.1.1 When is a good time to conduct MDA?

When constructing your strategic planning, it is advisable that you discuss with local government and stakeholders to know when is the best time to conduct the MDA in your district. You may want to combine LF drug distribution with other yearly public health programmes (immunisation, vitamin A distribution, etc.). You should consider planting and harvesting seasons, school holidays and major public holidays. It is important that once you choose a month, you continue to distribute the drugs the next year at the same time.

It may also be possible that the national programme will determine a specific month or day for the MDA as there are more and more districts participating in the elimination programme. You will have to follow this timeline from the central level when it comes.

1.4.1.2 Drug procurement

It takes about one year to order the drugs from Jakarta and then for the drugs to come to your district. If you are able to submit your order before July, then you can plan for the next year. If you submit after July, you will need to wait another year before the drugs will arrive. *Plan for 1 year (dependant on when you order the drugs)*

1.4.1.3 Preparation of awareness materials

If you choose to develop your own awareness materials, you will need to plan for a period of one month to develop the materials and test them with the local community for understanding and acceptability. It takes approximately 1-2 months for production. *Plan for 3 months*

1.4.1.4 Training of CHW or drug distributors and community leaders at the village level

Training of CHW, drug distributors and community leaders should take place close to the time you will conduct the MDA. The training itself takes one day per village, and is usually conducted by the health staff. Timing will be dependant on the locations between villages and the transportation available to the health staff. *Plan for 1 month*

1.4.1.5 Socialisation at the village, sub-district and district levels

Socialisation at the different levels: village, sub-district and district levels should be ongoing; however it should be particularly concentrated one month prior to the MDA. *Plan for 1 month*

1.4.1.6 MDA

The MDA should be conducted within 1-2 weeks across your whole district. This maximises the momentum of the socialisation. *Plan for 1 month*

1.4.1.7 Sweeping

Sweeping activities should be carried out for a period of 1 month post-MDA in order to make sure that the maximum percentage of population is reached. *Plan for 1 month*

1.4.1.8 Monitoring of MDA

1.4.1.8.1 Surveyed coverage rounds by independent interviewers after treatment rounds

Surveyed coverage should be conducted after the first year. It will take approximately 2 months to organise the survey, identify and train independent interviewers, collect the data and compile the results. *Plan for 2 months*

1.4.1.8.2 Programme

Programme evaluation consists of recording the reported coverage rates. It takes 2-3 months for the results to reach the district after MDA. *Plan for 3 months*

1.4.2 YEARS 2-5

1.4.2.1 Procurement of drugs and slides

You will need to order each year the necessary drugs from the central level. The re-application time should also be before July. Slides and other laboratory equipment will also be required for monitoring activities (post-Round 2 and post-Round 4) in the sentinel and spot check sites (materials needed for a total of 2000 persons).

1.4.2.2 Refreshing training beginning in the 2nd year

Each year, you should plan for a refreshing training for the drug distributors and for the health staff. This is especially important if there have been drop-outs or staff changes. *Plan for 1 month each year*

1.4.2.3 Monitoring via epidemiological evaluation (with blood smear)

Monitoring in each of the 4 sites (2 sentinel and 2 spot) will take approximately one month after Rounds 2 and 4. After Round 4, you will need to conduct additional testing in children with ICT cards and this may take longer. *Plan for 1-2 months*

1.4.2.4 Final epidemiological evaluation (with blood smear and ICT)

It will be necessary to plan several months for this process as there are various stages: evaluation in 5-10 additional sentinel sites, ICT testing in the 5-10 sentinel sites, ICT testing in 300 children and then ICT testing in 3000 children. Depending on whether true positive cases are found in the different stages will determine how long the process will take. *Plan initially for 6 months*

1.5 Drugs procurement

Drugs for the LF campaign are provided from the central level. Albendazole is provided to the Indonesian government free of charge by GlaxoSmithKline. Additional drugs for managing side effects will be provided in the beginning by the central level; however eventually you will be responsible for providing these drugs through your regular pharmacy procurement. In your planning, remember that in principle, side effects will be likely to decrease with each round of MDA, so you will need less drugs for their management.

1.5.1 How to determine how many drugs are needed?

When sending your first report to the central and provincial levels, you will need to include the most recent total population of your district with the report so that the central level can calculate directly the total number of drugs required. You can also calculate yourself using the following formula to determine the drugs needed for the first round:

Drug	*Calculation*
Albendazole (400 mg)	Multiply the total population in the district (IU) by 1.1 (this adds a 10% reserve)
DEC (100 mg)	Multiply the total population in the district (IU) by 2.75 (this adds a 10% reserve)

For subsequent rounds, you should use the following calculations (with the logic that the non-eligible population will act as a reserve stock):

Drug	*Calculation*
Albendazole (400 mg)	Multiply the total population in the district (IU) by 1
DEC (100 mg)	Multiply the total population in the district (IU) by 2.5

1.5.2 Where drugs should be ordered from?

The drugs (DEC and albendazole) should be ordered from Jakarta, Department of Health, LF Elimination Unit. You should always notify the province as to how many drugs you are ordering, when you ordered them and when you expect them to be delivered.[23]

The address of the National Programme is:

Departemen Kesehatan Republik Indonesia
Direktorat Jendral PPM & PL – Direktorat P2B2
SubDit Filariasis & Schistosomiasis
Jalan Percetakan Negara 29, PO Box 223
Jakarta, 10560 Indonesia
(tel) 021 424 7608 (ext 152)
(fax) 021 424 7475
email: Filschisto@yahoo.com

1.5.3 Transportation of drugs from central level to district level

Transportation of the drugs from the central level will be directly to the district level. The transport costs will be borne by the central level.

1.5.4 Drugs necessary for the monitoring of side effects and chronic case management

In order to calculate the drugs necessary for monitoring of side effects, it will be necessary to calculate for 20% of the total population number in the district (IU). The drugs necessary for monitoring side effects include the following:

- Paracetamol
- Antihistamine
- Vitamin B complex
- Antacid

[23] In the future as there are more districts participating in MDA, it may be advisable for the province to compile the district orders to the central level. The drugs can then be delivered first to the province and then distributed onto the districts in order to reduce shipping costs. This will be a decision taken on the individual province levels and approved by the central level.

Drugs for chronic case management will be calculated according to the number of chronic cases recorded in the baseline survey and those other suspected cases in the district. The following drugs are necessary:

- Anti fungal cream or ointment
- Steriod cream
- Antibiotic cream
- Amoxicillin

1.6 Payment for hydrocele surgery

If you have cases of hydrocele in your district, it is recommended that you budget in your strategic planning for the surgical costs, maintenance and transport costs for these patients so that they can benefit from this surgery without any cost.

1.7 Costing

1.7.1 Unit costs

Individual unit costs should be calculated for each activity. ☮ Please see the sample budgets from the District of Alor and from the SISKES projection for Alor following the pilot projects.

2 Financing the programme (District government, province, national, combining LF programme with existing PH programmes)

With decentralisation, the majority of costs for the LF programme will be borne by the district government, as was mentioned earlier in this guidebook. There are however other methods to fund LF activities within your district and it is recommended to identify where you may be able to reduce costs to the District government and the health authority by: integrating the LF programme with other existing public health programmes, using NGO as an integral part of the campaign or by fundraising at the district level.

2.1 Advocacy to local decision leaders (District Government Health Commission, Regional Planning Board, District Regent and Governor)

Since you have already informed the district government of the presence of LF in your district and presumably they have agreed to finance the programme for the 5-7 year

duration, you will now need to present the full strategic planning and budget for acceptance. It is important to determine with the District government how you will report the progress of the programme. The District government must understand that funding is necessary for the full 5-7 years. If they are only committed to financing for less than 5 years, it is not sufficient time for elimination and you should not begin the programme in your district. Continued advocacy is necessary so that each year, the necessary funding will be allocated for the LF programme.

2.2 Integration with existing health programmes

Below are some suggestions of projects that are ongoing in your district and which you may want to consider combining the LF programme with. This list is not exhaustive and it is possible that there are other programmes within your district that you may want to consider integrating the LF programme with that are not mentioned here. It is always recommended to integrate your health planning and budgeting to reduce costs and to improve performance.

2.2.1 Vitamin A

Usually there is mass distribution of Vitamin A in February and August of each year in the health centres and Posyandu (village health visits for mothers and children under 2 years). This could be an opportunity to maximise the LF campaign at the same time by socialisation during these mass distributions, visits to chronic cases or combining the MDA.

2.2.2 GFATM

With the entrance of the Global Fund AIDS, Tuberculosis and Malaria (GFATM), there is the potential to combine LF efforts with malaria activities which are planned in the GFATM proposal. For instance, vector control activities under the GFATM activities will provide a needed supplement to the MDA. Additionally, if GFATM includes the revitalisation of the Village Drug Post in the activities, LF drugs could be distributed via these posts.

2.2.3 Soil-transmitted helminths

Another option is to combine LF activities with those regular programmes to eliminate soil-transmitted helminths, especially in school children.

2.2.4 Immunisation

The immunisation campaign for polio is conducted each year in September and this may be another opportunity to combine LF activities.

2.3 NGO

It is highly recommended to use those active NGO in your district (IU) to supplement the health authority's activities. The NGO can reach their target populations with information about the MDA or can also assist to mobilise volunteers for drug distribution. By using NGO, you will increase coordination in the health sector as well as reduce overall costs.

2.4 Industry

There may be some industries in your district which may be interested in participating in financing the LF campaign. They may feel that their staff are at risk for the disease and as a result they may feel that financing a portion of the campaign may reduce morbidity within their employees, thereby increasing their standing in the community as well as their profits. You will need to approach the industry in the same way you would approach the district government – with minimal scientific and medical information and with sufficient information on economic loss and loss to productivity. It is also recommended to stress that they will be recognised for their efforts in eliminating LF (i.e. names on posters, brochures, radio or print ads, etc.).

Learn from field experience…

In Kalimantan, there is a coal mining company who has agreed to finance a significant portion of the LF campaign in the district where they are located. This has reduced costs to the government and health authority and has increased community and local ownership of the campaign and the mass drug administration.

3 Points to remember from Chapter 2

- ☑ It is important to include those relevant team members in your district in the discussion when planning and writing the strategic planning proposal so that there is good ***intersectoral collaboration*** and support for the activities.
- ☑ There are many different methods for drug distribution in your district (IU): health staff, booth distribution, special population groups, house to house and areas of community aggregation.
- ☑ You will need to consider which methods are appropriate for your district by considering the following criteria: remoteness of villages, capacity of health staff and health facilities, capacity of existing CHW, payment of drug distributors, strength of the village government and potential partners.
- ☑ It will be necessary to differentiate between the methods for socialisation and MDA in the ***rural and urban areas***.
- ☑ ***Drugs (albendazole and DEC)*** should be procured from the central level, with communication to the provincial level on quantities and time ordered.
- ☑ Determine the ***timing*** for the whole 5-7 years of the LF elimination programme.
- ☑ ***Costing*** all of the activities and purchasing requirements for the 5-7 year programme.
- ☑ ***Fundraising*** for the LF activities through: District government, NGO, integration with other public health programmes, industries in the district.
- ☑ ***Repeated advocacy*** to the District government is necessary over the 5-7 year programme to ensure that financial and political support is available for the full programme duration.

Chapter 3: PREPARATION OF SOCIAL MOBILISATION AND ADVOCACY

By the end of this chapter, you will be able to:

1. **Understand the importance of social mobilisation and advocacy for the LF elimination campaign;**
2. **Know how to develop local-specific materials for your district or province;**
3. **Discern between approaches for stakeholders and those for the general population;**
4. **Solicit the support of stakeholders in social mobilisation; and**
5. **Identify stakeholders and key persons for the promotion of the campaign.**

1 Why is social mobilisation so important?

Social mobilisation is an approach and a tool enabling people to organise for action together. It combines community organisations, government and non-government sectors and individuals in an effort to communicate, negotiate and work together maximising their potential for collective action, social change and improvement. In LF elimination, social mobilisation is essential to the overall success of the programme. Because the campaign requires over 80% of the total population to consume two drugs, DEC and albendazole, for a period of at least 5 years, there needs to be widespread community support for the project from all sectors of society. If this support is non-existent or lacking, then the success of the programme can be seriously compromised.

We have decided in this guidebook to allocate an entire chapter to social mobilisation since it is so essential for LF elimination. Social mobilisation incorporates health promotion and health education as well as advocacy techniques in order to organise people for collective action. These individual points will be covered in this chapter giving you tips on how to enable social mobilisation in your district.

2 Developing materials for target groups (stakeholders and general population)

In this section, we will discuss which materials are appropriate for stakeholders and general community and how to develop these materials. Materials that you will use for stakeholders may be different from the materials that you use for the community. Why is that?

Stakeholders will need to support politically and financially the programme whilst the community will need to believe that the programme's purpose is good for them and that they need to take the treatment. In order to motivate both stakeholders and general community, we will need to use different approaches to meet the different needs.

2.1.1 Who are the stakeholders?

Stakeholders for the LF elimination campaign include the district government, village chiefs, cultural and religious leaders among others. Stakeholders are those who have an interest in the success of the campaign. Because they have the authority to influence its outcome, we need to adapt a different communication approach with them.

Government leaders need to be convinced that the LF elimination programme will have a positive effect on economics and health in your district. The district government will have many persons and organisations coming to them requesting financing for different projects and they will need to understand that LF elimination is worth supporting and has a direct benefit for the population; perhaps even more than another project. If the government can understand that this is a financially cost-effective activity for your district over time, then they will be more interested to support it. So you will need to convince them!

Stakeholders also include religious and cultural leaders and village chiefs will have a direct connection to the community. Because communities follow their leadership on other issues like religious instruction, cultural guidelines, taxation, laws, government regulations, etc.; they will be more likely to follow their leadership on health issues. It is good to involve them from the beginning of the campaign.

2.1.1.1 Film

The LF film ☮ developed for Alor District is a good and simple way to inform stakeholders about LF and the elimination programme in a simplified format. The film is 18 minutes long so it can easily be incorporated into an hour session for stakeholders presenting LF, the global and national programmes and the strategy you have planned for your district. The film is specific to Alor District; however, you can mention that this is an example from one district which serves an example for your district too. The film shows visual images of the transmission cycle, the chronic and acute symptoms of the disease, the MDA, chronic case management and prevention measures.

2.1.1.2 Brief information on the campaign and how they can get involved and support

It is recommended to provide stakeholders with a brief information sheet on LF and the campaign that you intend to start in your district. In this sheet, you can combine information on the economic loss, the ease of the MDA, the need for total community support for 5 years and the promised benefit to local economic development and the health and well-being of the population. ✇ See Tool Kit CD for example.

Give clear instructions as to how stakeholders can get personally involved. Some examples include: inviting stakeholders to participate in opening the LF MDA activities by taking the drugs first in front of their communities, giving education and information sessions, distributing educational materials, participating in decisions about the campaign such as when and how to organise the MDA, cross-checking messages and images, etc. The more stakeholders are involved – the better chance you will have to eliminate LF from your district.

2.1.2 The Community

The approach you will use to educate and motivate the community will be different from the approach you have used to convince stakeholders to become involved. You will need to consider the following for your population:

- Education level (ability to read)
- Different local languages
- Local names for the disease
- Local perceptions of causes of the disease, disease and health in general, death
- Availability of newspapers, TV and radio
- Type of LF present in your district (hydrocele or elephantiasis of the leg, arm or breast)
- Religious and spiritual background of the community (particularly where images of hydrocele will be used)
- Etc.

Remember that you may need to consider a different approach for urban and rural areas.

There are already existing materials which were developed for Alor District and NTT province in 2002. ☮ These materials (brochure, flipchart and poster) are included as examples in the Tool Kit CD. They have been modified so that you can use them in your district as well. They have already been field tested in NTT province for clarity, comprehension and acceptance.

2.1.2.1 Local specific materials

After considering the above points, you may find that you would like to develop materials which are specific to your district or to your province. ☮ Included with this CD are various drawings and photographs which you could use to develop your own materials.

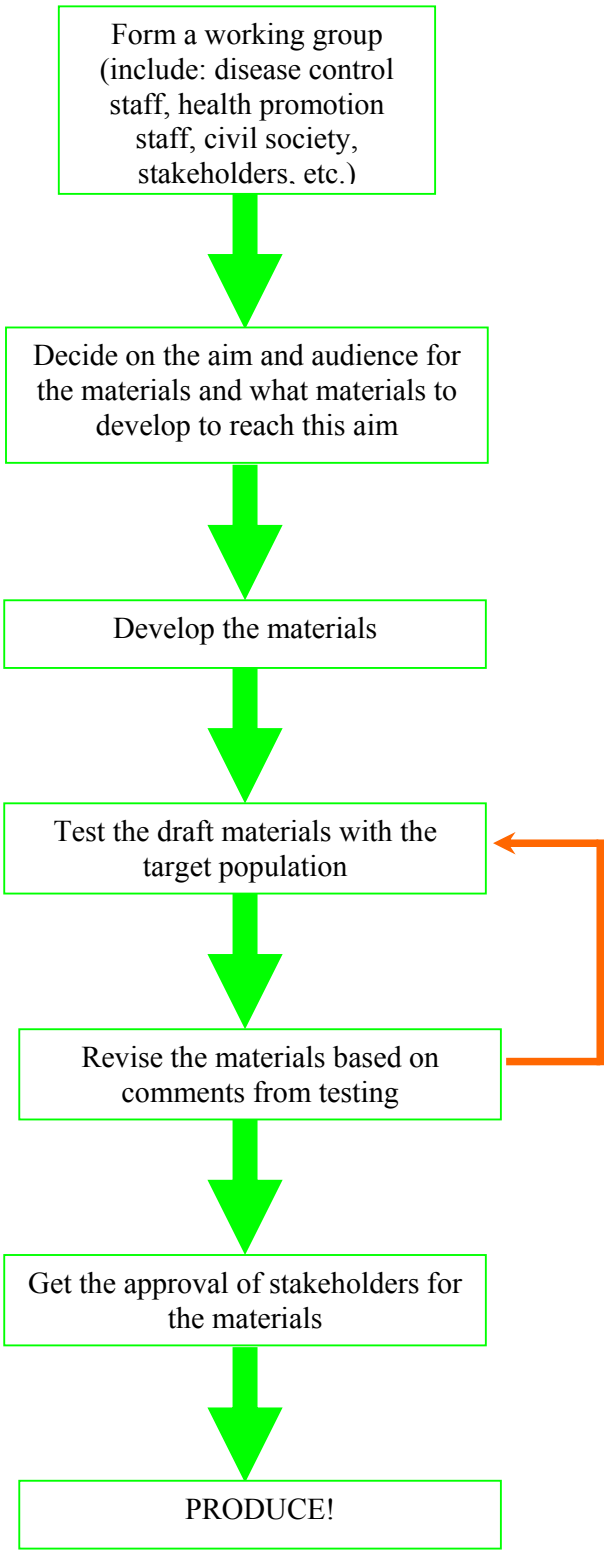
2.1.2.2 Development of new materials

It is important to spend considerable time on this step so that you maximise your funds. To begin, you must decide what kind of materials you will develop: brochure, information sheet, poster, flipchart, booklet, song, film, etc. Your budget and the community's reading ability will determine what materials you can develop.

Consider the aim of the communication when deciding what kind of materials to develop. For example, if you want to raise knowledge levels in the population and inform people about the MDA, then a brochure or information sheet is the best way. If your aim is to inform people how and when MDA will take place, a poster may be more effective. It is recommended to form a working group to develop the materials, including stakeholders as well as technical personnel. This working group can decide on what the aim of the material is and what the best form of communication to use is.

Regardless of the form of communication you choose, remember to keep the language and information simple. In order to ensure that your message is understood by the general population, it is essential that you test the materials with members of the community before production. A few focus group discussions and informal interviews with people on the proposed material and its content (pictures and text) are recommended. It would be a waste of funds to produce materials which the community does not understand or misunderstands! *So don't forget to test your draft materials first!*

The following flowchart suggests the steps required in development of materials to support social mobilisation:


Form a working group (include: disease control staff, health promotion staff, civil society, stakeholders, etc.)
Decide on the aim and audience for the materials and what materials to develop to reach this aim
Develop the materials
Test the draft materials with the target population
Revise the materials based on comments from testing
Get the approval of stakeholders for the materials
PRODUCE!

2.1.2.3 How many materials should be ordered?

Depending on what kind of materials you produce (posters, brochures, song, film, stickers, etc.) will determine how many you order. Generally with print material, the more you order the cheaper the price per piece.[24]

Some recommendations for ordering materials:

- Brochures: enough for one per household for the entire IU;
- Stickers: enough for one per household for the entire IU;
- Posters: enough to cover all health posts and village drug posts, village chief offices, churches, mosques, schools and other areas of community aggregation;
- Songs: enough cassettes or CDs for public transport, health centres and radio stations;
- Films: TV stations, main government stakeholders, health centres, etc.;

2.2 Involving the District Parliament, District Regent, local village leaders and stakeholders

The District Parliament and District Regent should be contacted for approval of the materials that you will produce. By including some of their suggestions or by getting their approval, you will further increase their involvement and empowerment in the LF elimination efforts.

If possible, involve these important stakeholders in socialisation in the community. It is highly effective for the community members to see their government representatives swallowing the drug and promoting good compliance. It is also an increased motivation for the health staff and drug distributors.

[24] This is another point for the province. If the province has the capability, it is recommended to provide promotional materials for all districts participating in the LF campaign. This will reduce costs at the district level and provide standardization of the materials and the information included. This is a decision which will have to be taken on an individual provincial level.

3 Points to remember from Chapter 3

- ☑ ***Social mobilisation*** is an approach and a tool enabling people to organise for action together. It combines community organisations, government and non-government sectors and individuals in an effort to communicate, negotiate and work together maximising their potential for collective action, social change and improvement.
- ☑ ***Stakeholders*** for the LF elimination campaign include the district government, village chiefs, cultural, religious and spiritual leaders and others. Stakeholders are those who have an interest in the success of the campaign and who have the authority to influence its outcome.
- ☑ Involve stakeholders from the beginning of the activity. Involving them will increase their ***ownership of the programme*** – therefore increasing your success in eliminating LF!
- ☑ Regardless of the form of communication you choose, remember to keep the language and information short and simple.
- ☑ ***Test the materials*** with members of the community before production in focus group discussions and informal interviews
- ☑ Involve ***district government, civil society and religious / cultural leaders*** in development of the materials and get their approval before the materials are produced.

Chapter 4: IMPLEMENTATION

This chapter will give you comprehensive information about implementation of the mass drug administration – how to prepare for it and how to carry it out – and how to conduct disability prevention activities.

By the end of this chapter, you will be able to:

1. **Determine the sentinel and spot check sites for your IU;**
2. **Understand how to prepare baseline information prior to beginning the MDA;**
3. **Identify drug distributors in each village and train them in MDA and disability prevention;**
4. **Train health centre staff for MDA and disability prevention activities;**
5. **Carry out social mobilisation prior to the MDA;**
6. **Know the steps for implementation of the MDA: logistics, drug administration, sweeping;**
7. **Conduct Recording and Reporting, including documentation of the activities;**
8. **Train individuals with lymphoedema and their families in disability reduction and prevention activities; and**
9. **Organise hydrocele surgery in your district – case finding, education, surgery, post-operative care, monitoring and evaluation.**

1 Preparation of Implementation

1.1 Census of the population who are eligible to participate in the MDA

In order to prepare for the mass drug administration, you will have to census the population in your IU in order to know how many people in certain areas are eligible and in-eligible for treatment. Usually, it is done by the district health centres together with the village leaders in their areas. The village leaders work together with the head of the neighbourhoods in order to have an exact census of the number of people living in an area.

Learn from field experience…

In Alor District, the district health staff worked together with the staff from the health centres in order to get an accurate census of the population. Each of the villages was given a small notebook and the total number of persons, with age and pregnancy/breastfeeding status was recorded. This census provided the most updated census in the district and is used for other public health and disease control initiatives.

This census provides the district level with information with how many drugs need to be allocated by health centres for the mass drug administration. It also forms the denominator for the reported coverage numbers which will be collated after the MDA.

1.2 Training

You have been trained at the district level by the provincial health team. Now you are responsible to transfer that information to the health centres in the different areas of your IU. There is a suggested training module ☮ in your Tool Kit CD which outlines a two day training series for heath staff who will be involved in the mass drug administration as well as chronic case management.

1.2.1 Training of health staff at the district level: Puskesmas, Pustu and Polindes

The two day training module included with this Tool Kit is for the different levels of health care centres. The training was designed to take place at the primary health care centre so that as many health staff as possible could participate. If it is not possible for the district health staff to train at the sub-district level then it is beneficial to have at least one person from each health centre present for the training.

The training covers the following topics:

- Introduction
- Topic 1: Identification, Cause and Transmission of Lymphatic Filariasis
- Topic 2: Symptoms of lymphatic filariasis: acute and chronic
- Topic 3: Chronic and acute case management
- Topic 4: Prevention of Lymphatic filariasis
- Topic 5: Mass drug administration
- Forms for monitoring

The training is designed to present the materials present in the Department of Health Books I, II and III in particular, which outline the LF elimination campaign in Indonesia, the guidelines for MDA and the guidelines for the management of chronic cases.

The module requires two trainers and is designed to take two full days, which includes group work, pre-training testing and post-training testing.

1.2.2 Training of drug distributors and community decision makers

1.2.2.1 Identify drug distributors

Assuming that you have decided in the strategic planning stage (chapter 2) to use drug distributors, you will need to identify who they will be. It is recommended to do this at the individual village or neighbourhood level (if in an urban environment) as local decision makers together with health staff will be best able to identify who are the best persons for distribution. Remember that drug distributors are the link between the health centre and the general population. They are responsible for informing the population directly of the importance of taking the two drugs; they will be the ones to answer questions and to ensure that individuals take directly the drugs. Drug distributors ideally should have the following characteristics:

- Motivated to work with the community;
- Health knowledge;
- Able to be active and mobile – to walk from house to house;
- Have a positive attitude;
- Respected by their community;
- Knowledge of the community;
- Ability to persuade others.

It is also good to have a good mix of men and women with your drug distributors. In order to know how many drug distributors you will need per local area (neighbourhood or village), local decision makers and health centre staff should decide how many households will be represented by 1 drug distributor. This will depend on how far the houses are from each other, the size of the unit (village or neighbourhood) you are considering as well as the drug distribution method.

1.2.2.2 Training of drug distributors and community decision makers

You will need to conduct a brief training for the drug distributors. Normally, the health staff from the local health centre will conduct the training and generally one day is sufficient to cover all of the essential points. The training will cover:

- General information on LF (prevalence, transmission, cause);
- Symptoms (acute and chronic);
- Economic and social impact of the disease;
- Case management for acute and chronic symptoms;
- Prevention;
- Why do we conduct a mass drug administration;
- Advocacy and mobilisation of the community to take the treatment;
- Treatment of LF;
- Process of drug distribution;
- How to carry out the drug distribution;
- How to handle side effects of the treatment; and
- How to report the results of the drug distribution.

Since community involvement is so essential to the success of the campaign, it is recommended that you include community decision makers in the one day training that you conduct for drug distributors. This will increase social mobilisation in the community by informing key persons in the village who can answer questions as they arise, convince people to comply with treatment and assist with organisation of the MDA. By training the decision makers you will also increase their ownership of the programme as they will be asked to take responsibility for the programme together with the drug distributors.

Community decision makers may include the following:

- Village government
- Teachers
- Cultural leaders
- Religious and spiritual leaders
- NGO staff
- Head of women's groups, farmers' cooperatives, cultural groups, clubs, etc.
- Etc.

The drug volunteers, community decision makers and local health staff can decide and plan together the best way to socialise their community and to distribute drugs at the village level. It is recommended to add this planning component to the training activity to maximise the presence of everyone.

2 Mass Drug Administration (MDA)

This part of the guidebook will explain the implementation of the mass drug administration. It is assumed that when you reach this point, you will have already trained both health staff and drug distributors for each village or neighbourhood area (in urban environments) and that the drugs for the campaign have already been delivered to your IU.

2.1 Logistics: District to Puskesmas and Puskesmas to Village

You will need to ensure that drugs for the MDA and for the management of side effects reach the health centres 1-2 weeks before the MDA plans to start. This will give enough time for the health centres to distribute the drugs to the peripheral health centres and villages in preparation of the drug distribution days. You may decide to deliver the drugs before socialisation begins or you may decide to do it in between the socialisation and the distribution itself. Consider while planning, the terrain in your district and the constraints / possibilities of delivering to certain locations. All logistics should be in place in the villages 3 days before the MDA should begin.

2.2 Social mobilisation at the village level (village) or neighbourhood level (urban)

Social mobilisation is an essential element of the mass drug administration – so do not forget to spend some time and resources on this step! Social mobilisation will inform the community about the upcoming drug distribution and will educate them on lymphatic filariasis, including why they should take the two drugs. If communities are not informed about what the drugs are for, then there is a risk that people will not take the drugs since they will not understand the drugs' benefits. Imagine what a waste of time and resources this would be! So make sure that you plan to conduct social mobilisation activities in both rural and urban areas.

Different ways to conduct social mobilisation include:

- Showing the LF film and then having short explanation about the upcoming drug distribution campaign (when, why, where);
- Distributing flyers or brochures to all households;
- House to house information (could be done during the census);
- Radio and/or television announcements;
- Posters which give information on the day of the drug distribution, including short information on when, why, where;
- Using places where people congregate like churches on Sunday, mosques on Friday, market days or schools to give information on the upcoming drug distribution (when, why, where);
- Using megaphones to convey messages;
- Etc.

This list is not exhaustive and you may find in your district, there are other ways of informing people about the upcoming MDA. It is recommended to carry out social mobilisation activities about 2 weeks to one month prior to the drug distribution. If you inform people too far in advance, it is possible they will forget about the programme by the time the drugs are distributed. By informing people and then directly organising the drug distribution campaign, you maximise the momentum created by social mobilisation. People will be informed and will want to take the drugs – you can concentrate on provision of the treatment to the community.

Learn from field experience…

In Alor District, at many different levels – district and village – on the day the mass drug administration was launched, there was a speech given by important decision makers followed by their taking the drugs in front of the community. This demonstrated their political support as well as showed that they were not afraid of the treatment or its effects and that they felt that it was important for them as well.

2.3 Implementation of MDA

The mass drug administration should usually take place on the same day within the whole IU and may also be connected to the same day used across the country. Usually it takes 1-2 days to conduct the MDA in an IU, to reach all of the houses and areas for distribution. It is best to "make a day" of the drug distribution so that you capitalise on the momentum in the community; if everyone is aware that there is a free drug distribution going on, they will make sure that they also participate.

Remember who will be excluded from the drug distribution:

1. Pregnant / breastfeeding women;
2. Children under the age of 2 years;
3. Those persons who are very ill.

These persons are excluded from the mass drug administration as they are contraindicated for the use of these two drugs. Their exclusion from the treatment will not affect the overall success of the campaign and they will probably join the MDA at some point during the 5 years.

The drug distribution table is:

Age	**DEC (100 mg)**	**Albendazole (400 mg)**
2 – 6 years (pre-school)	1 tablet	1 tablet
7 – 12 years (primary school)	2 tablet	1 tablet
13 – adult (high school +)	3 tablet	1 tablet

The drug distributor must ensure that the drugs are swallowed by the person directly. For this reason, it is perhaps best to consider conducting the MDA in the late afternoon early evening when people have finished their noon or evening meal. It is recommended to take the treatment after eating to reduce side effects. Additionally, since side effects usually come after about 6 hours, people will be asleep or going to sleep and therefore will not suffer as much from side effects if they do have them. Another recommendation is for the drug distributor to have clean water available at the time of distribution.

If conducting house to house distribution, each time the drug distributor enters into a house, he or she will have to check the family cards (see example below and under forms in Tool Kit ☮) and enter the number of drugs distributed as well as ensure that the age is correct. For those who could not be reached or who are not eligible for the treatment, make sure that the reasons are written under "Comments". If someone in the household is out of the house at the time the drug distributor comes, that he should return to the house the following day or at a pre-arranged time in order to give the drugs to that person. The drug distributor should not leave the drug with the family members and assume that the person will receive the treatment. This point is especially important since this situation will most certainly arise in every village or neighbourhood. **Remember!** The drug distributor must observe the person taking the two drugs.

If other distribution methods are used (distribution posts or special population groups), you may need to consider how family cards can be used in these situations for monitoring purposes. For example, in some villages, whole households must come to the distribution posts so that the family cards could be filled out accordingly. This approach may not be feasible in an urban environment and other recording methods may be used.

Family Treatment Card

Date of the start of the MDA implementation: 09 / 08/2004:
Name of the head of the family: Yopi M. Laumaley
House No: 2
RT/RW: 05 / 03
Village: Binongko / Kalabahi
Health centre and Sub-district: Puskesmas Kenarilang / Kec. Teluk Mutiara

No	Name	Age the first year of distribution		Number of DEC tablets for each year					Alb 400mg	Date of administration and Year				
		M	F							1	2	3	4	5
1	Yopi M. Laumaley	25		3					1	10/11 /04				
2	Jelita Kamis		20	3					1	10/11 /04				
3	Tara Y. Dorothee		1m th	0					0	10/11 /04				
4	Angmereng S. L.		18	3					1	10/11 /04				
5	Efraim Kamis	13		3					1	10/11 /04				
6	Zet Boy L.	9		2					1	10/11 /04				

Comments: No. 9 pregnant (2004)
No. 10 outside of the village, to Kupang (2004)

Make sure that your district health team supervises in some locations on the drug distribution day. They cannot be in every village, but wherever possible, it is recommended to include supervision into the planning.

There are two reasons for this:
1) This will encourage and support the health centre staff, the drug distributors and the community and;

2) The district health staff will be able to see directly in the villages and neighbourhoods what are some of the constraints and successes in the drug distribution so that they can improve the process for the upcoming year. The supervision team should fill out a form of their observations. ☮ See Tool Kit for an example.

2.4 Monitoring of side effects

As mentioned above, there is always the possibility of side effects in people following the mass drug administration (MDA). If a person has MF in their body, when the drugs work to kill the MF, the body sometimes reacts to the death of the LF worms. The side effects that people experience are not life-threatening. The most common side effects are: fever, fatigue, queasiness and dizziness. Other less common effects are: red pin prick spots, itching, swelling in the scrotum or limbs and forming of an abscess. If people do suffer side effects from the treatment, it is important that they understand that the side effects are good, the medication is working and that they had lymphatic filarial worms (MF and/or adult worms) in their bodies.

If someone is suspected to have suffered from severe side effects, also called serious adverse experiences (SAE), then the health staff must report it immediately to the district health office. The district health office should then report it to the provincial and central level immediately. Serious adverse experiences are classified as an unfavourable experience following treatment with drugs leading to:

- Death;
- Life-threatening reaction to the treatment;
- Hospitalisation or prolongation of an existing hospitalisation;
- Persistent disability or incapacity;

- Birth defects in children born to women who have taken the treatment;
- Cancer;
- Accidental or intentional overdose.

Remember that serious adverse experiences are very rare and it is most likely that during the course of the whole MDA in your IU, there will not be anyone suffering from severe reactions. Last year (2003), during the course of MDA across the world, four deaths out of 133 million people taking the single dose (DEC) or two dose (DEC and albendazole) treatment, were reported to WHO as possibly associated with the MDA. It is important, however, that your health staff understands the possibility of these effects and knows how to handle them should they arise. Remember also that statistically there is the possibility that people will die of other causes within your IU on the day of the drug distribution. As a result, your health team must be able to explain to the community that this was not due to the filarial drugs, but to other causes.

Remember that albendazole also kills 5 different kinds of intestinal helminths; therefore people will expel intestinal worms the following day. This is one of the positive side effects of the treatment, especially for children.

It is recommended in those areas where there are high MF rates to ensure that a doctor or nurse stays in the village the first night after the drugs are distributed. This will assure the community if there are any side effects that health staff are present to assist them. Where this is not feasible, it is recommended to leave a small quantity of drugs (antihistamine and paracetamol) for the drug distributors to take care of the side effects in the community. This is particularly recommended for very rural areas. The following table gives the recommended simplified dosage for these drugs:

Age and average weight	Paracetamol (500 mg)	Antihistamine (4 mg)
2– 4 years (8 kg)	3 x ¼ tablet	3 x ¼ tablet
5 – 15 years (15- 30 kg)	3 x ½ tablet	3 x ½ tablet
16 years – adult (> 40 kg)	3 x 1 tablet	3 x ½ tablet

2.5 Sweeping

After the 1-2 primary days of drug distribution, there will be a sweeping period. Sweeping is the process of finding those who may have missed the treatment during the main distribution days. Usually this will be done by the health staff together with the drug distributors and will take 1-2 months. Depending on the method of distribution that you chose and on whether you are sweeping in an urban or rural area, will determine how you conduct the sweeping procedure. You may choose to conduct house to house sweeping or you may choose to return to schools, businesses, government offices to ensure that everyone there received the treatment. You will need several sweeping methods in the entire IU.

2.6 Recording and reporting of MDA from the village level to Puskesmas to District to Province to Central

After both MDA and sweeping activities have been completed, it will be necessary to record and report the results to the different decentralised levels of government. The health staff will need to collect the results from the villages and towns in their areas and then forward the coverage information onto the district level. See Chapter 5, Section 1.2 for more specific details.

2.7 Documentation of MDA

If you have the means within your district, it is recommended that you photograph or video the MDA during the different stages: training, socialisation, MDA, sweeping, etc. so that you have documentary evidence to show to the district decision makers (government and non-government) as part of your ongoing advocacy.

3 Disability prevention

One of the important components of the elimination programme for LF is the prevention of disability for those suffering from the chronic symptoms of the disease: lymphoedema and elephantiasis. Because these chronic symptoms become incapacitating with time, it is important that we reach everyone who has evidence of chronic symptoms and educate them on the different measures they can take to reduce disability and to prevent future deterioration. The basic principles of disability prevention include:

1. Treatment regimen for those who have lymphoedema of the limbs, breast, penis and scrotum which includes general hygiene, prevention of secondary bacterial infections and skin care.

2. Encouragement of repetitive and frequent natural movement and elevation of the affected area as much as possible.
3. Surgical treatment for hydrocele (surgical hydrocelectomy).
4. Patient and family education on the above measures.

Remember to adapt these measures so that they are locally possible and sustainable. Informal caregivers (family members, friends, neighbours, drug distributors and community health workers) should be informed about the different measures so that they can assist the sufferer in self-care; this is particularly important for those persons who are already severely disabled. These informal caregivers can also help the sufferer to prevent further disability and worsening of existing disability. Informal caregivers can also assist to reduce social exclusion for those persons suffering from chronic symptoms.

It is also suggested to involve the Department of Social Work in case management. They can follow-up with families and LF sufferers together with the health staff.

3.1 Case management

The Indonesian programme has determined that those persons who suffer from chronic symptoms should be individually treated for 10 days with the following doses: 100mg 3 X day for 10 days during the first round of MDA. In the second and subsequent years, they will join the rest of the population in take the single dose treatment.

For those persons who are suffering from the different stages of lymphoedema, the following chart should be followed:

Treatment component	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Stage 7
Definition	Swelling is reversible overnight	Swelling is not reversible overnight	One or more shallow skin folds are present	One or more knobs are present	One or more deep skin folds are present	Mossy (like warts) lesions are present	Patient is unable to perform regular activities indepen-dently
Hygiene (washing and drying)	Yes (ideally at night)	Yes (ideally at night)	Yes (ideally at night)	Yes (ideally at night)	Yes (twice a day if possible)	Yes (twice a day if possible)	Yes (twice a day if possible)
Care of entry lesions	If present	If present	If present	If present	If present	If present	If present
Exercise	Yes	Yes	Yes	Yes	If possible	If possible	If possible
Elevation	Usually not necessary	At night	Day and night	Day and night	Day and night	Day and night if possible	Day and night if possible
Prophylact ic creams	No	No	Usually not necessar y	Usually not necessary	Usually necessary	Necessary	Necessary
Prophylact ic systemic antibiotics (send to doctor)	No	No	No	Usually not necessary	Usually necessary (if acute attacks persist)	Necessary	Necessary

Lymphoedema management has many benefits for the sufferer:

- Eliminates the bad odour;
- Prevents and heals entry lesions;
- Improves the patients' self-confidence;
- Often reduces the size of the leg, arm, or other affected area;
- Reduces acute attacks caused by bacterial infections of the skin (affected area swells and is painful and the person suffers from chills, redness, fever, gland soreness, headache and nausea);
- Improves the patients' ability to work, go to school or conduct other life functions.

The foundation of case management is the simple act of washing the affected area carefully. Make sure that the person uses clean water and plain, non-perfumed soap. Germs cause acute attacks to occur so by washing the affected area well, the individual will remove dirt and germs. Make sure that the sufferer washes the leg or other affected area until the water is clean – i.e. until the rinse water stays clean. If the individual is incapacitated or unable to reach certain parts of the feet, then they should seek assistance from a friend or family member; the germs and dirt are no harm to the caregiver. Make sure that small entry wounds are found and washed well. Check especially in between the toes and in the folds of the skin. After washing, these areas must be dried well to avoid growth of bacteria and fungus. If the individual has small wounds, they should apply anti-bacterial cream to the wounds. Ensure that both legs (the affected one and the unaffected one) are both cared for in the same way. This will prevent lymphoedema from occurring in the non-affected leg.

For those suffering from lymphoedema of the leg, they should always wear comfortable shoes that are not too tight. The individual may have to have shoes widened by the shoe maker so that they will fit the larger foot. It is essential that shoes are not too tight as tightness can encourage small wounds to form and this increases the risk of an acute attack.

Those who suffer from Stage 2 – Stage 7 lymphoedema should elevate their legs when possible. This should be done during the day and at night while sleeping. Small exercises are also recommended – like moving the feet back and forth and around in a circle. These exercises should be done as frequently as possible.

It is not necessary for the community health worker to be able to classify the stages of lymphoedema. The community health worker should know how to recommend for all persons suffering from lymphoedema: foot hygiene, exercise and elevating the leg wherever possible. The community health worker should also know when to refer sufferers to the health clinic – especially when they are suffering from acute attacks and need systemic antibiotics.

3.2 Hydrocele surgery

Hydrocele is the most common genital problem caused by LF. It occurs when there is collection of fluid inside the scrotal sac, around the testicles. Sometimes hydroceles can be small and the patient may not even notice them. They can also be very large, causing

disability to the patient, inhibiting sexual and urinary functions if the penis becomes completely hidden. Those with hydrocele should follow the above advice about washing the affected area well and individuals should particularly pay attention to the contact area between the leg and scrotum, which are prone to fungal infections.

Hydrocele can be cured with surgery. If a patient suffers from hydrocele, they should be referred to a doctor so that they can discuss the possibility for surgery and also ensure that the patient has hydrocele from lymphatic filariasis and not another condition which causes fluid to collect around the scrotal sac.

You will need to identify if there is the possibility to conduct hydrocele surgery in your IU. You may need to coordinate with the provincial and central levels to organise a training activity for the surgeon in your district hospital.

3.2.1 Case finding, awareness, education and counselling

If hydrocele surgery is available in your district, you will need to determine how to inform the community about the surgery. You will need to inform them of the process of the surgery, what they should expect and what the expected result of the surgery is. It is important that the person and his family are properly counselled and understand what the decision entails in terms of benefits, necessary care after surgery and expense to the family.

In some areas, there are periods when a specialist surgeon comes especially to conduct hydrocelectomies for the whole IU. The IU actively searches for cases and refers them to the hospital for treatment. If you decide to actively find people, make sure that you present this surgery as an option – not as a forced activity. People should have the choice to decide if they want to participate. If they do decide to participate, then they should be offered counselling on the procedure and on its benefits. Additionally, if you organise such a hydrocele surgery period, ensure that it is not during the time that men need to be working in the fields.

3.2.2 Follow-up post operation

For those who decide to have a hydrocelectomy, make sure that the individuals and their families are adequately informed about prevention of infection around the surgery wound as well as reduction of normal activities (lifting heavy objects, working hard, etc.) until the

wound has healed properly. Health staff at the local health centre should be aware of the patient and follow-up post-operation to ensure that there is no infection.

3.2.3 Evaluation (documentation)

In order to encourage people to come forward for hydrocelectomies, it would be useful to evaluate the surgery in some patients so that you can use their experiences to encourage others to come forward. Remember that surgery is frightening for anyone, especially those with a low education level; so it would be useful to show people the positive results of the surgery. If you use before/after photos, make sure that the person in the photo remains anonymous (i.e. do not take a picture of the face or cite the name of the person). Someone may be willing to come forward and speak openly about how their life has changed since the operation. This kind of witnessing will be useful for the programme as people will believe the experiences of another person. If necessary this person should be offered counselling before speaking publicly so that he will understand the benefits and drawbacks of telling about his experience.

4 Points to remember from Chapter 4

- ☑ You should select the two villages with the highest MF rates from the baseline blood smear surveys as sentinel sites for future monitoring within the IU. For each IU, there should be two ***sentinel sites*** or if the IU has a large population, then there should be two sentinel sites for every one million persons or one for every 500,000 persons.

- ☑ In addition to the two fixed sentinel sites, you will need to identify two ***spot check sites*** which will change with each monitoring phase.

- ☑ Before beginning the mass drug administration, you will need to have the minimum set of ***essential indicators*** for the sentinel sites:
  - Microfilaraemia prevalence and density in 500 persons using night blood smears
  - Clinical signs of the disease (prevalence of lymphoedema and hydrocele)

- ☑ Health centre staff together with ***local decision makers*** should census the population in the IU in order to know how many people in certain areas are eligible and in-eligible for treatment.

- ☑ The district health team are responsible to train heath staff who will be involved in the mass drug administration and in chronic case management. A two day training module is included with this Tool Kit.

- ☑ It is recommended to identify local drug distributors at the individual village or neighbourhood level (if in an urban environment) as local decision makers together with health staff will be best able to identify who are the best persons for distribution. Remember that drug distributors are the link between the health centre and the general population. They should be motivated and have some knowledge on health issues and on their community.

- ☑ The health staff will need to train the ***drug distributors***. It is recommended to train local decision makers at the same time. One day is usually sufficient and a training guide is included with this Tool Kit.

- ☑ Social mobilisation is an essential element of the mass drug administration – so do not forget to spend some time and resources on this step! Social mobilisation will inform the community about the upcoming drug distribution and will educate them on lymphatic filariasis, including why they should take the two drugs.

- ☑ Ensure that the drugs for the MDA and for the management of side effects reach the health centres two weeks before the MDA plans to start; to give enough time for the health centres to distribute the drugs to the peripheral health centres and villages in preparation of the drug distribution days.

- ☑ MDA should usually take place on the same day within the whole IU and may also be connected to the same day used across the country. It is best to "make a day" of the drug distribution so that you capitalise on the momentum from social mobilisation.

- ☑ Remember who will be ***excluded*** from the drug distribution:
  - Pregnant / breastfeeding women;
  - Children under the age of 2 years;
  - Those persons who are very ill.

- ☑ The drug distributor must ensure that the person swallows the drugs directly.

- ☑ Consider conducting the MDA in the late afternoon or early evening when people have finished their noon or evening meal to reduce side effects.

- ☑ Some people may suffer from ***side effects*** following treatment because the drugs work to kill the MF and the body sometime reacts to the death of these worms. The side effects that people experience are <u>not life-threatening</u>. The most common side effects are: fever, fatigue, queasiness and dizziness.

- ☑ The district health team are responsible to train heath staff who will be involved in the mass drug administration and in chronic case management. A two day training module is included with this Tool Kit.

- ☑ ***Sweeping*** is the process of finding those who may have missed the treatment during the main distribution days. Usually this will be done by the health staff together with the drug distributors and will take 1-2 months.

- ☑ The health staff will need to collect the results from the villages and towns in their areas and then forward the coverage information onto the district level. The district will then send to the provincial and central levels.

- ☑ Make sure you ***document the MDA*** for advocacy purposes. Show your district government what they are paying for!

- ☑ The second component of the elimination programme for LF is the ***prevention of disability*** for those suffering from the chronic symptoms of the disease: lymphoedema and elephantiasis. You must reach everyone who has evidence of chronic symptoms in order to educate them on the different measures they can take to reduce disability and to prevent future deterioration: regular hygiene, elevation, exercise and wearing shoes.

- ☑ ***Surgery for hydrocele*** is possible and you will have to determine if this can be done in your district. Active case finding should include education and information about the procedure, the risks and the benefits.

Chapter 5: MONITORING & EVALUATION

This chapter will give you comprehensive information about the monitoring and evaluation activities in your IU. This Tool Kit includes the most recent information from the World Health Organisation and the Global Elimination Campaign. The material has been adapted from the WHO guidebook: "Monitoring and Epidemiological Assessment of the programme to eliminate Lymphatic Filariasis at the level of the Implementation Unit." Since the LF elimination campaign is still relatively new, these guidelines are subject to change as operational research and new evidence based studies are conducted. It is therefore essential that you coordinate with LF programme managers at both the provincial and central levels.

By the end of this chapter, you will be able to:

1. **Explain why monitoring and evaluation are important;**
2. **Record reported coverage for the IU each year;**
3. **Record geographical coverage for the IU each year;**
4. **Evaluate surveyed coverage in your IU following Round 1;**
5. **Conduct blood smear surveys and mf density in sentinel and spot check sites 11 months after Round 2 and 11 months after Round 4;**
6. **Monitor regularly the reported coverage rates in your IU;**
7. **Conduct routine programme evaluation during the course of the 5 year MDA;**
8. **Evaluate the interruption of transmission of LF for your IU together with the provincial and central levels; and**
9. **Measure the impact of the interruption of transmission of LF for the local decision makers in your area.**

1 Monitoring

1.1 Why is monitoring important?

Remember that the objective of mass drug administration is to administer the drugs to all of the eligible population of the endemic IU once per year. The more people that take the drug, the better chance you have to eliminate the disease. It is important to monitor the programme's achievements each year so that you can know where you are performing well (i.e. a good percentage is ingesting the drugs) and where you need to improve (i.e. not

enough people are ingesting the drugs). Monitoring is active and should be done throughout the course of the MDA according to the guidelines outlined here.

1.2 Geographical and Reported coverage

In order to measure how your programme is going, the following indicators have been defined for your IU:

1. Geographical coverage: defined as the proportion of villages or urban areas covered by the MDA in the targeted IU during the reported year. This indicator will help the programme manager at the IU level to assess whether the health centre staff and drug distributors have reached all of the areas in the IU.

   It is calculated using the following formula:

$$\text{Geographic coverage of villages} = \frac{\text{Number of villages covered}}{\text{Total number of villages in the IU}} \times 100$$

$$\text{Geographic coverage of urban areas} = \frac{\text{Number of urban areas covered}}{\text{Total number of urban areas in the IU}} \times 100$$

2. Drug Coverage: defined as the proportion of individuals who actually ingest the drug. There are two different kinds of drug coverage: reported coverage and surveyed coverage. We will discuss here only reported coverage and the next section (1.3) will outline surveyed coverage. Reported coverage refers to the recording of the drug distributor, at the time of drug administration, of the individuals who swallowed the two drugs. The drug distributors will also record those persons who are ineligible for treatment or who were missed during the MDA (see Chapter 4 for more details). Drug coverage will be compiled by the drug distributors and then by the district health centres who will report to the District LF programme manager. There are two indicators: reported coverage in the total population and reported coverage in the eligible population.

They are calculated using the following formulas:

$$\text{Drug coverage reported in total population} = \frac{\text{\# of people reported to take treatment}}{\text{Total population in the IU}} \times 100$$

$$\text{Drug coverage reported in eligible population} = \frac{\text{\# of people reported to take treatment}}{\text{Total eligible population in the IU}} \times 100$$

These two indicators will measure the MDA impact on the total population and on the eligible population. The coverage among the total population reflects the proportion of the at risk population (e.g. the whole endemic IU) are being reached by the MDA and is used for epidemiological monitoring. The coverage amongst the eligible population will measure the performance of the health system in the MDA implementation and serves as an indicator for the district health office where they need to strengthen their activities.

On the monitoring form, the following information is necessary:

No.	Name of village or area	(A) Total population	(B) Total number of pregnant / breastfeeding women, children < 2 years	(C) Total population who must receive treatment =(A)-(B)	(D) Total population who took the treatment	(E) Drug coverage reported in eligible population [(D) / (C)] X 100	(F) Drug coverage reported in total population [(D) / (A)] X 100
1.	Tasi	396	17	379	366	96,6%	92%
2.	Wolwal	877	45	832	523	62,3%	59,6%

This reporting form will then be compiled by the district with the coverage per village for each health centre and then sent onto the provincial and central levels. It is important to compile this information in a timely manner so that the reports will reach Jakarta before September in time for the yearly report to the international donors.

1.3 Surveyed coverage after Round 1

Although it is assumed that the reported drug coverage reflects the actual consumption of the drugs; however it is possible that sometimes it will be an over-estimated of the true coverage. Some example of this may include:

- The drug distributor leaves behind the drugs in a household and assumes that the household members have consumed the drugs;
- If the drug distributor is paid per person treated, it is possible that there is over-reporting of how many people took the treatment in order to receive increased payment;
- The data on the total population or the eligible population is incorrect or outdated and will result in an incorrect calculation of the drug coverage.

In order to control for these possibilities, it is recommended to verify the reported coverage by checking with a survey, whose results are called surveyed coverage. Surveyed coverage complements reported coverage and provides a way to double check the reports from the health centres and drug distributors. It uses a population-based cluster method of 30 clusters of 10 households which is adapted form the Expanded Programme for Immunisation (EPI) methodology.

The following indicator will be calculated from the results:

Surveyed coverage

$$= \frac{\text{Total number of individuals identified by HH survey to have taken drugs}}{\text{Total number of individuals residing in all the surveyed HH on whom information on drug ingestion could be elicited}} \times 100$$

The methodology to carry out surveyed coverage is outlined in detail in Appendix 3. It is recommended that independent assessors carry out the surveyed coverage. Some possibilities for interviewers are: local NGO, District Health Councils, or other civil society groups. If it is not possible to identify independent assessors, then the survey should be carried out by those who were not responsible for the MDA. This will reduce bias in the results.

It is recommended to conduct this survey after Round 1 so that you will be able to identify any abnormalities in the MDA in your IU – i.e. drug coverage is too high or too low. Surveyed coverage should be compared with reported coverage figures. The following table outlines the possibilities for the results:

Results	Possible explanation	What should be done?
Reported coverage and surveyed coverage are both low.	- Some areas within the IU have not been covered with MDA; - Some age groups have been left out; - Eligible population may have been misinterpreted; - Population may be refusing to take the treatment due to different reasons.	- May need to repeat MDA in certain areas which may have been left out; - Improve social mobilisation in the communities; - Improve the skills of the drug distributors (training and better supervision); - Conduct KAP study in order to identify why people are refusing to take the treatment.
Reported coverage is much higher than surveyed coverage.	- Drug distributors may be incorrectly reporting drug ingestion; - Outdated or incorrect total population figures; - Incorrect eligible population figures; - Low comprehension in the community about the importance of consuming the drugs; - People from outside the IU are taking the drugs and are recorded as being part of the IU.	- Improve the skills of the drug distributors (training and better supervision); - Improve coverage in the low coverage areas by strengthening social mobilisation; - Re-check total population figures (updated census?); - Communicate with drug distributors that they should include non-residents separately and not as part of the target population of the IU.
Reported coverage is much lower than surveyed coverage.	- Outdated or incorrect total population figures; - Incorrect eligible population figures; - Drug distributor is not recording all of the persons receiving the medication.	- Improve the skills of the drug distributors (training and better supervision); - Improve coverage in the low coverage areas by strengthening social mobilisation; - Re-check total population figures (is there an updated census?).
Both reported coverage and surveyed coverage are high	- Good reporting system; - Communities and drug distributors are motivated; - MDA programme is functioning according to the planning.	- Keep the momentum going for the next years; - Let the health staff and drug distributors know the results and that they are doing a good job – this will reinforce their ownership of the programme.

1.4 Epidemiological monitoring

The goal of the elimination campaign is to reduce the microfilariae load in people in the endemic IU to such low levels that transmission is lowered to a level where it is interrupted. In order to measure if we are reaching this epidemiological goal, we need to periodically measure the MF levels in a sample of the IU population. Because it is time consuming and

financially impossible to measure the MF rates in all individuals living in an IU, the ELF programme recommends measuring the MF rate in sentinel populations instead.

1.4.1 Identifying sentinel and spot check sites

Before the first round of MDA, you should have selected the two villages with the highest MF rates from the baseline blood smear surveys as sentinel sites for future monitoring within the IU. For each IU, there should be two sentinel sites or if the IU has a large population, then there should be two sentinel sites for every one million persons or one for every 500,000 persons. Each site should have a population of at least 500 persons, and if the site is larger than 500, then a sub-unit of 500 can be used as a sentinel site. The selected populations should have relatively stable populations and should reflect the general population of the IU (city dwellers, rural, etc.). Once selected, these sentinel sites will continue to operate throughout the mass drug administration and do not change. It is best to confirm with the province the selection of the sentinel sites.

In some areas where there is focalised distribution, the size of the IU may be small like a sub-district. In this case, it may not be feasible to choose two sentinel sites per IU; in which case, it is possible to choose reference sentinel sites for a group of IUs. In doing so, however, you must ensure that the IUs are similar in the following characteristics:

- Geographical proximity to each other;
- Have similar epidemiological characteristics;
- Have implemented MDA at the same time.

It should be noted that this arrangement is <u>the exception</u> and can only be done after discussion and agreement from the national programme manager.

Since health staff may know where the sentinel sites are located and as a result, may concentrate their efforts more in that area during the MDA thereby influencing the results, you should identify spot check sites to reduce this bias. These spot check sites provide additional information about transmission in the IU. An equal number of spot check sites will be chosen for every sentinel site in the IU. The spot check sites are unfixed - meaning that new spot check sites will be chosen with each monitoring survey. For example, in an IU with population less than 500.000 persons, you will have 2 fixed sentinel sites and 2

unfixed spot check sites. Spot check sites should have the same requirements at the sentinel sites (population greater than 500 persons or if larger, a sub-unit of 500 can be chosen).

Before beginning the mass drug administration, you will need to have the minimum set of essential indicators in the sentinel sites:

- Microfilaraemia prevalence and density;
- Clinical signs of the disease;

You will need to examine at least 500 individuals in each sentinel site for microfilaraemia by night blood smear examination and for prevalence of lymphoedema and hydrocele. You will need to calculate the baseline microfilaraemia prevalence and the mean microfilaraemia density with the following formulas:

Microfilaraemia prevalence (mf%) =

$$\frac{\text{No. of individuals whose slides are positive for mf X 100}}{\text{Total no. of individuals examined for mf}}$$

Microfilaria density (mfd) =

$$\frac{\text{Total count of microfilariae in the slides found X 50*}}{\text{Total no. of slides found positive}}$$

* 50 is used at the correction factor when the blood volume is 20 µl otherwise for different amounts of blood, there are different correction factors.

Since you have chosen these sites from those you observed in the baseline survey, you may not need to repeat the night blood smear survey again.

The prevalence of clinical cases of lymphoedema and hydrocele should be recorded in all of the sentinel sites. This will give an indication of the disease burden in the IU and will assist with planning of disability prevention activities.

Use the example from the following table to calculate the prevalence of clinical signs:

Implementation Unit	Sentinel site	No. of persons (both sexes) examined (c)	No. of lymphoedema Cases (d)	Prevalence (%) =(d/c) x100	No. of males examined (e)	No. of hydrocele cases (f)	Prevalence (%) (f/e) x100
X	A	500	6	1,2	250	39	15,6
	B	510	18	3,5	245	55	22,4

These measurements in the sentinel sites (MF prevalence, MF density and clinical signs) will serve as a baseline from which you will be able to follow the programme's impact from start to finish. Once the sentinel sites are established and the baseline data before the MDA has been carried out, you can implement the MDA.

1.4.2 Monitoring in sentinel surveillance and spot check areas after Rounds 2 and 4

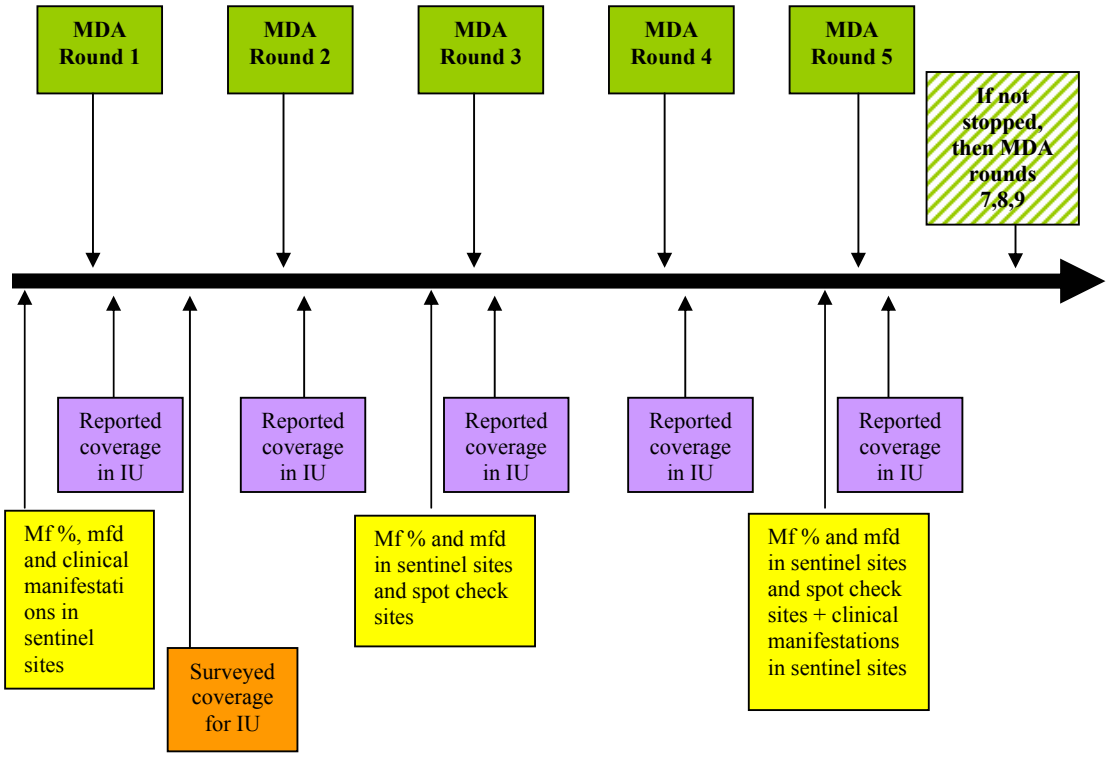
You have already conducted the baseline measurements in the sentinel sites before the MDA campaign began and now you have already begun the mass drug administration. The measurements you collected before beginning the MDA will serve as a baseline from which you will be able to follow the programme's impact.

In order to measure the impact of the drug campaign on microfilaria, we will need to measure at regular intervals the microfilaria prevalence and density in the sentinel and spot check sites. These indicators together with drug coverage data will provide an indication of the impact of the MDA on LF transmission. You will conduct two times night blood smear surveys in the entire sentinel site population (around 500 persons per site) and spot check sites (around 500 persons per site) for microfilaria prevalence and density. These monitoring surveys should be done 11 months after Round 2 and 11 months after Round 4. Since in Indonesia, LF is nocturnally periodic, you will need to take finger prick blood between 22h00 and 02h00 according to the correct protocols to measure microfilaria.

The following table outlines the frequency of measuring the indicators:

	Reported coverage of MDA	**Mf % or microfilaraemia prevalence**	**Mfd (microfilaria density)**	**Clinical manifestations**
Sentinel sites	Following every MDA (within one month)	Before the 1st, 3rd and 5th MDA rounds. If necessary, before the 7th and 9th rounds until MDA can be stopped	Before the 1st, 3rd and 5th MDA. If necessary, before the 7th and 9th rounds until MDA can be stopped	Before the 1st, 3rd and 5th MDA. If necessary, before the 7th and 9th rounds until MDA can be stopped
Spot check sites	No	Before the 3rd and 5th year. If necessary, before the 7th and 9th rounds until MDA can be stopped	Before the 3rd and 5th year. If necessary, before the 7th and 9th rounds until MDA can be stopped	No

Monitoring activities for the entire MDA can also be described in the following manner:



1.5 Regular monitoring of programme activities

In addition to the epidemiological and programmatic monitoring listed above, it is recommended that you also hold periodic mid-term evaluation meetings with the health

staff and drug distributors in order to discuss the results of the monitoring surveys as well as the drug coverage results. It will be important to get their opinions as to why coverage rates are higher or lower in certain areas and to get their suggestions as to how to improve the coverage. It will also provide an opportunity for the district health team to transfer positive experiences from one area to another. This mid-term evaluation will also provide a sense of empowerment and ownership of the MDA within both health staff and drug distributors. They will feel that they have a direct say in the direction of the campaign and an opportunity to propose solutions to difficulties as well as share in the successes. It will be up to you in the district how often you would carry out such an mid-term evaluation – although it is recommended after the first round and after the third round at a minimum.

2 Evaluation

Evaluation is essential in order to determine if you have reached interruption of transmission. You must follow very carefully the steps outlined here so that you do not make the mistake of stopping MDA prematurely. The provincial and central authorities will assist and supervise you in the evaluation. It is important that you adhere to the guidelines as they are written. After the 5th round of MDA is completed, please make sure that you contact the national manager in order to ensure that you follow the most updated guidelines to show the interruption of transmission.

2.1 Evaluation of interruption of LF transmission

In order to evaluate the interruption of LF transmission, there are 5 steps which you will need to execute before you can determine if you have stopped transmission within your IU.

Step 1: Follow-up to monitoring survey after Round 4, if mf < 1%, add ICT card testing in children 2-4 years

As mentioned in the above section on monitoring, you will conduct mfd and mf% blood smear surveys in the sentinel and spot check sites one month before you plan to conduct the 5th round of MDA (or 11 months after Round 4). If the results of this survey show that the mf% < 1 % in both the sentinel and spot check sites, then you will need to test using ICT cards all of the children in both the sentinel and spot check sites who are between the ages of 2 – 4 years old (meaning that they were born after the MDA began).

ICT cards test the antigenaemia of the children, showing if they have been exposed to mf during their lifetimes. ICT cards only see the antigens for bancroftian filariasis, so if you

have areas with *B. timori* or *B. malayi* in your IU, you will not need to use the ICT cards and you can use night blood smears instead to detect presence of microfilaria.

If you find even one positive case from the ICT card testing or the night blood smears, you will need to first confirm if this is a "true positive" – meaning that there was not an error in the testing procedure. There is an algorithm attached at the end of this document which will outline the exact steps which need to be taken. You will first need to re-test that child to make sure that the test is indeed positive. If the child tests positive again, you will need to investigate where this child may have been exposed to filariasis. For example, perhaps the family is new to the area or has been travelling. Wherever the child was exposed to LF, you will need to assess the MF status in family members and neighbours (MF testing and ICT card tests). The national programme manager will be able to assist you on the process if you find more than 3 positive cases. If you find any true positives, you will need to carry out an extra round of MDA (5 and 6). This should be a decision taken together with the central and provincial levels.

If you do not find any true positives in the children, then you can go on to Step 2.

Step 2: 5 – 10 additional sentinel sites are added for mf survey and ICT testing

Still, before the 5th round of MDA, you must repeat the procedure in Step 1 in 5 – 10 additional sentinel sites. These sites should be believed to have the highest risk for ongoing MF transmission (e.g. they had high MF rates prior to the beginning of the MDA, low coverage rates, dramatic change in IU population (refugees or internally displaced persons, etc.). Remember that if you have brugian filariasis in your area, you will use the night blood smear instead of the ICT test.

If you find a high number of true positives in the 2-4 year old children either in the ICT card tests or with the night blood smears, it means that transmission of LF is ongoing and you should continue the MDA. However, if you find 1 or 2 positive, you should carry out the 5th round of MDA and then move onto to Step 4 and assess the results together with the central and provincial levels as to stopping MDA or continuing one more round.

If you do not find any true positives, then you continue on with Step 3.

Step 3: 5th Round of MDA

Since you have already planned for the 5th round of MDA, you will continue on, regardless of the results (true positives or not from the ICT cards and/or night blood smears).

Step 4: Lot Quality Assurance (LQA) in 300 children using ICT cards or night blood smears in brugian areas

It is recommended that you conduct this step as quickly as possible after Round 5 of the MDA, so that if necessary, you will be able to order drugs for Round 6.

For Step 4, the children to be sampled are between 2 – 4 years old. In order to identify which communities need to be identified, make sure that you make at list of those communities where the MF prevalence is known and you will rank them, with those with the highest MF prevalence at the beginning of the list. You should choose those areas with the highest transmission for the LQA survey.

In these communities, you will need a sample of 30 clusters of 10 children each. In the individual cluster (10 children), you will choose one household at random and the oldest child (between 2-4 years) is chosen and tested with an ICT card for antigenaemia in bancroftian areas or with night blood smears in brugian or mixed areas. If no child between 2 – 4 years is present in this household, you will need to go to the next household (nearest to the first house chosen) and begin with the oldest child between 2 – 4 years. If the selected child is absent from the household, the second-eldest child can be selected for ICT card or night blood smear testing. Make sure that you note which households the eldest child was absent; in case you have to return there to test the eldest child. You should then go to the next house (the nearest to the house where you are) and select the eldest child there following the same procedure as above. You should continue house to house until you have tested 10 children; i.e. you will test one child per household.

If you find true positives in these 300 children, you will need to conduct another round of MDA. After that round of MDA, you can go directly to Step 5.

If you have no true positives in these 300 children, then you can move on to Step 5.

Step 5: Large community LQA using ICT cards in 3000 school entrants

In this final step to assure that you have eliminated LF transmission in your IU, you will need to test 3000 children for filarial antigenaemia using the ICT cards (except in those areas where brugian filariasis is present, where you will need to use blood smear surveys). You will need to be sure to follow very closely the guidelines outlined here for selecting children.

You will need the total number of children in the age group (6-7 years) first. Let's say for this example that there are 180.000 children in your IU who are between the ages of (6-7 years). You need to test 3000. First, you will need to determine the sampling interval. You can do this by calculating 180.000 / 3.000. The answer, = 60. This is your sampling interval.

Next, you will need a list of every school in your IU with the corresponding total number of children between the ages (6-7 years).

The following table gives an example:

Elementary school	Total number of children between 6-7 years
Kalabahi	300
Maukuru	50
Kamot	45
Lekom	20
Alila	80
Bukapiting	100

In order to identify which children in which schools you should interview, you will need to calculate the cumulative totals of the populations in the schools. This gives a cumulative population for the schools.

The following table gives an example:

Elementary school	Total number of children between 6-7 years	Cumulative population
Kalabahi	300	300
Maukuru	50	350
Kamot	45	395
Lekom	20	415
Alila	80	495
Bukapiting	100	595

From here you will need to select a random number in order to begin your sample. You should take a random number between 1 and the cumulative population total. Let's say our random number is 42. Here is how we determine how to select children from the different schools:

Elementary school	Total number of children between 6-7 years	Cumulative population	Sampling frame	Number of children to be tested
Kalabahi	300	300	42	5
			42+60=102	
			102+60=162	
			162+60=222	
			222+60=282	
Maukuru	50	350	282+60=342	1
Kamot	45	395		
Lekom	20	415	342+60=402	1
Alila	80	495	402+60=462	1
Bukapiting	100	595	462+60=522	1
Etc.				

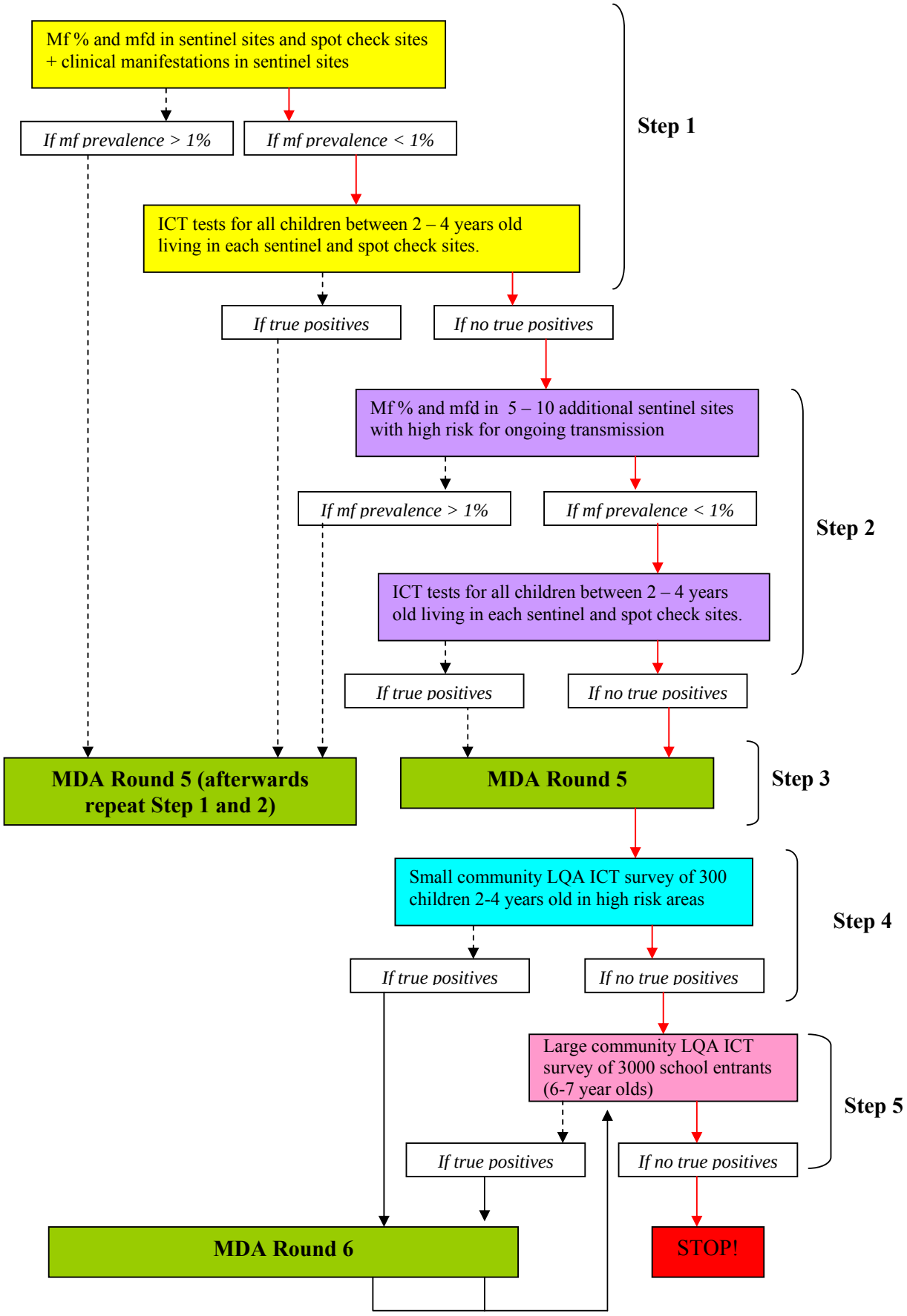
You start with the school that has 42 children – Kalabahi. Then you add your sampling interval (42+60) which equals 102. Kalabahi still has 102 children, so now 2 children will be tested there. Again you add 60 (102+60) which equals 162. Kalabahi still has more than 162 children; therefore now 3 children will be tested. Adding 60 again (162+60) still is

included in the Kalabahi school (222<300) and again when 222+60= 282, it is still included in the Kalabahi school. Therefore, there will be 5 children tested from Kalabahi. When adding 60+282, it equals 342, meaning that it is greater than the total number of children between the ages groups in the Kalabahi school, but less than the number of children for this age groups in Maukuru, so 1 child will be chosen from Maukuru. You will continue doing this until you reach 3000 children.

At the school level, you will need to choose the children in the same systematic manner as above. For example, if 10 children will be selected from a sample school with a population of 500, then every 50^{th} child (=500 / 10) starting with a random one from the first fifty will need to be chosen. It may be useful to use a list of children in the class to do this.

If, in this example, there are any true positives, you will need to assess what to do with the national programme manager – re-start MDA or re-assess to STOP. This process will take 1-2 months to reach all of the children and to compile the results.

If within these 3.000 children, there are no 3 true positives, then you can STOP MDA.
The following diagram explains the scheme to evaluate if transmission has been interrupted.


Mf % and mfd in sentinel sites and spot check sites + clinical manifestations in sentinel sites
If mf prevalence > 1%
If mf prevalence < 1%
ICT tests for all children between 2 – 4 years old living in each sentinel and spot check sites.
If true positives
If no true positives
Step 1
Mf % and mfd in 5 – 10 additional sentinel sites with high risk for ongoing transmission
If mf prevalence > 1%
If mf prevalence < 1%
ICT tests for all children between 2 – 4 years old living in each sentinel and spot check sites.
If true positives
If no true positives
Step 2
MDA Round 5 (afterwards repeat Step 1 and 2)
MDA Round 5
Step 3
Small community LQA ICT survey of 300 children 2-4 years old in high risk areas
If true positives
If no true positives
Step 4
Large community LQA ICT survey of 3000 school entrants (6-7 year olds)
If true positives
If no true positives
Step 5
MDA Round 6
STOP!

2.2 How to measure impact for decision makers (cost efficiency, programme)

Once you have achieved the interruption of transmission, you will need to again communicate with the decision makers in your IU in order to show them how much money you have saved in your district because of the LF elimination. You should calculate how many people were treated per year and also show evidence of the decline in MF prevalence and MF density in the district (or IU).

You can calculate how much money you have saved in your district. Multiply the number of persons suffering pre- MDA from LF by 735.000, Rupiah (the total economic loss per year for each case). The total represents the amount of economic loss the district faced per year before LF elimination – this is also the money saved per year now that you have eliminated the disease. It does not include the new cases that have been avoided, so it is a minimal estimation of the true costs.

There is also the additional health benefit of elimination of intestinal helminths on a yearly basis for children particularly. This will have had, without doubt, a benefit on their education and an improvement in their overall health benefit.

3 Points to remember from Chapter 5

- ☑ Evaluation is essential in order to determine if you have reached interruption of transmission.
- ☑ You must follow very carefully the steps outlined in the chapter so that you do not make the mistake of stopping MDA prematurely. You will be supervised by the provincial and central levels.
- ☑ In order to evaluate the interruption of LF transmission, there are 5 steps which you will need to execute before you can determine if you have stopped transmission within your IU.
    - Step 1: MF prevalence in sentinel and spot check sites and ICT card tests for all children in sentinel and spot check sites between the ages of 2-4 years
    - Step 2: MF prevalence in 5 – 10 additional sentinel sites and ICT card tests for all children in additional sentinel sites between 2 – 4 years
    - Step 3: MDA Round 5
    - Step 4: Small community Lot Quality Assurance survey in 300 children between 2 – 4 years old in high risk areas
    - Step 5: Large community Lot Quality Assurance survey in 3000 school entrants
- ☑ Remember to communicate back to the decision makers the impact that eliminating LF has made in your district.

APPENDICES

1 Glossary of Terms

Most of the definitions are taken directly from the Dreyer et al. book "Basic Lymphoedema Management: Treatment and Prevention of Problems Associated with Lymphatic Filariasis."

Acute attack: Signs and symptoms caused by a bacterial infection of the skin. Includes: fever, chills, headache, swelling, redness, warmth, pain in the affected area and weakness.

Adverse reactions (also called side effects): Unwanted or undesirable reactions from the drug treatment. People with microfilariae in their blood may suffer from these reactions after they take the anti-filarial drugs. Reactions include: fever, headache, feeling of small pin pricks in the skin, temporary swelling, body aches and overall malaise.

Advocacy: The process of socialising important decision makers about a certain topic so that they will give their support (financial, political, leadership, etc.). It is not a one-time activity, but should be repeated continuously throughout the course of the activity.

Albendazole: Anti-parasitic drug primarily used for killing intestinal worms but also has anti-filarial effect in suppressing Microfilaraemia possibly through action on adult worm. Recommended to be used with DEC in combination for best effect.

Antibacterial cream: A topical cream that kills bacteria and stops them from growing. This kind of cream is used to treat entry lesions and wounds and will also prevent bacterial infections in deep fold of the skin.

Antibiotic: Drug used to treat bacterial infections.

Antifilarial drug: Drug that kills microfilariae in the blood of the human and may kill or have some effect on the adult worms. In Indonesia, the antifilarial drugs used are Diethlycarbamazine (DEC) and albendazole.

Antifungal cream: A topical cream that kills fungi and stops them from growing. It is used to treat entry lesions between the toes of those with lymphoedema and elephantiasis. It will also help to prevent fungal infections in the deep folds of the skin of those suffering from advanced stages of lymphoedema.

Bacteria: Type of germ that can enter the skin and cause acute attacks.

Brugia malayi: A filarial parasite that causes 10% of the lymphatic filariasis in the world – and is found in parts of Asia and the Western Pacific.

Brugia timori: A filarial parasite that is found only in eastern Indonesia and in East Timor. It represents a very small percentage of the global burden of disease.

Cluster: A group or a bunch.

Contraindication: A reason not to give a certain type of medication to someone. Pregnant women, severly ill persons and children under 2 are contraindicated to take anti-filarial drugs.

DEC (Diethlycarbamazine): The anti filarial drug which kills microfilariae in the human blood and some adult worms.

Deep skin fold: A skin fold where the bottom of the fold can only be seems when the edges of the fold are separated by the hand. Deep folds are one of the signs of advanced lymphoedema.

Diethlycarbamazine: see DEC.

Disability: The inability to perform daily activities normally. Daily activities include: walking, bathing, going to the bathroom, etc.

Drug coverage: The proportion of individuals who actually ingest the drug. There are two different kinds of drug coverage: reported coverage and surveyed coverage.

Elephantiasis: Severe or advanced lymphoedema.

Elevation: Raising up. Elevation of the leg will allow the fluid to drain. People with lymphoedema should elevate their legs at night. Elevation of the leg for people without lymphoedema is not harmful.

Elimination: Reduction of a disease to a level where transmission will be interrupted. In LF, elimination occurs when mf prevalence rate in a population is reduced to below 1%.

Endemic area: Areas where a disease is well established. For lymphatic filariasis, if there is > 1% prevalence of microfilariae in a measured population, the area is considered to be endemic.

Entry lesion: Any break in the skin which can allow bacteria to enter into the body. Wounds on the skin's surface such as cuts, scrapes or scratches are also considered to be entry lesions. Almost all patients with acute attacks will have visible entry lesions.

Epidemiology: the study of patterns, distribution and occurrence of disease.

Exercise: Active movement of the muscles. For those with lymphoedema, exercise should be done at any time and as frequently as possible. This will help to move fluid away from the tissues.

Fatigue: tiredness.

Fever: An abnormally high body temperature.

Filarial infection: The presence of adult filarial worms in the lymphatic vessels or microfilariae in the blood.

Filariasis: Lymphatic filariasis.

Folds: A crease. As lymphoedema gets worse, the skin swells and hardens, often unevenly. This causes a skin fold to appear. Skin folds can be shallow or deep and shallow folds will often become deeper as swelling increases.

Fungal infection: Infection with fungi.

Fungi: a type of germ that causes infections primarily between the toes and is the most common cause of entry lesions. Fungi themselves do not cause acute attacks, but the entry lesions they causes do allow bacteria to enter, which causes the acute attacks.

Geographic coverage: The proportion of villages or urban areas covered by the mass drug administration during the reported year.

Hydrocoele (hydrocele): The collection of too much fluid inside of the scrotal sac, which causes the scrotum to swell and get larger.

Hygiene: Cleanliness. For those with lymphoedema, this involves washing with soap and water until the rinse water is clean and then the area needs to be dried carefully.

Infected wounds: Wounds where bacteria are present and are multiplying and thus cause more disease.

Immuno-chromatographic test (ICT): The test card that measures presence of antigens for *W. bancrofti.*

Infection: The presence and growth in the body of any germ or organism that can cause disease.

Inflammation: Describes redness, pain, swelling and warmth. Swelling is one of the signs of inflammation.

Implementation Unit (IU): The designated level of the administrative unit in a country for which the decisions to administer to the entire population with anti-filarial drugs is taken if it is determine to have endemic transmission.

Ivermectin: A drug that kills microfilariae in the blood. It also kills intestinal worms. It is not used in Indonesia.

Knobs: Small bumps, lumps or protrusions on the skin. They are found in stage 4 lymphoedema. With treatment, they can become smaller and softer and can sometimes disappear.

Lymphatic filariasis: The disease caused by infection with filarial worms and the long-term results of the infection.

Lymph fluid: Fluid found in the lymphatic vessels. It is made up of water, waste products and cells that fight bacteria.

Lymph nodes: Small, bean-shaped organs along the lymphatic vessels. The lymph nodes trap bacteria before they reach the blood.

Lymphatic system: The network of vessels and lymph nodes that carry lymph fluid, bacteria and waster products from the tissues. The lymph system helps to fight infections.

Lymphatic vessels: A system of tubes that carry lymph fluid. The lymphatic vessels are similar to blood vessel, but rather than moving blood, they move fluid, waste products and some bacteria away from the tissues and towards the heart. Adult filarial worms live in the lymphatic vessels.

Lymphoedema (lymphedema): Swelling caused by the collection of fluid in the tissue. Lymphoedema most frequently occurs in the legs, arms, breasts, scrotal skin and penis.

Mass treatment (or Mass Drug Administration (MDA)): Giving a drug or medicine to all members of a community.

Microfilaria: A “baby” worm that is produced by the adult female worm in the lymphatic vessels. Microfilariae are found in the blood and are taken up by mosquitoes during a blood meal.

Microfilaria density (mfd):

$$\frac{\text{Total count of microfilariae in the slides found X 50*}}{\text{Total no. of slides found positive}}$$

* 50 is used at the correction factor when the blood volume is 20 µl otherwise for different amounts of blood, there are different correction factors.

Microfilaraemia prevalence (mf%):

$$\frac{\text{No. of individuals whose slides are positive for mf X 100}}{\text{Total no. of individuals examined for mf}}$$

Microscope: An instrument that makes it possible to see very small things that cannot be seen with the naked eye.

Mossy lesions: Clusters of vesicles that look like moss or warts, or the head of a cauliflower. Mossy lesions usually occur on the foot, where they are known as "mossy foot". The presence of mossy lesions is the feature of stage 6 lymphoedema.

Oedema (edema): Swelling caused by excess fluid in the tissue. It can occur with or without inflammation.

Paracetamol: A medicine that reduces fever and pain.

Parasite: An animal that lives in, or on, another animal (known as the host) and which may harm the host. The filarial worms *Brugia timori, Brugia malayi, Wuchereria bancrofti* are parasites of humans.

Prophylactic antibiotics: Antibiotics given to prevent bacterial infections. They are prescribed by a doctor when the patient continues to have acute attacks in spite of other measures being taken. They can be given by injection or by mouth. People with advanced lymphoedema often need prophylactic antibiotics.

Reported coverage: The proportion of the number of people reported to have taken the drug in the eligible population (programmatic importance) and the proportion of the

number of people reported to have taken the drug in the total population (epidemiological importance).

Reversible swelling: Swelling that goes away, or comes and goes.

Risk factor: Something that increases risk. For example, in people with lymphoedema, poor hygiene and poor skin care are risk factors for acute attacks. Or, people sleeping without mosquito nets are of increased risk for being bitten by a mosquito carrying filarial larvae.

Scrotal sac: The scrotum. The sac or pouch which holds the testicles and is located beneath the penis.

Self-confidence: Belief or trust in oneself or one's own abilities.

Sentinel sites: Sites which will be monitored throughout the mass drug administration for mf prevalence, mf density and drug coverage and whose results will represent the whole IU. They are fixed sites.

Shallow skin fold: A skin fold in which the base is visible when the leg or arm moves, thus "opening" the fold. If a patient has a shallow fold at the ankle, the base of the fold can be seen when he or she points the toes downwards. Shallow folds occur in persons with stage 3 lymphoedema.

Social mobilisation: An approach and tool enabling people to organise for action together. It combines community organisations, government and non-government sectors and individuals in an effort to communicate, negotiate and work together maximising their potential for collective action, social change and improvement.

Socialisation: The process of raising awareness and giving information on a certain topic so that people are motivated to act. An integral part of social mobilisation process.

Spot check sites: Identify a spot check site for every sentinel site identified in an Implementation Unit. Like the sentinel sites, they will be monitored at different intervals

for mf prevalence and mf density. They are not fixed sites and will change before each monitoring survey.

Stage 1 lymphoedema: Swelling is reversible overnight.

Stage 2 lymphoedema: Swelling is not reversible overnight.

Stage 3 lymphoedema: One or more shallow skin folds are present.

Stage 4 lymphoedema: One or more knobs are present.

Stage 5 lymphoedema: One or more deep skin folds are present.

Stage 6 lymphoedema: Mossy lesions are present.

Stage 7 lymphoedema: The patient is unable to adequately or independently perform routine daily activities like walking, bathing, cooking, going to the bathroom, etc.

Stakeholders: Those who have an interest in the success of the campaign and who have the authority to influence its outcome. They can be government personnel, politicians, civil society, NGO, industry, private organisations, etc.

Steroid cream: A type of cream that reduces inflammation. It can be used to reduce inflammation in entry lesions.

Streaking: The appearance of an inflamed lymphatic vessel, which looks like a streak or a cord that is red, tender and warm. When an adult worm dies, there is retrograde streaking.

Surveyed coverage: The results from a survey conducted throughout the IU. Surveyed coverage is the proportion of the total number of individuals identified by a household survey to have taken the drugs over the total number of individuals residing in all the surveyed households on whom information on drug ingestion is known.

Sweeping: The process of finding those who may have missed the treatment during the main mass drug distribution campaign and giving them the required treatment.

Testicles: Male sex organs (testes).

Topical: On the skin.

True positive: A truly positive case, as determined by the algorithm to check for false positives.

Wounds: Cuts, scrapes or scratches in the skin caused by injury to the skin. Wounds are one type of entry lesions.

***Wuchereria bancrofti*:** The filarial parasite that causes 90% of lymphatic filariasis in the world. It is found in Asia, Africa, the Pacific Islands and the Americas.

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3 EPI methodology for surveyed coverage

This section is taken directly from the WHO guidebook: "Monitoring and Epidemiological Assessment of the programme to eliminate Lymphatic Filariasis at the level of the Implementation Unit.".

3.1 Introduction

This protocol is designed to assist LF program managers in implementing population-based cluster coverage surveys to complement the 'reported coverage' obtained from tally sheet data. Representative surveys provide a method for confirming reported coverage results, and are especially important if there is doubt about the reported data. Additional information can economically be collected at the same time during the coverage survey by adding questions related to topics such as knowledge about LF, side effects
experienced, and other programmatic information. This protocol provides a standardized sampling methodology modeled after immunization coverage surveys, designed to strike a balance between statistical rigor and practical implementation. The sampling methodology is designed to provide an actual coverage estimate accurate to within plus or minus 6.5.

This protocol involves a series of steps, including:

= Selection of the implementation unit to be surveyed
= Selection of sub-units or areas (villages, wards, localities) within the IU, using population proportionate sampling to weight these areas according to their population size
= Random selection of a starting household followed by sampling from a cluster of contiguous households
= Use of a simple tabular data form and questionnaire to determine whether household members participated in the MDA.

Various forms and instructions that assist in carrying out a cluster survey are included here:
• A draft template questionnaire
• An example of population proportionate sampling
• Details on selection of a starting household
• A table with example sample sizes for different assumptions and conditions

3.2 Overview

Purpose. The purpose of a population-based survey is to provide a coverage estimate that is statistically likely to be representative of the population sampled. The estimate does not depend on data aggregated from different distribution sites, and is thus not as subject to missing data, mathematical errors or difficulties with estimating an accurate denominator from census figures.

Sampling. Ideally, to get a representative response from individuals living in a given implementation unit (usually a district) or a cluster of IUs, all individuals should be listed, and a sample of these individuals selected at random. Since this is impractical, the best compromise is to ensure random selection of smaller areas within the survey area, and randomly select individuals from within these smaller areas. In order to do
this, a smaller geographic area needs to be defined—and usually this represents a village, ward, locality or other administrative division of the district. To simplify analysis, the

selection of these smaller units is done proportionate to population so that more populated areas have more chance to be included in the sample.

Once these smaller sub-units have been selected, it is important to ensure that every individual within the sub-unit has an equal likelihood of being selected for the survey. There are a variety of methods used to achieve this. The simplest is to randomly select a 'starting household', interview all members and then select contiguous households until the desired number of individuals has been selected For some subunits, it will be necessary to make further sub-divisions using random selection techniques until the number of households in the sub-unit is small enough to be easily enumerated. Once the household is selected, everyone in the household is interviewed.

Interpretation. This survey technique provides a representative estimate of the population coverage rate. The accuracy of that estimate depends on several factors, including the number of persons included in the sample, the bias introduced by sampling people together within a sub-unit rather than as randomly selected
individuals (the so-called design effect) and the true population coverage rate (the sample will be least accurate when the rate is 50%). Appendix 5 provides a table indicating the interactions between sample size, design effect and true coverage rate on the accuracy of the sample estimate. In the method described here, 30 persons are selected from each of the 30 sub-units giving a total sample size of 900. For an assumed design effect of 4 (probably an over-estimate in most cases) and a true coverage rate of 50% (probably an underestimate in most cases) the survey result will be within 6.5% of the true coverage figure 95% of the time. The estimate from the 30 sub-units applies as an average for the entire area included in the sample. The results from a single sub-unit are not a valid estimate of that sub-unit.

3.3 Methods

Selection of implementation units

The survey is done at the level of the implementation unit (IU), which is commonly a district. The IU, or aggregation of IUs to be surveyed can be purposively selected, perhaps selecting those with high or low coverage, in order to review IUs where the program is going well, and those in which there may be some difficulties. The coverage estimate is representative of the IU being surveyed. A simple average
of all IUs surveyed does not provide a statistically valid estimate of national coverage. While having some attractiveness politically, such an estimate does not identify IUs that are performing well or poorly. While it is possible to sample individual IUs and combine results for a national estimate, this raises costs and complexity, and should only be undertaken with expert statistical advice.

Selection of areas from which clusters of individuals will be selected

For this protocol, within the selected survey area, 30 sub-units need to be selected. From each of these, a cluster of individuals will be selected. The ideal sub-unit is an administrative unit for which population figures are available. The sub-unit may be a village, a statistical enumeration area (used for census determination), a ward, or a locality. These 30 sub-units must be selected randomly from among all sub-units within the survey area. In addition, since different areas will have different populations, the
areas need to be weighted to take these population differences into consideration. By weighting during selection, it is not necessary to weight the results during the analysis.

A step-by-step example of population proportionate sampling will follow here as well. In order to do this method of sampling, the following are required:

• A clear definition of the sub-unit (e.g. village, ward, locality) within the survey area, including the ability to define its geographic boundaries when doing field data collection.
• A complete listing of all the sub-units within the survey area ensuring that no populated areas are excluded. If there is no listing of villages for a given survey area, for example, an alternative administrative unit may need to be chosen as the sub-unit, such as a ward.
• Estimated population figures for each sub-unit. Training of survey workers should emphasize the importance of adhering to random selection principles. Once a sub-unit or starting household is selected, it should be included in the sample. Substitutions invalidate random selection and easily lead to erroneous results.

Selection of households within an area or sub-unit
Once the 30 sub-units for the survey area have been identified, enumerators will need to sample a cluster of individuals from each of those areas. For this protocol, 30 individuals will be selected from each, resulting in an overall sample size for the survey of 900 individuals. In making the selection, all individuals must have an equal chance of being included in the survey. In practical terms, this is usually done by using methods to randomly select a 'starting household'. Only households that are occupied (currently serving as a residence, even though the inhabitants may be away) are considered in the sampling. Ideally, households should be selected at random from a list of all households in the sub-unit. However, this is usually not possible, since such a list is not usually available. An alternative is to map all the households within the sub-unit, and maps permitting numbering of individual households may be available from the work of other programs (e.g. polio eradication). It is costly, however, to create maps for the survey, and for LF coverage surveys, alternative methods are recommended if maps are not already available. If the sub-unit selected is so large that it is difficult to identify a starting household, it should be further divided. First divide the sub-unit into manageable areas with approximately the same number of households and select one randomly. Then select the starting household within that area. The most important issue is to have a practical mechanism that allows a 'starting household' to be selected at random, with all households in the area having an equal chance of being selected.

In order of preference, the following selection methods are recommended:
1) Randomly select a starting household from a list of all households in the subunit.
2) Use a map to enumerate all households in the sub-unit and randomly select one. The map should ideally be updated with a resident of the area who knows about recent changes.
3) Divide the sub-unit into quadrants with approximately the same number of households. Select one quadrant randomly, list the households and select one household randomly. If the quadrant is still too large, repeat the process dividing it again into a smaller number of areas.
4) From the approximate center of the sub-unit, randomly select a direction of travel. Count the number of households between the center and the limit of the sub-unit and randomly select the starting household. More specific details on the methods for random selection of the starting household are included later in the document.

3.4 Selection of individuals within the area or sub-unit

Once the starting household has been selected, data are collected from all individuals in the starting household. Once this is done, the next nearest household is selected, and data are

collected from all individuals in that household. This process continues until data have been collected from 30 individuals. If there are more individuals in the last household visited than are needed to reach the required 30, data on all
individuals in that final household are collected, resulting in a sample of more than 30 for that particular cluster.
After completing the starting household, to select the next house, choose the one whose entrance is nearest to the starting household. Continue selecting additional households in this manner (excluding those already visited) until enough households have been visited to allow 30 individuals to have been sampled.
There are a number of definitions and criteria that apply to selection of individuals within households. The following general guidelines should be followed:

• All individuals who lived in the household during the time of the last MDA are enumerated. The list includes individuals who may not have been eligible (e.g. pregnant women), and those who may not currently reside in the household, or those not currently present. From this list, responses are tabulated.
• Ideally, each individual answers for him or herself. Parents or caregivers can answer for younger children. If a resident of the household is missing, a family member can provide information for the missing person if in the judgment of the enumerator, the family member is likely to be accurate in his or her response.
• The responses include whether the person received a dose or not, and if not, whether it was because they were not eligible. For those not eligible, the reason not eligible is recorded (including age, pregnancy, illness). For those eligible but not being dosed, the reason for not being dosed is recorded (including refusal, not knowing about the MDA or because of other obstacles such as knowing about MDA but being in the fields, traveling, or away at work).
• Individuals enumerated, but on whom no information is available, are noted, but not included in the overall sample.
• The optional other questions are asked of one respondent per household
• The overall sample should include 900 individuals on whom information is available.

The coverage survey is designed to capture data on a sample of 30 individuals for each area or sub-unit, rather than on a sample of a fixed number of households within each area. Thus, the total number of households visited will depend on the number of people in the households—if the average number is high, fewer households will be visited.

3.5 Analysis

Currently, the recommendation for reporting coverage is to report the total number of individuals dosed divided by the total population of the endemic areas. For coverage surveys, therefore, the coverage estimate is based on the total number of individuals stating they were dosed during the last MDA divided by all those on whom information is available who were resident in the households sampled at the time of the last MDA.
The basic analysis for the coverage survey is simple, and can be done by hand. The template data collection form in the Form Section of this CD results in a table with basic information on each of the 30 individuals sampled from each area, and a summary table for all areas can be easily created. In this way it is possible to determine the total number surveyed and the total number stating they received a dose during the recent MDA. In the analysis, the numerator used for coverage is the total number responding that they received the dose during the recent MDA, and the denominator the total number on whom data was available, that did or did not receive the dose. In addition, it will be useful to report in the analysis:

• The proportion of the total sample on whom no data were available
• The proportion of the sample on whom information was available who were deemed ineligible, and the reasons for ineligibility
• The proportion of the sample on whom information was available who were eligible and who refused dosing
• The proportion of the sample on whom information was available and who were eligible for dosing who were not dosed because they were not aware of the MDA.

With this sampling method, it is not statistically correct to define coverage for any given area or sub-unit from which the cluster of individuals has been selected—or to compare coverage between these areas. However, it may be possible to look at coverage for different strata within the overall sample of 900 individuals to see if there are gross differences between men and women, or between adults and children.

Interpretation should be done with caution, however, since the smaller sample size for these strata make the confidence interval wider, making it more difficult to determine statistically valid differences between strata. It may be useful to enter the data into a spreadsheet or database to make sub-analyses easier, and to manage multiple coverage surveys over time. If additional questions are asked of individuals within households, such as knowledge, awareness, behavior or practice questions, computerization will be necessary, and this information may be valuable to review over time.

3.6 Population Proportionate Sampling Example

STEP 1: List all subunits within the area or IU to be surveyed within the selected area, make a complete list of all the sub-units from which the cluster of individuals will be selected. The list does not need to be in any particular order, but must include all the sub-units within the IU.

STEP 2: List the population for each sub-unit in a column next to the name of the sub-unit, list its estimated population. The source of the population figure is not critical as long as the same source is used for each area. Usually census figures (with correction if the census is old) are used.

STEP 3: Calculate the cumulative population for the list of sub-units in a 3rd column, successively add the population for each sub-unit, providing a cumulative population figure for the whole survey area. This can be done using a computer spreadsheet.

STEP 4: Calculate the sampling interval. To calculate the sampling interval, divide the total population for the IU by 30 (the total number of sub-units to be selected).

STEP 5: Randomly select the starting point using a random number table, select a number between 1 and the sampling interval, and record this in a 4th column.

STEP 6: Calculate populations from which to select subsequent sub-unit. Add the sampling interval to the starting point, and record in the 4th column. Continue to add the sampling interval successively until the total population for the area is reached or exceeded.

STEP 7: Select remaining sub-units using the figures in the 4th column, determine if a sub-unit is to be included in the survey as follows: If the first random number (between 1 and the sampling interval)
recorded in the 4th column includes the population of the first sub-unit listed (in the 3rd column), then that sub-unit is selected as the first of the 30 areas to be selected. If the

random number is larger, then the first sub-unit in which the cumulative population includes this random number is selected as the first sub-unit.
Using the next number in the 4th column, determine the next sub-unit that is included in that number, and continue making selections until all 30 sub-units are selected. In some instances, an area will have a large population, and it is possible that it will be selected more than once.

The table below shows an example of selection of areas using PPS methods.

Sub-unit	Population	Cumulative Population	Areas selected	Random start plus sampling interval	Sampling interval calculations
1	480	480			Total population=37741
2	555	1035	1	718	
3	657	1692			Total number of areas=30
4	489	2181	1	1976	
5	367	2548			Sampling interval = 1258
6	456	3004			(37741/30)
7	1299	4303	1	3234	
8	345	4648	1	4492	Random start = random
9	333	4981			number between 1 and 1258
10	777	5758	1	5750	
11	888	6646			For this example, 718 was
12	675	7321	1	7008	the randomly selected
13	324	7645			starting point
14	865	8510	1	8266	
15	567	9077			
16	756	9833	1	9524	
17	1234	11067	1	10782	
18	3465	14532	2	12040	
				13298	
19	567	15099	1	14556	
20	878	15977	1	15814	
21	898	16875			
22	909	17784	1	17072	
23	345	18129			
24	345	18474	1	18330	
25	556	19030			
26	675	19705	1	19588	
27	564	20269			
28	867	21136	1	20846	
29	933	22069			
30	967	23036	1	22104	
31	876	23912	1	23362	
32	347	24259			
33	879	25138	1	24620	
34	1266	26404	1	25878	
35	1244	27648	1	27136	
36	2134	29782	2	28394	
37	467	30249		29652	
38	234	30483			
39	266	30749			
40	188	30937	1	30910	
41	399	31336			
42	789	32125			
43	987	33112	1	32168	
44	867	33979	1	33426	
45	856	34835	1	34684	
46	745	35580			
47	679	36259	1	35942	
48	346	36605			
49	457	37062			
50	679	37741	1	37200	
			30		

3.7 Random Selection of Starting Household

1) Randomly select a starting household from a list of all households in the sub-unit.
In this ideal but unlikely situation, perform a random selection of one household from the full list by selecting a random number between 1 and the total number of households listed. This defines the 'starting household'. Beginning with this household, sample consecutive households as noted in the text.

2) Randomly select a starting household from a map of all households in the subunit. The map should ideally be updated with a resident of the area who knows about recent changes.
Maps may exist from recent DHS surveys, NIDs (immunization campaigns) or census activities. The map can be used to number all households and list them. From this listing, it is possible to again perform a random selection of 1 household to serve as the 'starting household'. Since consecutive households are sampled from this starting household, it will not matter if a few households are not on the list. However, if the map is grossly inaccurate, it should not be used.

3) Divide the sub-unit into smaller units such as quadrants, and following random selection of one of these, develop a list of households within the smaller unit and randomly select the starting household.
Step 1: Identify a central point within the sub-unit through consultation with a village leader.

Step 2: Visually divide the sub-unit into a smaller number of units (such as quadrants), each with roughly the same number of households.

Step 3: Randomly select one of these smaller units for household sampling.

Step 4: Number all the households in the selected smaller unit, and by selecting a random number between 1 and the total number of households, select the starting household. If the smaller unit or quadrant proves to be too large to number all households, it can be divided again into smaller areas with roughly the same number of households, repeating the process until a starting household can be randomly selected.

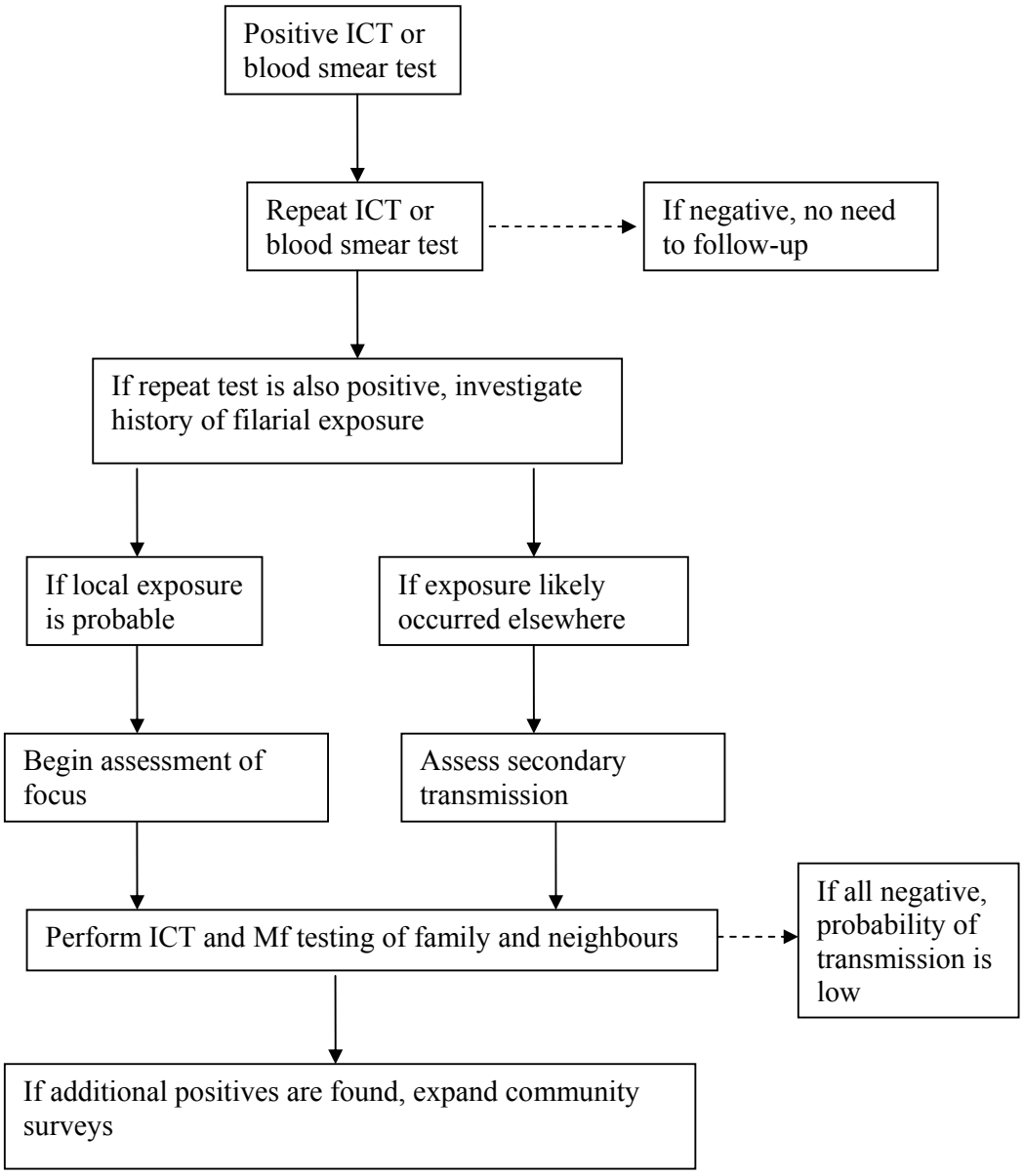
4) Randomly select a direction of travel, and after counting all households in that direction of travel, randomly select a starting household.
Step 1: Identify a central point within the sub-unit through consultation with a village leader.

Step 2: Spin a pen or bottle to randomly select a direction of travel from the central point. If there are no households in that direction, change the direction clockwise until the first house is encountered. This becomes the new direction.

Step 3: Number all households that fall within this direction of travel from the central point to the boundary of the area or sub-unit. It is important to stick as closely as possible to the actual line of the direction of travel.

Step 4: Randomly select a number between 1 and the total number of households along the direction of travel, and use this as the starting household.

4 Algorithm for finding true positives



Make sure that throughout this process, you are in close contact with the LF Programme Manager at the central level. He will be able to advise on the best procedures to adopt.

5 Useful websites

www.filariasis.org

www.filariasis.net

www.filariajournal.com

www.lymphnotes.com

www.filariasis.org.uk (Liverpool LF Support Centre)

www.sph.emory.edu/LFSC/aboutlf.html (Emory University LF Support Centre)

www.who.int (World Health Organisation)

www.paho.org (WHO Pan-American Region)

www.whosea.org (WHO Southeast Asian Region)

www.cdc.gov (Center for Disease Control, Atlanta US)

www.gsk.com/filariasis (GlaxoSmithKline)

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