



Lymphoedema Staff Manual

Treatment and Prevention of Problems Associated with Lymphatic Filariasis

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Part 2. Tutor's Guide



World Health Organization
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PREFACE

This training module on the treatment and prevention of lymphoedema in lymphatic filariasis consists of two separate parts: Part 1, the Learner's Guide containing all the technical information needed by health workers involved in morbidity control.; and Part 2 (this part), the Tutor's Guide, which outlines the main points to be learned, provides guidance on the learning process, and gives suggestions to those responsible for conducting training programmes.

This module is the first of a series on several topics related to lymphatic filariasis that will be produced by the World Health Organization to assist national elimination programmes with the different aspects of the disease.

The alleviation and prevention of suffering and disability of individuals affected by the chronic manifestations of lymphatic filariasis (lymphoedema, hydrocele, elephantiasis of the limbs or genitals, and secondary infection associated with damaged lymphatics), and addressing the social hardships of those individuals, are a vital part of the strategy to eliminate lymphatic filariasis.

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INTRODUCTION

This Tutor's Guide (Part 2 of the training module) is designed primarily to help those responsible for training health personnel in lymphoedema treatment. Some parts of it should be useful even to the most experienced medical doctors. The style of writing has been kept simple, to avoid misunderstanding and to facilitate translation into local languages.

It is essential that you read the whole Learner's Guide (Part I of the training module) before planning your training programme, rather than reading only the Unit that relates to your next teaching session.

This Introduction will help you to understand the role of the tutor and facilitator in this training system and explains why the Learner's Guide is designed the way it is.

For whom is this training module intended?

Control of lymphatic filariasis, leading to its elimination, is based on two major pillars: (a) controlling transmission of infection; and (b) controlling the long-term consequences of the disease. Clinical care of people already suffering from the chronic sequelae of lymphatic filariasis is an important component of filariasis control and elimination programmes. This module is intended for workers who are responsible for training health personnel in lymphoedema treatment, thus it addresses the control of the long-term consequences of the disease. It can be used for both basic and refresher training.

Educational level of the learners

The appropriate educational or entry level of learners will depend upon a number of factors. Health workers from a wide range of educational backgrounds can be accepted for training in this subject. However, if the entry level is relatively low, the period of training may need to be extended: it may well take longer to train someone with only 8 years of schooling than someone with 12 years. On average, it should be possible to teach the contents of this module in about 3 days.

Apart from education requirements, it is equally important that learners:

- are able to read, comprehend and write simple English (or the language into which the module has been translated);
- can systematically follow a set of written instructions;
- have good hearing and eyesight;
- are sympathetic to the health problems of the community;
- indicate willingness, on completion of the course, to work with members of the community, especially those who are affected by lymphoedema.

This list is not necessarily complete: for example, another requirement might be willingness to work for long periods in rural areas, far from home.

Often, you and your colleagues will be unable to interview candidates directly. Therefore, when writing to those responsible for selecting learners for the course, it is particularly important to indicate the most suitable type of person.

How is the training designed and what is its content?

The training module is intended to facilitate the teaching of all the individual tasks involved in lymphoedema treatment. *The principal objectives of the training are listed in the Introduction to the Learner's Guide.* Please stop and read these now.

The training is designed to deal with each step of the process that the health worker should follow in order to understand the structure and function of the lymphatic system, to assess and stage the lymphoedema and to correctly manage the patient. This type of training, when carried out properly, is highly effective. It is also very economical: training is kept as short as possible, yet participants learn how to perform the required tasks competently. This can save time, money and resources.

At the beginning of each Learning Unit in the Learner's Guide is a list of the learning objectives. These summarize the knowledge, skills and attitudes that each learner should have acquired by the end of that Unit. You and your colleagues must satisfy yourselves that each learner has achieved the stated objectives before proceeding to the next Learning Unit.

While it is more convenient to have all the learners working together on each Learning Unit, or in small groups, this programme allows the slower learners to work through each Unit at their own pace.

Who runs the course?

You and your colleagues are responsible for organizing and running the course. The Learner's and Tutor's Guides will do much to help you, but the final results will depend upon your efforts. This may be the first time that you have organized and run such a course, or you may be an experienced teacher: in either case, the importance of using the Learner's Guide and the Tutor's Guide together as you proceed through the Learning Units cannot be emphasize enough.

Who helps you in the course?

Your job will be easier, and your teaching more effective, if you have one or more people to help you. These assistants, who should have working experience of lymphoedema treatment, are called facilitators. You can then divide learners into small groups of perhaps two to four, and allocate one facilitator to each group. The greater interaction that this permits between the learners and the facilitators results in better learning and understanding.

As overall manager of the training programme, you will be responsible for designing the timetable, explaining the learning tasks to the learners and facilitators, and giving learners and facilitators whatever help they need. Do not worry if the facilitators are not trained as teachers; their task is to explain or demonstrate a particular activity and to watch learners perform it. They must also be able to admit to learners when there is something that they do not know and be prepared to refer the question or problem to you. Impress on your facilitators that no one person can be expected to know everything about a particular subject. There is no shame in saying “I do not know, but I will find out for you”.

Many problems can be avoided by giving your facilitators plenty of time to read the Learner’s Guide and discuss with you any part of it that may need clarification. It would be a good idea for you and the facilitators to go through the module together, you could then test their knowledge by asking them appropriate questions.

Why provide a Learner’s Guide?

Providing learners with a full set of notes ensures that all learners have exactly the same set of notes, and thus avoids unnecessary note-taking during lessons; you and the facilitators can refer to any part of the Learner’s Guide knowing that all learners can find the right page quickly; learners can spend more time reading the notes, and therefore have a greater chance of understanding them, because there is no need to write up notes taken during class; there is no chance of learners making errors in note-taking; after the course, each learner can take home a set of notes that will be a helpful reference in his or her daily work.

How is the course run?

This subject is dealt with on pages *i to iii of the Learner’s Guide*: please stop and read these now.

As stated in the Learner’s Guide, classroom presentations should be kept to a minimum. Demonstrations and role-play involving the learners, practical sessions, field visits and discussion groups, are all much more effective ways of teaching.

Learners who are actively involved learn more and learn better than those who must simply sit and listen to a single person talking for long periods of time.

How will you know whether it was a good course?

Judging whether or not the course was a good one is difficult and involves answering the following questions:

How well did the group learn?

This may be determined by evaluating the learners’ performance as they work through the Learning Units, and again, at the end of the training. A further evaluation of how well they have retained their knowledge, and have developed skills and competence may be necessary 10-12 months later.

How did the learners view the training?

Learners' answers to this question will yield valuable information on how useful they find this type of training, especially if they provide a short evaluation during the course and a longer one at the end. Frankness can be encouraged by allowing learners to make their responses anonymously.

Feedback provided during the course allows you to assess how well your training is being received and to make any improvements that seem necessary. Feedback received at the end of the course will help you to improve future programmes. If you have prepared the course carefully, feedback is likely to be favourable, which is rewarding both for you and for the facilitators.

Whatever the government policy may be regarding the award of a certificate of competence, some record of attendance and level of competence reached by each learner should be kept so that details may be checked later.

Use of the Tutor's and Learner's Guides

The Tutor's and Learner's Guides may be used together (*and with the suggested audio-visual aids*) for basic group training and for in-service training. The Learner's Guide alone may be used for refresher training, or by individuals for reference.

The way in which you and your facilitators should make use of the Guides and the *audio-visual aids* will become apparent as you work through the training module.

Learners will follow the group training activities using the Learner's Guide plus whatever other materials you provide them with.

Training facilities

A number of basic facilities and equipment must be organized before training can begin. In some countries these are readily available, but in others, you may need to improvise or to modify existing equipment. Bear in mind that there may be long intervals between ordering supplies and getting them delivered, but do not delay training unnecessarily because you do not have the best equipment.

Ideally, two rooms should be available for training. One of these can be used for group discussions and for the *overhead and slide projectors*. Chairs and small tables or desks will be needed for this room. The second room will be used as a *treatment room* to demonstrate the techniques directly on the patient. There should be a reliable electricity supply with several outlets, running water and at least one sink. Space on a wall should be available for a black or white-board. In practice, you may have no running water, little, if any electricity, few tables, and chairs or stools of fixed height. Whatever the conditions, do your best to ensure that the learners are as comfortable as is possible in the circumstances: you may be surprised how much you can achieve even with relatively few facilities

Teaching equipment

For teaching sessions and group discussions, the following items should ideally be available:

- overhead projector.
- projector for 35 mm slides, preferably with automatic slide feeder.
- screen for slide projection (a white sheet is an adequate substitute, but the white-board is unsuitable because it will reflect projected light).
- flipcharts - one for each small group of learners.
- large blackboard or white-board.
- chalks for blackboard or marker pens for white-board, in a selection of colours.
- acetate sheets for overhead projector (or used and washed X-ray plates). Coloured marker pens for acetate sheets (including some permanent markers for diagrams you may wish to keep).

Soap, antibacterial cream, towels and clean water

You probably have most, if not all, of what you need for the training course available to you in the community where you do your own routine work.

Learners' equipment

The equipment listed below should be provided for each learner. Where supplies have to be ordered, this should be done well in advance of the course; many items are difficult to obtain at short notice.

- Copy of the Learner's Guide
- Notepad
- Ballpoint pen and pencil
- Eraser

Syllabus and Timetable

Syllabus

The contents list of the Learner's Guide represents the syllabus - the list of subjects to be covered - for the training course. Planning the course is made easier by the division of each Learning Unit into a number of subunits or main topics. Go through each of the Learning Units in turn; for each subunit calculate how much time you will need to devote to it and decide what kind of learning activity would be most suitable for the topic. For example, you will find that Learning Unit 2 – The Lymphatic System - has two learning objectives: 1. Structure and function of the lymphatic system, and 2. How filariasis damages the lymphatic system. If you consider that one or more of the learning objectives could best be achieved through group discussion, with interaction between you, the facilitators and the learners, you should then decide what other materials you might need to reinforce the learning. *It might be valuable to show slides of patients with lymphatic filariasis to illustrate the effects of the disease.*

The following is a list of the various learning activities that you might consider using:

Group discussion

Once participants get used to group discussions, the two-way exchange of information between them and the facilitators makes this a very effective learning activity. People share their knowledge and experiences with the rest of the group and stimulate each other's thoughts on the subject in hand.

Practical work

Practical work usually takes place in the treatment room or other suitable location. Its purpose is to give learners the opportunity to practise the procedures involved in lymphoedema treatment. The more practice they have, the more competence they will acquire in dealing correctly with lymphoedema.

Field work

Work performed in the field, in conditions as close as possible to those that trainees will meet later in their jobs, is a very effective learning activity.

Demonstrations, role-play and audio-visual aids

These three activities are designed to reinforce the learning process. Slides might be a good way to show learners what a particular place looks like without your having to take them there. Role-play can be used for training in various aspects of work, such as approaching patients for blood samples, with the learners acting the parts of those involved in the situation.

Evaluation

Evaluation is assessment of the level of skill, competence and knowledge that learners have achieved in a particular area. Methods of evaluation are discussed later. Evaluation of the course, and of you and the facilitators, by the learners is also important, and will provide feedback that will help you to improve the training course.

The timetable

Once you have calculated the amount of time that needs to be spent on each subunit, all the various learning activities must be fitted into the framework of the training programme. The duration of the programme may be something over which you have little control; for instance, you may be told to limit the programme to 1 day because of shortage of funds, even though you have calculated that it should ideally be spread over 3 days. You and the facilitators will then need to spend time reorganizing the timetable so that all the learning activities can be fitted into the time available.

Table 1 shows the different types of learning activities and may help you in allocating time to each of the Learning Units. However, it represents just one approach to the problem and is intended only as a guide that may be of help to you in organizing your training programme. It cannot take account of all the factors that may influence your planning, such as the length of your normal working week, the need for you to divide your time between the training course and your routine work, or the fact that there are public holidays during the course.

Table 1 Different type of learning activities

Learning Units	A	B	C	D
Mass drug administration for lymphatic filariasis	x			
The lymphatic system	x		x	
Assessment of lymphoedema		x	x	
Management of lymphoedema				
Urogenital problems in filariasis	x		x	
Pre and post tests				x

A = presentations, including brief lectures, group discussions, information exchange, feedback

B = practical work

C = audio-visual aids, demonstration, role-play or a combination

D = evaluation of the learners by multiple choice questionnaire before and after the course, evaluation of the course by the learners, or both

In planning the timetable, remember to allow time for evaluation both during and after the course, and for the “hidden” activities, such as tidying of the treatment room, completion of records, etc.

Introduction to the course

Your very first session with the learners should take place in the meeting room, preferably with the seating in a semicircular arrangement.. If the chairs do not have fixed supports for notebooks, it would be helpful to have small desks or tables available.

Introduce yourself first. Write your name on the board or flipchart and tell the learners a little about your background and your job. Then ask each of the facilitators to do the same thing.

The learners should introduce themselves next. It might be helpful to divide the learners into pairs and ask them to exchange names, information about jobs, home towns, etc. Each learner can then introduce his or her partner to the whole group. This method often has the effect of reducing tension, and a relaxed atmosphere is a good learning atmosphere.

The learners will have been given their copies of the Learner’s Guide. Allow them ten minutes or so to read through its Introduction and then briefly, but carefully, deal with the various topics covered. Explain,

for instance, that working in small groups with facilitators should make learning easier, and that there should be little need to take notes during the course. Stress that the course will involve a great deal of practice, since this is the best way to acquire the necessary skills.

Go through the objectives of the various Learning Units so that the learners understand exactly what they should have achieved by the end of the course. Explain that the learners should keep these objectives in mind throughout the course and always ask for help if they feel uncertain of having achieved them. Each learner is likely to be more aware than the facilitators of how well he or she has understood a particular topic or has mastered a particular skill; it is the job of the facilitators to make the learning process as effective as possible.

There may be other subjects you want to raise at this time, but try also to encourage the learners to discuss the training programme - what they expect of it, what aspects of it are worrying them, and so forth. Explain that you and the facilitators will welcome feedback throughout the course - constructive criticism from the learners may well help you to improve the training programme.

Finally, talk to the learners about evaluation. Explain that evaluation will be a continuous process throughout the training course. Stress that the tests and multiple-choice quizzes should be enjoyed rather than feared; they are part of the learning experience. Their purpose is to allow you and facilitators to assess the learners' progress, to correct mistakes and clarify misunderstandings. Emphasize the importance of the learners reading all the questions (and any supplementary instructions) very carefully. Explain that everyone will learn at different speeds and that you and the facilitators will make as much allowance for this as possible.

LEARNING UNIT 1

Mass Drug Administration For Lymphatic Filariasis

Learning objectives

By the end of this unit you should be able to:

- describe how lymphatic filariasis is spread.
- describe how community treatment can prevent the spread of filariasis.

As the learning objectives state, this Unit is intended to:

- Present the life cycle of the filarial parasite and its consequences on the human body,
- Stress that the role of the community is of paramount importance in the elimination of lymphatic filariasis,
- Underline that lymphatic filariasis is a major contributor to poverty and disability,
- Give emphasis to the fact that the drugs given during the elimination programme will spare the next generation from elephantiasis, hydrocoele and other manifestations of lymphatic filariasis by breaking the cycle of infection between mosquitoes and humans,
- Emphasize that the strategy to eliminate lymphatic filariasis is based on two pillars: first the interruption of the transmission of the disease, and second the prevention and treatment of the problems associated with lymphoedema.

Ask the learners to read carefully the text of this Unit and then have a general discussion. Probably most of the learners have seen lymphatic filariasis patients in their home town or villages and will be able to make useful contributions to the discussion.

Remind the learners that they should take the time to read the next Learning Unit in preparation for the corresponding session.

LEARNING UNIT 2

The Lymphatic System

Learning objectives

By the end of this unit you should be able to:

- describe the functions of the lymphatic system
- list the consequences of filariasis for the lymphatic vessels

This is probably the first time that many of the learners have been told in such detail about the lymphatic system. They may feel a little nervous about the subject, and will need your encouragement. It would be helpful to show slides or transparencies; this will make the presentation more interesting to follow and the subject easier to remember. Ensure that the learners fully understand the functions of the lymphatic system and its various components.

Key points

Emphasize the importance of the lymphatic system and make sure that the following points are well understood:

The lymphatic system has two important functions:

- It keeps the body's fluids in balance by taking away the waste and the excess fluid produced by tissues throughout the body,
- It fights bacteria that cause infections.

The lymphatic system consists of two parts:

- The various lymphoid organs and tissues scattered throughout the body. These organs house phagocytic cells and lymphocytes, which are important in resistance to disease and in the body's defences
- A network of lymphatic vessels, which transport fluids that have escaped the blood system back to the blood.

Remind the learners that they should take the time to read the next Learning Unit in preparation for the corresponding session.

LEARNING UNIT 3

Assessment of Lymphoedema

Learning objectives

By the end of this unit you should be able to:

- recognize the physical signs for each stage of lymphoedema
- stage lymphoedema using these physical signs

As the learning objectives state, this Unit is intended to:

- make the participant proficient in assessing lymphoedema on the basis of 3 stages classification of lymphoedema,
- make the participants proficient in assessing lymphoedema on the basis of 7 stages of classification.

You should explain the features used to classify the stage of lymphoedema: leg swelling; skin folds; knobs; mossy foot; and level of disability. Make sure you cover all of the features listed in the second paragraph of this learning unit. Use patients, photographs, slides or overheads to demonstrate the features. Plan on spending approximately one hour on this task, unless you feel the participants need more time. You should be able to assess the level of understanding of the participants through questions and discussion.

At the end of this session have several participants stage various patients, photographs, slides or overheads that they have not yet seen.

Make sure that participants understand the technical terms presented in this unit. A quick question and answer session or oral quiz are good methods to use to assess their understanding. Try to be friendly and non-threatening with your questions or quizzing.

Remind the learners that they should take the time to read the next Learning Unit in preparation for the corresponding session.

LEARNING UNIT 4

Management of Lymphoedema

Learning objectives

By the end of this unit, you should be able to:

- list the components of lymphoedema management
- identify the benefits of each management component
- apply recommended components to each stage of lymphoedema
- decide when a patient needs to be seen by a doctor

Learners should read this unit in advance. It is very important to identify patients willing to participate in the teaching process. Make sure the participants realize the patients are volunteering their time and should be treated with respect. Before working with the patients, participants should introduce themselves to the patients.

Learners should be taught the importance of properly managing lymphoedema because this can dramatically improve their patient's life. You should explain the components of lymphoedema management:

- Hygiene - washing
- Management of entry lesions
- Elevation
- Exercise
- Wearing appropriate footwear.

Use patients, photographs, slides or overheads to demonstrate each component. Plan on spending approximately one hour on this task, unless you feel the participants need more time. You should be able to assess the level of understanding of the participants through questions and discussion. Make sure that participants understand the technical terms presented in this unit.

Next, you should organize a practical session for the participants to practice the components with patients. First demonstrate the components then allow the participants to try. Make sure all participants can see during the demonstration. You and your facilitators should have no more than five participants per patient. Be sure and observe the participants when they are trying the management. Correct any errors and praise any actions done correctly.

Remind the learners that they should take the time to read the next Learning Unit in preparation for the corresponding session.

LEARNING UNIT 5

Assessment and Management of Acute Attacks

Learning objectives

By the end of this unit you should be able to:

- describe acute attacks
- establish how to manage acute attacks
- decide when patients with acute attacks should be referred to a doctor or a nurse

You should explain cause of an acute attack, and the symptoms used to diagnose one: a swollen lymph node; inflammation; painful, warm, swollen skin; fever; headache; chills; nausea; and vomiting. You should also explain the features used to diagnose an acute attack after it occurs. These include, the patient's history, dry, peeling skin, and darker skin in the area where the attack occurred. Show photographs, slides, or overheads to illustrate the symptoms and features. Plan on spending approximately one hour on this task, unless you feel the participants need more time. You should be able to assess the level of understanding of the participants through questions and discussion.

Next, you should explain the steps used to manage an acute attack. These include:

- Cooling the leg
- Taking fever medicine
- Resting
- Elevating the leg
- Drinking water.

Be sure you cover what patients should NOT do during an acute attack (exercise, cut the leg, put hot water on the leg). Also explain the signs which indicate that referral to a physician is necessary.

Participants should role play counseling patients about acute attacks. Divide the participants into teams of two. One should be the patient suffering from the acute attack, the other should be the health care provider. Have the participants take turns playing each role. The participants should have 5 to 10 minutes to play each role. During the role play observe the participants. Make notes of errors and correct actions, but do not correct the participants during the role play. After each participant has done each role, give your observations on the errors and the correct actions to the group.

Remind the learners that they should take the time to read the next Learning Unit in preparation for the corresponding session.

LEARNING UNIT 6

Urogenital Problems in Lymphatic Filariasis

Learning objectives

By the end of this unit, you should be able to:

- identify urogenital problems
- manage these problems
- distinguish between problems of the genital skin and problems inside the scrotal sac
- teach proper hygiene for genital lymphoedema
- manage acute attacks in the skin of the penis and scrotal area
- refer patients for medical care
- suggest a low-fat, high-protein diet for patients with chyluria

In this unit, you should explain the types of urogenital problems related to filariasis. These problems include hydrocele, lymphoedema and elephantiasis of the scrotum and penis, lymph scrotum, and chyluria. Make sure that participants understand the technical terms presented in this unit and can distinguish between the different conditions.

Use patients, photographs, slides or overheads to demonstrate the types of problems. Plan on spending at least two hours on this task, unless you feel the participants need more time. At the end of this session have participants identify the various problems in patients, photographs, slides or overheads that they have not yet seen.

Because of the sensitive nature of these problems, patients participating in this session should be treated with the utmost respect.

Remind the learners that they should take the time to read the next Learning Unit in preparation for the corresponding session.

FURTHER READING

- Addiss, D. & Dreyer, G. Treatment of lymphatic filariasis. In: *Lymphatic Filariasis*, Nutman TB (ed.). London: Imperial College Press, 2000, 151-199.
- Bandyopadhyay, L. Lymphatic filariasis and the women of India. *Social Science and Medicine*, 42 (10):1401-1410, 1996.
- Dreyer, G., Norões, J., & Addiss, D. The silent burden of sexual disability associated with lymphatic filariasis. *Acta Tropica*, 63: 57-60, 1997.
- Dreyer, G., Figueredo-Silva, J., Neafie, R. & Addiss, D. Lymphatic Filariasis. In: *Pathology of Emerging Infections 2*, Ann Marie Nelson and C. Robert Horsburg, Jr. (ed.). Washington, D.C.: American Society for Microbiology, 1998. chap. 14, pp 317-342.
- Seim, A., R., Dreyer, G. & Addiss, D. Controlling morbidity and interrupting transmission: twin pillars of lymphatic filariasis elimination. *Revista da Sociedade Brasileira de Medicina Tropical*, 32(3):325-328, 1999.
- Dreyer, G., Medeiros, Z., Netto, M.J., Leal, N.C., De Castro, L.G. & Piessens, W.F. Acute attacks in the extremities of persons living in an area endemic for bancroftian filariasis: differentiation of two syndromes. *Transactions of the Royal Society of Tropical Medicine and Hygiene*. 93:413-417, 1999.
- Dreyer, G. & Piessens, W. Worms and microorganisms can cause lymphatic disease in residents of filariasis-endemic areas. In: *Lymphatic Filariasis*, Nutman TB (ed.). London: Imperial College Press, 2000, 245-264.
- Price, E.W. & Bailey D. Environmental factors in the etiology of endemic elephantiasis of the lower legs in tropical Africa. *Tropical and Geographical Medicine*, 36:1-5, 1984.
- Shenoy, R.K., Kumaraswami, V., Suma, T.K., Rajan, K. & Radhakuttyamma, G. A double-blind, placebo-controlled study of the efficacy of oral penicillin, diethylcarbamazine or local treatment of the affected limb in preventing acute adenolymphangitis in lymphoedema caused by brugian filariasis. *Annals of Tropical Medicine & Parasitology*, 93(4):367-377, 1999.
- Shenoy, R.K., Sandhya, K., Suma, T.K. & Kumaraswami, V. A preliminary study of filariasis related acute adenolymphangitis with special reference to precipitating factors and treatment modalities. *Southeast Asian Journal of Tropical Medicine and Public Health*, 26:301-305, 1995.
- Olszewski, W.L., Jamal, S., Manokaran, G., Pani, S., Kumaraswami, V., Kubicka, U., Lukomska, B., Dworzynski, A., Swoboda, E. & Meisel-Mikolajczyk, F. Bacteriologic studies of skin, tissue fluid, lymph, and lymph nodes in patients with filarial lymphedema. *The American Journal of Tropical Medicine and Hygiene*, 57(1):7-15, 1997.
- Olszewski, W.L. Episodic dermatolymphangioadenitis (DLA) in patients with lymphedema of the lower extremities before and after administration of benzathine penicillin: A preliminary study. *Lymphology*, 29:126-131, 1996.
- WHO Expert Committee on Filariasis, Fifth Report, Geneva, World Health Organization, 1992 (WHO Technical Report Series, No. 821)

GLOSSARY

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

Adjunct measures: treatment measures that may be helpful for some patients, but may not be necessary for most patients. For example, for people with stage 5 lymphoedema of the leg, surgery may be used as an adjunct measure to remove knobs.

Adult worm death: death of adult filarial worms. Symptoms of adult worm death are more mild than those caused by bacterial infection.

Adult worms: male and female filarial worms that live in lymphatic vessels.

Albendazole: a drug that is taken by mouth to kill intestinal worms.

Antibacterial cream: a cream that kills bacteria or stops them from growing. Antibacterial creams are used to treat infected entry lesions and wounds. They are also used to prevent infections in deep skin folds.

Antibiotic: a drug that is used to treat bacterial infections. Most antibiotics are prescribed by a doctor. They can be given by mouth (tablets or pills) or by injection.

Antifilarial drug: a drug that kills microfilariae in the blood and may kill adult worms in the lymphatic vessels. Antifilarial drugs are used to treat filarial infections.

Antifungal cream: a cream that kills fungi or stops them from growing. Antifungal creams are used to treat entry lesions between the toes. For patients with advanced stage lymphoedema, antifungal creams can help prevent fungal infections in the deep folds.

Antiseptic: a liquid or cream used on the skin to stop bacteria from growing.

Aspirin: a drug taken to reduce pain and fever. Aspirin is not usually given to people who live in areas where dengue is common.

Bacteria: types of germs that can enter the skin and cause acute attacks.

Blister: a small swelling or bump in the skin filled with watery fluid. Blisters can be caused by bacteria, burns, or rubbing the skin.

Chill: a feeling of coldness of the body that can cause shaking or shivering.

Chronic: a medical condition that cannot be cured.

Chyluria: the milky fluid taken up by the intestinal lymphatics from the food in the intestine after digestion. The presence of chyluria in the urine, gives it a milky appearance.

Clean water: water that is suitable for drinking.

Clot: a semi-solidified mass, as of blood or lymph.

Cluster: a number of persons or things grouped together.

Confusion: inability to think clearly.

Cosmetic surgery: surgery done to improve the way a person looks. Cosmetic surgery to remove knobs may also decrease the risk of entry lesions in some patients.

DEC: diethylcarbamazine, an antifilarial drug which kills microfilariae in the blood and some adult worms in the lymphatic vessels.

Deep skin fold: a skin fold in which the base or bottom can be seen only when the edges of the fold are separated by hand. Deep folds are a sign of advanced lymphoedema (at least stage 5). Because deep folds are often moist, fungi and bacteria grow easily in them.

Dengue: a disease that, like filariasis, is spread by mosquitoes. Dengue causes fever and muscle pain.

Diabetes: a disease which causes too much sugar in the blood.

Diethylcarbamazine: see DEC.

Dilate: to make wider or larger, to expand or swell.

Disability: a condition which makes a person unable to adequately or independently perform daily activities such as walking, bathing, going to the bathroom, etc. Disabled patients need help from the health care system.

Drowsiness: a feeling of sleepiness.

Drug: a medicine used to treat disease.

Elephantiasis: severe or advanced lymphoedema.

Elevation: lifting or raising. Elevation of the leg allows lymph fluid to drain. People with lymphoedema of the leg should elevate their legs at night by raising the foot of the bed to chest height.

Endemic area: an area where a disease is common.

Entry lesion: any break in the skin that allows bacteria to enter the body. Wounds on the skin surface, such as cuts, scrapes, or scratches, are entry lesions. Entry lesions also can occur between the toes and fingers or in deep skin folds. Many patients with acute attacks have visible entry lesions.

Exercise: active movement of the muscles. Exercise helps move fluid away from the tissues.

Fat: an oily or greasy substance found in food.

Fatigue: a feeling of tiredness.

Fever: an increase in body temperature.

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

Filariasis: a disease caused by parasitic worms.

Fold: a crease. As lymphoedema gets worse, the swelling and hardening of the skin often occur unevenly, more in some areas than in others. This causes skin folds to appear. Skin folds can be shallow or deep. Shallow folds often deepen as the swelling increases.

Fungi: a type of germ that causes infections, for instance between the toes. Fungal infection is a common cause of entry lesions. Entry lesions let bacteria enter the skin, which causes acute attacks. Fungi alone do not cause acute attacks.

Genitals: reproductive and urinary organs of the body.

Germs: small living organisms, such as fungi and bacteria, which can make people sick. Germs can be seen only with a microscope.

Haematuria: blood in the urine.

Health care system: doctors, nurses, community health workers and other health care workers and resources such as clinics and hospitals.

Hydrocele: a collection of too much fluid inside the scrotal sac, which causes the scrotum to swell or get larger.

Hygiene: cleanliness. Hygiene for the management of lymphoedema involves washing the leg, arm or genital area with soap and water until the rinse water is clean, and then carefully drying the skin.

Infected wounds: wounds in which germs are present and growing, causing disease.

Infection: the presence in the body of any germ that can cause disease.

Inflammation: redness, pain, swelling and warmth. In patients with dark skin, the redness may be hard to see. However, the skin feels warm. Swelling is one sign of inflammation, but swelling can occur without inflammation.

Inguinal: in or near the groin area.

Interdigital: between the toes or between the fingers.

Ivermectin: a drug that kills microfilariae in the blood, and worms in the intestines.

Knobs: small bumps, lumps or protrusions on the skin. Knobs before treatment feel very firm, even hard. With treatment, knobs may become softer and smaller, and may even disappear. Knobs are found in stage 4, 5, 6 or 7 lymphoedema.

Leg volume: the size of the leg.

Lymph fluid (lymph): the fluid found in the lymphatic vessels. Lymph fluid is made up of water, waste products, and cells that fight germs.

Lymph nodes (also called lymph glands): small, bean-shaped organs along the lymphatic vessels. The lymph nodes trap germs before they reach the blood.

Lymph scrotum: a scrotum that is thick and enlarged, and has vesicles on the surface, which are filled with lymph fluid.

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

Lymphatic system: the network of vessels, lymph nodes, and other organs that carry lymph fluid, bacteria, and waste products from the tissues. The lymphatic system helps fight infections.

Lymphatic vessels: a system of tubes that carry lymph fluid. They are similar to blood vessels, but instead of blood, they move fluid, waste products, and germs away from the tissues. Adult filarial worms live in the lymphatic vessels.

Lymphoedema: oedema or swelling caused by the collection of fluid in the tissue. Lymphoedema most frequently occurs in the legs, arm, breasts, scrotal skin, and penis.

Lymphoedema of the penis: swelling in the penis caused by damaged lymphatic vessels.

Lymphoedema of the scrotum: swelling in the scrotum caused by damaged lymphatic vessels.

Mass treatment: giving a drug or medicine to all people in a community.

Medicated cream: creams with an antibiotic agents, antifungal agent or both.

Microfilariae: young worms found in the blood. Adult female worms living in the lymphatic vessels

produce microfilariae. Mosquitoes are infected with microfilaria when they bite a person who has filariasis.

Microscope: an instrument that makes very small things, such as bacteria, which cannot usually be seen, appear large.

Mossy foot: clusters of knobs on the top of the foot, which look like patches of moss, warts, or the head of a cauliflower. Mossy foot is a feature of stage 6 lymphoedema.

Myiasis: a disease caused by flies laying their eggs in wounds or entry lesions.

Oedema: swelling caused by excess fluid in the tissue. It can occur with or without inflammation.

Paracetamol: a drug that reduces fever and pain. Paracetamol, unlike aspirin, can be given in areas where dengue is common.

Parasitic worms: worms that live in the body. Filarial worms are one type of parasitic worms.

Peeling skin: the top layer of skin comes off in layers or flakes.

Penis: the male reproductive and urinary organ.

Physical examination: looking at and touching a patient to find out about a health problem.

Potassium permanganate: a liquid antiseptic that is used on wounds and on deep skin folds to help fight bacterial infections. It is available in the form of purple tablets or powder, and must be mixed with clean water.

Prophylactic antibiotics: antibiotics given to prevent bacterial infections. They are usually given by injection, but they can be taken by mouth. Prophylactic antibiotics should be given by a doctor when the patient continues to suffer from acute attacks in spite of other measures.

Protein: a substance in meat and other foods that helps build strong bodies.

Pus: the yellow-white or greenish material found in a wound. It is produced by an infection.

Reconstructive surgery: surgery that rebuilds part of the body.

Repeated acute attacks: acute attacks that occur again and again.

Retrograde lymphangitis: retrograde means “backwards”, or going towards the fingers or toes. Lymphangitis is inflammation of the lymphatic vessels. When the adult worm dies, streaks of inflammation can be seen along the lymphatic vessels, moving *away from the body* towards the fingers or toes.

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

Rotate: to move in a circle.

Scrotal: of the scrotum.

Scrotal sac: scrotum. The sac, or pouch, of skin, located beneath the penis, which holds the testes.

Scrotum: the pouch of skin, located beneath the penis, which holds the testes.

Shallow skin fold: a skin fold in which the base is visible when the leg or arm moves. 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 down. Shallow folds occur in persons with stage 3 lymphoedema or higher.

Spontaneously: happening without obvious cause.

Stage: the degree of severity of lymphoedema. Lymphoedema is graded from stage 1 (mild) to stage 7 (very severe).

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 foot is present.

Stage 7 lymphoedema: the patient is unable to adequately or independently perform routine daily activities such as walking, bathing, cooking, etc. The patient needs help from the health care system.

Streak: a long, thin red stripe caused by an inflamed lymphatic vessel, which looks red, and feels tender and warm. Adult worm death causes a retrograde streak.

Systemic antibiotics (see antibiotics): antibiotics that are given by injection or by mouth.

Tender: sensitive or painful when touched.

Testicle: male reproductive organ (testes - plural).

Tissue: a group of cells in the body that perform the same function.

Urinary tract: the organs involved in making and releasing urine from the body.

Urogenital: related to the reproductive or urinary organs.

Vesicle: a blister. A small sac or blister that contains fluid.

Vicious cycle: a situation in which one problem causes another problem, which in turn, makes the first problem worse.

Worm: a long, thin, soft-bodied animal. In humans, intestinal worms live in the intestines, and adult filarial worms live in the lymphatic vessels.

Wounds: Cuts, scrapes, or scratches in the skin caused by injury. Wounds are one type of entry lesion, usually on the surface of the skin. Entry lesions may also be caused by fungal infections between the toes or in between skin folds; these entry lesions are not wounds.

I. Aspects relating to the planning of the course.

1. **I was given sufficient information on the aims and methods of the course upon my arrival.**

1	2	4	5
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Your comments:

2. **It was clear from the beginning of the course that I was expected to actively participate in it.**

1	2	4	5
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Your comments:

3. **The objectives of the course were clearly related to my present or future professional activities.**

1	2	4	5
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Your comments:

4. **The following administrative aspects of the course have been adequate and satisfactory:**

a) **Finances:**

1	2	4	5
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Please give specific comments if any problem arose:

b) **Travel arrangements:**

1	2	4	5
---	---	---	---

Please give specific comments if any problem arose:

c) **Accommodation and arrangements:**

1	2	4	5
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Please give specific comments if any problem arose:

5. **The training module and other materials provided were sufficient and adequate for this course.**

1	2	4	5
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If less than adequate, please note deficiencies:

6. **These training module can easily be adapted and will be of use for training workers in my country.**

1	2	4	5
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If not, please state why not and identify specific problem areas:

II. Aspects relating to the course objectives and design.

7. **This course has covered all the subjects that I expected.**

1	2	4	5
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If subjects or topics were omitted, please list them:

8. _____ days is the ideal length for such a course.

1	2	4	5
---	---	---	---

If not, please state whether the course was too short or too long.

9. **The time given to each session and the sequence were appropriate considering the total time available.**

1	2	4	5
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If not, what changes in emphasis and time allotment and sequence should be made?

10. **The course tutors and facilitators had sufficient knowledge and teaching capabilities to provide me with the necessary skills and competence in their teaching area.**

1	2	4	5
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If not, please identify the sections and sessions that were not well taught and if possible, indicate the possible reasons.

11. **The practical training exercises were a valuable experience which helped me to understand how to assess and manage lymphoedema in lymphatic filariasis.**

1	2	4	5
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If not, please indicate precisely why not and identify the deficiencies.

- III. Aspects relating to the relevance and utility of different teaching methodologies.

12. **The use of the different methods of instruction listed below was appropriate. (Please indicate your response for each method of instruction).**

- a) **Lectures:**

1	2	4	5
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Your comments:

- b) **Small group discussions:**

1	2	4	5
---	---	---	---

Your comments:

c) Practical demonstrations:

1	2	4	5
---	---	---	---

Your comments:

d) Self-study and additional reading:

1	2	4	5
---	---	---	---

Your comments:

13. The audiovisual materials used in this part of the course were sufficient and adequate.

1	2	4	5
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If not, please indicate precisely what audiovisual materials would be useful for this training activity.

IV. Aspects relating to the way the course was implemented and to the attitude of the teachers and organizers.

14. The general atmosphere of the course was conducive to serious work.

1	2	4	5
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Your comments:

15. Every effort was made to help me reach my objectives of the course.

1	2	4	5
---	---	---	---

Your comments:

16. The course was organized in such a way that it promoted "team" effort and a cooperative approach.

1	2	4	5
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Your comments:

- 17. The course helped me improve my knowledge of lymphatic filariais and has adequately prepared me to teach this in my own country.**

1	2	4	5
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Your comments:

- 18. The course has made me more confident as a teacher and implementer of lymphatic filariasis morbidity control activities.**

1	2	4	5
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Your comments:

V. Overall evaluation of the course and its implementation.

19. I would give an overall rating to this course as follows:

Please circle your response:

Lowest <=== 1 2 4 5 ===> **Highest**

20. Please note below and give actual examples of:

a) The three aspects which impressed you most favourably:

b) The three aspects which impressed you least favourably: