The health extension workers are the key to NTD control and elimination in Ethiopia as they work directly in the communities at risk. This role is a sacred responsibility. As a health extension worker (HEW), you must ensure that drugs to treat NTD are administered safely and in the correct dosage to members of your community. As disease prevention is one of the main emphasis of the health policy, you must also teach your community how they can prevent NTD.

This NTD handbook is meant to act as a quick reference guide to supplement your existing NTD training. It can help you to teach your community about the methods of prevention and guide you during mass drug administration.

By serving your family, friends and neighbors to fight against NTD, you are helping in creating a healthy and productive community that will engage in transforming our country to a mid-level economy.

Your country thanks you, your community thanks you, and I thank you for your precious commitment and contributions.

(signature)

State Minister
Federal Ministry of Health
Introduction

Neglected tropical diseases (NTD) are included in the Health Sector Development Program (HSDP). In addition, a National NTD Master Plan is prepared so as to guide and intensify the prevention and control of NTD in an integrated and coordinated manner.

The eight NTD targeted for control and elimination in Ethiopia are broadly classified into Preventive Chemotherapy (PCT) diseases and Innovative and Intensified Disease Management (IDM) diseases. PCT diseases include Trachoma, Onchocerciasis, Schistosomiasis, Soil-Transmitted Helminthiasis, and Lymphatic Filariasis. The IDM diseases are Dracunculiasis (Guinea Worm Disease), Leishmaniasis, and Podoconiosis. These NTD cause ill health, and further disable and kill a large proportion of the population, both children and adults. These diseases are widespread throughout the country with an average of 3-7 NTD existing per region. Currently, disease mapping is under completion and would enable FMOH and its partners to undertake evidence informed interventions against NTD.

This handbook is prepared to provide you, as a health extension worker, a quick guide for your dynamic efforts of halting the intergenerational scourge of NTD among our society. The handbook contains essential information about the causes, transmission, signs and symptoms, treatment and prevention methods of each disease. It further illustrates the necessary preparation and action for mass drug administration (MDA).

MDA to the entire population is used to prevent, control, or eliminate NTD. During MDA, we use safe and single-dose medicine to the target population who are at risk of a specific disease(s). In areas where there exists co-infection of NTD, the Regional Health Bureau may give direction for using combined medicines.

You can measure the success of your MDA activity by calculating the proportion of individuals in the community requiring MDA for the given disease who have ingested the appropriate drug.

Your role in NTD control and elimination is not different than the one you are currently doing: collection of health data and reporting; planning and coordinating NTD activities, including MDA; educating and mobilizing the community for MDA and environmental sanitation.
Lymphatic filariasis

How is lymphatic filariasis caused and transmitted?
Infection occurs when mosquitos bite and transmit a parasite to humans. Infection can slowly cause internal damage when adult worms move into the person’s lymphatic vessels (that carry waste body fluids). The majority of infected individuals show no physical signs, yet can infect mosquitos, which can then infect other people. This is how lymphatic filariasis spreads.

What are the signs and symptoms of lymphatic filariasis?
- Swelling of the legs and feet (elephantiasis)
- Swelling of the scrotum (hydrocele)
- Swelling of other parts of the body
How can lymphatic filariasis be treated and prevented?

- Mass drug administration (MDA) with ivermectin + albendazole one time each year
- Sleep under a long-lasting, insecticide-treated bed net

Refer men who have hydrocele (swollen scrotum) to their local hospital for surgery to cure them.

Teach people with swollen limbs to:
- Wash the affected limb daily with soap and clean water
- Elevate the limb whenever possible
- Wear shoes to protect feet from dirt and injury
- Rest, drink water and take paracetamol to reduce fever when the limb is hot and painful
- Exercise as often as possible, including these movements:

What are the MDA requirements for lymphatic filariasis?

<table>
<thead>
<tr>
<th>Which drugs?</th>
<th>How many times per year?</th>
<th>Who should be treated?</th>
<th>Do NOT treat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ivermectin + Albendazole</td>
<td>1 time per year</td>
<td>Everyone except for those below</td>
<td>Pregnant women, Women who gave birth within the last 1 week, Children under 90 cm height or 15kg body weight, Severely ill people</td>
</tr>
</tbody>
</table>

Images courtesy of Centers for Disease Control (CDC)
How is onchocerciasis caused and transmitted?

Infection occurs when infected blackflies bite and transmit a parasite to humans. These blackflies usually breed in fast-flowing rivers and streams, mostly in remote, agricultural villages.

What are the signs and symptoms of onchocerciasis?

- Severe itching
- Skin lesions
- Nodules under the skin
- Visual impairment or permanent blindness

Image: RTI International
How can onchocerciasis be treated and prevented?

- MDA with ivermectin 2 times each year
- Spray with insecticides against blackfly larvae (vector control)

Refer people who have symptoms of onchocerciasis to their local health center for treatment and follow-up.

What are the MDA requirements for onchocerciasis?

<table>
<thead>
<tr>
<th>Which drugs?</th>
<th>How many times per year?</th>
<th>Who should be treated? Everyone except those mentioned below</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ivermectin</td>
<td>Once or twice yearly depending on your area in Ethiopia.</td>
<td>Your RHB will inform you of the correct regimen for your community.</td>
</tr>
</tbody>
</table>

Do NOT treat:
- Pregnant women
- Women who gave birth within the last 1 week
- Children under 90 cm height or 15 kg body weight
- Severely ill people
How is schistosomiasis caused and transmitted?

Infection occurs when a person enters fresh water that contains snails releasing parasitic worm larvae. The larvae penetrate the person’s skin and move through their body to the urinary or intestinal tracts, where they grow and cause damage. The cycle is complete when an infected person urinates or defecates the schistosomiasis eggs back into fresh water.

What are the signs and symptoms of schistosomiasis?

Many infected people do not have initial symptoms, but if they are not treated, they can experience

- abdominal pain
- abdominal distension
- bloody urine and/or bloody stool, which can lead to anemia
- stunted growth, emaciation
- cognitive impairment
- severe damage of internal organs (liver, spleen, bladder, etc.), which can lead to death
How can schistosomiasis be treated and prevented?

- MDA with praziquantel (PZQ) at least 1 time each year
- Avoid urinating or defecating near fresh water sources
- Improve sanitation, including by building and using latrines

Refer people with schistosomiasis to their local health center. (Refer people who have symptoms of schistosomiasis and known epilepsy to their local health center for alternative drugs during MDA, not Praziquantel.)

What are the MDA requirements for schistosomiasis?

<table>
<thead>
<tr>
<th>Which drugs?</th>
<th>How many times per year?</th>
<th>Who should be treated?</th>
</tr>
</thead>
</table>
| Praziquantel (PZQ)    | Prevalence of 50% and above: Treat once a year| • School-aged children 4 and above  
                        | Prevalence of 10% - 49%: Treat once every 2 years | • Pregnant or breastfeeding women |
| Always give with food | Prevalence below 10%: Treat school age children twice during their primary school age | Your Regional Health Bureau will inform you if you should be treating additional people at high risk in your area. |

Do NOT treat children under 4 years old or less than 94 cm height.
Intestinal Worms
(Soil Transmitted Helminths)

How are intestinal worms caused and transmitted?
Infection occurs when tiny worms that cannot be seen enter a person’s body through bare feet, dirty hands or unwashed food.

What are the signs and symptoms of intestinal worms?

In children, intestinal worms cause
• abdominal pain
• abdominal distension
• malnourishment
• low energy or listlessness
• anemia
• cognitive impairment
• stunted growth

In pregnant women, intestinal worms can cause
• pregnancy complications
• underweight babies
How can intestinal worms be treated and prevented?

• MDA with Albendazole or Mebendazole at least 1 time each year
• Wear shoes
• Wash hands with clean water after using/going to the bathroom
• Wash hands with clean water before eating
• Wash fruits and vegetables with clean water before eating them
• Construct latrines and safe water supplies in schools and homes

Refer people with intestinal worms to their local health center for treatment and follow-up.

What are the MDA requirements for intestinal worms?

<table>
<thead>
<tr>
<th>Which drugs?</th>
<th>How many times per year?</th>
<th>Who should be treated?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mebendazole</td>
<td>• Prevalence of 50% and above: Treat twice a year</td>
<td>School-age children age 5 and above</td>
</tr>
<tr>
<td></td>
<td>• Prevalence of 20% - 49%: Once a year</td>
<td>Your Regional Health Bureau will inform you if you should also be treating additional people at high risk in your area.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Your Regional Health Bureau will inform you which regimen is appropriate in your community.</td>
</tr>
</tbody>
</table>

Do NOT treat
• Children under 1 year old
• Pregnant women in the first 3 months of pregnancy
How is trachoma caused and transmitted?
Infection is transmitted by flies, dirty hands or dirty cloth carrying bacteria that come into contact with a person’s eyes.

What are the signs and symptoms of trachoma?
- Inflammation and eventual scarring of the inner eyelid
- Eyelashes turning inward to rub on the eyeball, wounding and scarring the cornea
- Visual impairment and blindness
How can trachoma be treated and prevented?

Practice the WHO-endorsed SAFE (Surgery, Antibiotics, Facial cleanliness and Environmental improvement):

- Refer people with active (inflammatory) trachoma to their local health facility to be cured with antibiotics.
- People who have in-turned eyelashes are going blind from trachoma. A safe, simple, and free surgery can stop their vision getting worse and relieve pain. Refer them to an eye care centre.

What are the MDA requirements for trachoma?

<table>
<thead>
<tr>
<th>Which drugs?</th>
<th>How many times per year?</th>
<th>Who should be treated?</th>
</tr>
</thead>
</table>
| Azithromycin (pills or syrup) OR Tetracycline eye ointment (TEO) | 1 time per year | EVERYONE
  - Everyone older than 5 years: tablets
  - 6 months to 5 years: syrup
  - Infants and pregnant women: eye ointment |

Images courtesy of the International Trachoma Initiative
How is Leishmaniasis caused and transmitted?
Infection occurs when infected sandflies bite human skin.

What are the signs and symptoms of Leishmaniasis?
The disease exits in different forms. The most common forms are cutaneous leishmaniasis, which causes skin lesions at the site of bite (exposed parts, nose, mouth and limb), and visceral leishmaniasis, which affects several internal organs (usually spleen, liver, and bone marrow).
## Leishmaniasis (continued)

| Localized cutaneous leishmaniasis | - begins with erythema in the skin  
- develops into nodular lesions that progressively ulcerate |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Diffused cutaneous leishmaniasis</td>
<td>- ulcerative destruction of the mucosa of nose, ear and mouth</td>
</tr>
</tbody>
</table>
| Mucocutaneous leishmaniasis       | - fever for > 2 weeks  
- weight loss  
- enlarged spleen and liver  
- death can result if untreated |
| Visceral leishmaniasis            | - fever for > 2 weeks  
- weight loss  
- enlarged spleen and liver  
- death can result if untreated |

### How can leishmaniasis be **prevented and treated**?
- Sleep under a long-lasting, insecticide-treated bed net
- Wear protective clothing
- Apply indoor insecticide
- Refer all suspected cases of leishmaniasis to the nearest hospital or health center for diagnosis and treatment.

**Leishmaniasis cannot be treated through MDA!**
How is podoconiosis **caused and transmitted**?
Podoconiosis (podo) is caused by long term exposure of bare feet to irritant red clay soil of volcanic origins in highland tropical areas. Podo is often confused with LF. Unlike LF there is no infectious cause of podoconiosis (no virus, bacterium, fungus or parasite).

**Walking barefoot on red clay soil**

*Image: RTI International*

What are the **signs and symptoms** of Podoconiosis?

- Early symptoms commonly include itching of the skin of the forefoot and a burning sensation in the foot and lower leg.
- Splaying of the forefoot with the formation of “mossy-like” covering and rigid toes. Ooze from cracks in the skin.
- Later, the swelling may be one of two types: soft and fluid, or hard and fibrotic, often associated with multiple hard skin nodules.
- The patient will sometimes become febrile and the limb warm and painful.
How can podoconiosis be treated and prevented?

To prevent Podoconiosis:
• Avoid or minimize exposure to irritant soils by wearing shoes
• Cover floor surfaces inside traditional huts
• Wash feet daily with soap and clean water

Podoconiosis treatment includes:
• Foot hygiene: daily washing with soap and water (diluted bleach is also useful in the early stages of treatment)
• Skin care: use of simple ointment or oil
• Daily use of socks and shoes
• Use of elastic bandage
• Elevation and movement of feet
• Minor Surgery by trained health professional to remove nodules

Unlike LF, Podoconiosis is not treated with MDA since no infectious agent has been identified!
How is Guinea Worm Disease/Dracunculiasis caused and transmitted?

- It is a disabling parasitic disease caused by the emergence of a thread-like worm that can reach 100 centimeters long.
- People become infected with Guinea worm by drinking water from ponds and other stagnant water containing tiny “water fleas” that carry the Guinea worm larvae.

What are the signs and symptoms of Guinea worm disease?

- People do not usually have symptoms until about one year after they become infected.
- A few days to hours before the worm comes out of the skin, the person may develop a fever, swelling, and pain in the area.
- More than 90% of the worms come out of the legs and feet, but worms can appear on other body parts too.
How can Guinea worm disease be treated and prevented?

There is no drug to treat Guinea worm disease and no vaccine to prevent infection. It is important to:

- Prevent people with swellings and wounds from entering ponds and other water used for drinking
- Avoid drinking from unsafe water source
- Filter drinking water from unsafe sources, using a cloth filter or a pipe filter
- Treat unsafe drinking water sources with ABATE® chemical

Reward for Guinea worm cases: Call 112-765-340

- 1000 Birr if infected patient reports worm BEFORE it emerges.
- 1000 Birr to any person that reports seeing a case.
- 500 birr to the person with the worm if he or she agrees to treatment.