

Guinea Worm/Dracunculiasis Eradication Programme

Training Course for Guinea Worm Coordinators



Developed by

**Centers for Disease Control
Training and Laboratory Program Office
Division of Technical Services**

Technical support provided by

**Center for Infectious Diseases, Division of Parasitic Diseases,
Parasitic Diseases Branch, Guinea Worm Task Group**

for

**Global 2000-BCCI Guinea Worm Eradication Project
and
United Nations Development Programme**

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ISBN 6943
245.3 2994

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Training Course for Guinea Worm Coordinators

Course Director's Guide

Introduction

As the Course Director for this course, you are responsible for planning the course, setting it up, and managing the overall course once it has begun. Careful planning on your part will be essential both before and during the course to ensure the quality of the instruction and a successful learning experience for the course participants.

This guide has been developed for you to use to ensure that all necessary plans and arrangements are made. The guide describes the activities that a Course Director should perform in planning and implementing this course. It consists of lists of tasks, plus guidelines for adapting the course to meet the training needs required by the guinea worm eradication programme represented by the participants.

Tasks to be Performed by the Course Director

This is a list of all the tasks which should be performed in directing the course. Details for the major tasks are described on the following pages.

DURING THE TWO TO FOUR MONTHS BEFORE THE COURSE

1. Decide who should attend the course. (See details on page 5.)
2. Select dates and locations for both the course and the facilitator preparation session. Five days are required for the course and three days for facilitator preparation.
3. Make arrangements for the course site and for food and lodging for participants and facilitators. (See details on page 6.)
4. Select course facilitators. You will need at least six--that provides a facilitator for each small group. The number of facilitators will vary if you have more or less than 36-42 participants. (See details on page 7.)
5. Inform participants about the course.
6. Obtain necessary course materials, supplies, and audiovisual equipment. (See details on page 8.)
7. Plan adaptations to be made to the course, if any. (See details on page 10.)
8. Make arrangements for field trips. (See details on page 12.)
9. Plan miscellaneous activities (e.g., opening and closing ceremonies, social activities, special sessions).
10. Have course certificates signed by appropriate officials. (See example course certificate on page 26.)
11. Schedule class photograph, if desired.

DURING THE WEEK BEFORE THE COURSE

12. Prepare a list of names and addresses of all participants and course facilitators for distribution at the course.
13. Conduct facilitator preparation session. (See details on page 14.)
14. Assemble course handouts, visual aids, and other needed materials.

Tasks to be Performed by the Course Director, continued

DURING THE COURSE

15. Present the Course Introduction section and any other course sections you are responsible for.
16. Ensure that participants have the materials and guidance they need.
17. Ensure that the facilitators have the materials and guidance they need to carry out their responsibilities.
18. Conduct course facilitator meetings daily. (See details on page 17.)
19. Keep the course on track. Make sure all sessions start and stop on time.
20. Analyze the pretests, if used, and inform facilitators of the results.
21. Coordinate miscellaneous activities (e.g., social activities, field trips, special sessions, closing ceremony).

AFTER THE COURSE

22. Compile, summarize, and analyze the posttests and course evaluations.
23. Report course activities, results, and recommendations to appropriate persons.
24. Distribute any follow-up materials promised to participants (such as the class photograph).

1. Decide who should attend the course.

Who

This course was designed for district-level* Guinea Worm Eradication Programme workers. They are referred to in the Facilitator's Guide as Guinea Worm Coordinators. However, in your area they may have a different title. Circumstances and training needs will differ among guinea worm eradication programmes, but, in general, persons who take this course should have the following characteristics:

- They are members of district guinea worm task forces with responsibilities including some or all of the following: surveillance, community mobilization, health education, case treatment, and vector control.
- They probably are the main liason between the regional* guinea worm office and the villages.
- They hold the major responsibility for carrying out guinea worm eradication activities in the villages.
- They may have others assigned to them to help carry out these responsibilities. If this is the case, the Guinea Worm Coordinators will probably have to return from this course and train their subordinates in the subjects they learned. Adapting the Facilitator's Guide or providing some other support materials for this continued training would be extremely helpful to these Guinea Worm Coordinators.

How Many

Because this course is designed to include a great deal of participant-facilitator interaction, it is strongly recommended that the number of participants be limited to 36-42. This number (or fewer) is conducive to carrying out discussions and giving everyone a chance to contribute during the small group exercises. The course includes numerous activities that require the participants to work in small groups of six or seven persons. If more participants are allowed, the learning will decrease and more time will be required for the small group exercises and reports.

* In this course, the terms "region" and "district" are used to describe official geographic areas. If these are not the terms used in your country, substitute the appropriate terms. Comparable terms are listed below.

<u>region</u>	<u>district</u>
state	LGA (local government area)
province	sector

3. Make arrangements for the course site and for food and lodging for participants and facilitators.
-

The course site should have the following:

- adequate space and furnishings for participants to be seated during plenary (whole group) sessions
- adequate space for participants to break up and spread out into six small groups of six or seven persons; small group areas will need chairs and somewhere to display a flipchart--access to extra rooms would be ideal
- nearby sites suitable for field trips (see details on page 12)
- lunch available at or near the course site
- easy access for participants and facilitators from their lodgings
- if showing the guinea worm film or videotape, you will need electrical power, adequate space for projection, and ability to darken the room

4. Select course facilitators.

The responsibilities of the course facilitators are listed below:

- to present the course sections as described in the Facilitator's Guide
- to lead the small group activities
- to lead the field trips
- to assist you in carrying out your Course Director responsibilities

Select facilitators based on their expertise in the course topics and their ability to present the course content to the participants. Keep in mind that this is not a lecture course. It involves a great deal of discussion and activity by the participants. Select facilitators who will be able to participate effectively in this manner.

6. Obtain necessary course materials, supplies, and audiovisual equipment.

Materials, supplies, and audiovisual equipment needed-- Details about these can be found in the Facilitator's Guide on the first two pages of each section.

Whole Course

- name tags--optional
- 1 folder containing handouts for each participant, plus other handouts to be distributed during the course (see handout list on pages 21 & 22)
- 1 set of Health Education Visual Aids for each participant (see page 23)
- 1 Facilitator's Guide for each facilitator (see page 25)
- 7 flipcharts (one for each of the small groups and one to be used by the facilitators during large group sessions)
- felt tip markers for writing on flipcharts
- microphone for speakers, if needed

Guinea Worm Overview Section

- recent guinea worm surveillance data
- film or videotape- "Guinea Worm: The Fiery Serpent"
- 16 mm film projector, screen (or clear wall), extension cords, extra projector bulbs or appropriate videocassette equipment

Surveillance Section

- case recognition photographs, 3 1/2" x 5" --optional; will need one per participant or, at least, one per pair for use in case search during field trip (see Facilitator's Guide)

Community Assessment section

- 15 illustrations of drinking water sources (located in the Facilitator's Guide at the end of this section)

Promoting Individual Action Section

- cotton and nylon or polyester filter cloths and, if available, examples of different types of filter designs
- 3 practice stations set up in the classroom with materials necessary for practicing the health education talks (see Facilitator's Guide)

Vector Control Section

- for optional demonstrations, will need demonstration samples of temephos, several litres of water in clear container, microscope, and sample of water containing live cyclops (see Facilitator's Guide)

6. Obtain necessary course materials, supplies, and audiovisual equipment.

continued

Case Treatment Section

- 6 case photographs, 8" x 10". Either negatives or prints are provided with the course materials. If negatives are provided, you will have to get them developed and number each photograph as indicated below:
 - #1-- guinea worm visible under skin (pre-emergent)
 - #2-- blister on foot (pre-emergent)
 - #3-- guinea worm wound around a matchstick (emergent)
 - #4-- uncomplicated wound with emerging guinea worm (emergent)
 - #5-- swollen knee joint with emerging guinea worm (complicated)
 - #6-- foot with pus (complicated)

7. Plan adaptations to be made to the course, if any.

You may want to omit or adapt some of the course materials and topics for the course you are directing. Reasons for making changes might be one or more of the following:

- The material conflicts with information or procedures from the guinea worm eradication programme served by the participants.
- Another form, checklist, etc. will be used on the job by the participants instead of the one included in the handouts. (Whenever possible, substitute the form actually used by the programme for the one provided.)
- The material is inappropriate for the culture, geographic area, socio-economic conditions, etc. of the area for which it will be used.

It is recommended that you get the advice of the facilitators on adapting parts of the course related to their areas of expertise. Ideally, this should be done far enough in advance so that there is enough time to make the recommended adaptations to the materials. (Some time is allowed for this in the facilitator preparation session, if it cannot be accomplished before that time.) Each course section is discussed and possible adaptations are described below.

Course Introduction

- Decide whether or not to include the pretest and/or part II of the pretest. (See notes on the pretest and posttest on page 24.)
- Make any necessary modifications to the agenda. (See the suggested agenda on page 18.)
- Adjustments may need to be made for the opening ceremony.

Guinea Worm Overview

- If the film cannot be obtained, see notes in Facilitator's Guide.
- Make any necessary modifications to the handout "Guinea Worm Coordinator Roles" to reflect the eradication programme represented by the participants.

Surveillance

- Content and procedures described may need to be modified to reflect the surveillance activities which the participants will take part in on their jobs.
- Decide which case definition will be used in the surveillance activities of the participants. (See page S-7 of the Facilitator's Guide for details.)
- Decide whether to give participants the case recognition card for use in the case searches. If you decide to use it, you will have to make copies from the case recognition card provided with the course materials.

Vector Control

- Make necessary adaptations or substitutions for handouts as described in the Facilitator's Guide. If the participants will be participating in case searches and this is the only training they will receive for it, it is especially important that the course include the actual questionnaire form which they will be using instead of the sample form provided.
- If the participants need to know how to measure and calculate water volume and calculate the required amount of temephos for a body of water, then it might be necessary to incorporate that information and practice into the course. (See details in Facilitator's Guide.)
- Substitute a more applicable Temephos Application Record, if needed.

Case Treatment

- Decide if the practice exercise is needed. (See details in the Facilitator's Guide.)
- Adapt Guinea Worm Classification and Treatment Matrix to reflect programme practices, if necessary.
- Adapt Guinea Worm Treatment Record, if necessary.

8. Make arrangements for field trips.

Field trips are scheduled for three afternoons of the course. The field trips give participants a chance to practice the skills they are exposed to during the classroom sessions. During the field trips they visit a village where there are cases of guinea worm disease. Participants should be organized into three or four groups, with 10 to 12 participants in each group.

Field trips must be planned carefully and all arrangements must be made in advance. Since each group of participants should go to a different village, you will need as many villages as you have groups. Find villages that have cases of guinea worm and that are a reasonable traveling distance from the course. Make sure that someone gets permission for the field trip from the chiefs of the villages. Also, coordinate your arrangements with the guinea worm health workers who serve the villages so that the field trip activities will not conflict with their guinea worm eradication activities.

Arrangements should be made with local guinea worm health worker(s) to follow-up after the course on the plans made by the participants and villagers during the field trips. It is very important that the progress started by the participants in the villages be continued. If possible, you may want to invite the local health worker(s) to serve as advisor(s) for the field trips.

Activities for the participants to accomplish during each field trip are outlined below:

First Day Field Trip--The focus of this field trip is to practice conducting a case search and to begin a community assessment.

1. Meet the chief. A spokesperson should introduce the group and explain the purpose for being there. The activities which the group wants to conduct in the village for the next two days should be explained.
2. Begin the community assessment by finding out about what community leaders and groups there are in the village.
3. Ask the chief if he will form a committee (or identify an existing committee) to work on solving the village's guinea worm problem. Explain that the group would like to return and talk to this committee tomorrow.
4. Break up into pairs and practice administering the case search questionnaire forms. Each pair should conduct at least three household interviews.

Second Day Field Trip--The focus of this field trip is to continue the community assessment and practice giving health education talks.

1. Meet the committee designated by the chief and introduce the group and explain purpose.
2. Ask the committee about community beliefs and practices, community resources, and the local drinking water sources.
3. Discuss possible solutions to the guinea worm problems of the community.
4. Announce that the group will be back tomorrow to discuss a plan for implementing the solutions (that is, if feasible solutions can be agreed upon).
5. Divide up into smaller groups and practice giving health education talks on the causes of guinea worm and the importance of filtering drinking water (if applicable).
6. Arrange to see the drinking water sources, if possible. (This may be a good opportunity to practice measuring water volume for temephos application.)

8. Make arrangements for field trips.

continued

Third Day Field Trip--The focus of this field trip is to continue making a plan for the community's guinea worm activities. If desirable, the participants can also practice treating cases (under medical supervision).

1. Meet again with the committee and finalize the implementation plan. It may be possible to do this for only one or two activities.
2. Identify, classify, and treat cases.
3. Complete a case treatment form.
4. Meet again with the chief and summarize the visit. Thank him for his cooperation.

12. Conduct facilitator preparation session.

In the week prior to the course, you should conduct a three-day session to prepare the facilitators. You will not need the full three days if the facilitators have been able to review their Facilitator's Guides before this preparation session. Ideally, the facilitators should receive and review the guides in advance, but this may not be possible in all situations. If it is possible, the whole three days may not be needed. Below is a suggested agenda for the full three-day facilitator preparation session. Adjust it if you will not be needing the whole three days.

Day One

- Welcome and thank the facilitators for their time and participation.
- Discuss the nontraditional nature of the course. It is not a lecture course, but includes a lot of open discussions, facilitator-led discussions, and small group exercises. Emphasize the importance of encouraging active participation from the participants.
- Go over the agenda which is in the Facilitator's Guide and, if it has not already been done, agree on who will assume responsibility for each section of the course. Stress the importance of keeping the sessions on time. There is so much material to be covered during the course that it is important for each facilitator not to use more than his or her allotted time.
- Explain that in addition to being responsible for presenting the content for their section(s), the facilitators will also be leading small group exercises and field trips.
- Call the facilitators' attention to the Introduction at the beginning of the Facilitator's Guide. Go over the information on the first three pages. Go over in detail the part titled "Using the Facilitator's Guide" on pages three and four. Review the example page illustration on page four pointing out each of the organizational cues. Go through several pages of the guide to make sure that everyone understands the instructional techniques described and the cues for when to refer to handouts, when to use a flipchart, when to lead a discussion, etc.
- Ask the facilitators to read the rest of the Introduction section, pages five through ten, before tomorrow's session.
- Discuss the organization of the guide. Explain that each course section is followed by its handouts and the references are located in the back of the guide. The pages are numbered with a different letter code for each section. The codes are the initial letters from the section title, for example, the Community Assessment section pages are numbered CA-1 through CA-23.
- Take a break of several hours for the facilitators to review the sections they are responsible for presenting. Ask them to return from the break with comments, suggestions, and questions regarding their sections. (The time allotted to this activity will depend on whether or not the facilitators have been able to review the Facilitator's Guide. If they have access to the guide before the preparation session, you may want to ask them to do this before coming.)

12. Conduct facilitator preparation session.

continued

Day One, continued

- Discuss each course section, including the comments, suggestions, and questions of the facilitators. Agree on any adaptations to be made and on who is responsible for making designated revisions to the participant handouts.

Day Two

- If necessary continue the discussion of course sections.
- Distribute copies of the list of course participants. Decide on how best to divide them up into six groups (or however many groups are required for this course). Do you want to group them according to the geographic area in which they will work, experience level, type of job, etc.? Also, decide if it would be best to group them in the same way every day or to form different groups on different days. Agree on how to assign a facilitator to each group.
- Conduct a discussion of discussion-leading techniques. Ask the facilitators to suggest ways of leading a successful discussion. Record their suggestions on a flipchart page as each is mentioned. Refer to the tips given in the Introduction of the Facilitator's Guide. At appropriate times as you are writing on the flipchart, remind the facilitators about the tips for proper use of flipcharts which are described in the Introduction.
- Ask for a volunteer to demonstrate leading a discussion using pages CA-6 and CA-7 of the Facilitator's Guide (or any other pages you think are appropriate). Discuss his or her performance, including activities done well and areas which could be improved.
- Look at the small group exercise on page CA-12. Explain that this is the procedure for most of the group exercises in the course. Discuss the facilitator's role in leading each group. Make sure everyone understands that they should allow the participants to do most of the talking and decision making. The facilitator serves mainly to keep the group on track.

Day Three

- Explain the brainstorming process as described on pages PCA-6 through PCA-8 of the Facilitator's Guide. In this exercise the participants practice the brainstorming process and then discuss ways to use it with villagers. To give the facilitators some practice with this process, have them do the exercise as it is described in the guide, except they will have only one group instead of six and will discuss only one of the Exercise Problem Descriptions. Ask for a volunteer to act as discussion leader. When the exercise is complete critique the process and discuss how to ensure using it successfully with the participants.
- Go over the Health Education Visual Aids. Discuss each one and explain how it is used so that the facilitators will be able to help the participants practice using the visual aids in the practice exercise and during the field trips. (See page 23 for a description of the visual aids.)

12. Conduct facilitator preparation session.

continued

Day Three, continued

- Discuss the fact that many of the course participants will be expected to return from this course and teach others in their districts about what they learned. Talk about how the facilitators should be aware of this during their presentations and should offer advice on how the participants can teach the content to others. Discuss ways you can provide the participants with support once they leave the course.
- Discuss possible problem situations which may come up during the course, e.g., uncooperative participants, problems with facilities.
- Make arrangements for having daily facilitator meetings during the course. Schedule them for any convenient time (for example, at the beginning or end of the day, or at lunch).
- Discuss any other issues which need to be discussed. Thank the facilitators for their time and dedication and adjourn the session.

18. Conduct daily course facilitator meetings.

- Discuss any problems that course participants are having with the content of the course. Discuss causes of the problems and possible solutions.
- Discuss any other problems that participants are having (e.g., lack of motivation, language difficulties, classroom setting). Discuss causes of the problems and possible solutions.
- Provide feedback to the facilitators on the progress of the course. Mention specific actions which have been well done. Mention areas which might be improved.
- Ask about any other needs or problems that the facilitators are having.
- Summarize upcoming activities and make sure everyone understands what is expected of them.
- Make any necessary administrative announcements.

Agenda

This is the agenda suggested for the course. It may vary depending on your decision to omit from or add to some of the course sections. The agenda allows time for six group reports in the small group exercises. If you have more than six groups of participants, you will need more time than shown below; if you have fewer groups, you will need less time. You may also find it necessary to adjust the agenda on the first and last days of the course to accommodate the schedules of officials participating in the opening and closing ceremonies.

DAY ONE

8:00 - 8:30	<u>Course Introduction</u> Registration
8:30 - 8:45	Welcome
8:45 - 9:45	Opening Ceremony
9:45 - 10:30	Introduction Exercise
10:30 - 10:45	BREAK
10:45 - 11:30	Pretest
11:30 - 12:00	<u>Guinea Worm Overview</u> Introduction and Film
12:00 - 12:30	Prevention Methods
12:30 - 1:30	LUNCH
1:30 - 2:30	Prevention Methods, continued
2:30 - 2:40	Terminology and Conclusion
2:40 - 3:00	<u>Surveillance</u> Introduction
3:00 - 3:30	Sources of Surveillance Information
3:30 - 3:45	BREAK
3:45 - 5:10	Case Searches
5:10 - 5:25	Using the Data

Agenda, continued

DAY TWO

8:30 - 8:45 Community Assessment
Introduction

8:45 - 9:35 Community Assessment Topics

9:35 - 9:50 Community Assessment Process

9:50 - 10:05 BREAK

10:05 - 11:00 Small Group Exercise and Conclusion

11:00 - 11:15 Promoting Community Action (Part I)
Introduction

11:15 - 11:30 Steps in Promoting Community Action

11:30 - 1:00 Brainstorming

1:00 - 2:00 LUNCH

2:00 - Field Trip

DAY THREE

8:30 - 8:50 Promoting Community Action (Part II)
Community Meetings

8:50 - 10:30 Implementation Plans

10:30 - 10:45 BREAK

10:45 - 10:50 Promoting Individual Action
Introduction

10:50 - 11:15 Health Education Messages

11:15 - 11:30 Health Education Talk A

11:30 - 11:45 Health Education Talk B

11:45 - 12:00 Health Education Talk C

12:00 - 1:05 Practice Exercise and Conclusion

1:05 - 2:00 LUNCH

2:00 Field Trip

Agenda, continued

DAY FOUR

8:30 - 8:45	<u>Vector Control</u> Introduction
8:45 - 9:00	About Temephos
9:00 - 10:00	Temephos Application
10:00 - 10:15	BREAK
10:15 - 10:35	<u>Case Treatment</u> Introduction
10:35 - 11:00	Case Classification and Treatment Response
11:00 - 11:45	Practice Exercise
11:45 - 12:45	LUNCH
12:45 -	Field Trip

DAY FIVE

8:30 - 10:00	<u>Course Closing</u> Field Trip Reports
10:00 - 10:30	Summary
10:30 - 10:45	BREAK
10:45 - 11:45	Posttest and Course Evaluation
11:45 -	Closing Ceremony

Handouts

Make one copy of each handout for each participant and compile in participant folders. It is recommended that the folders be handed out to the participants on the morning of the first day of the course.

Below is a list of all of the handouts used in the course. They are listed under the name of the section where they are used (the section name is underlined) and in the order in which they are used. The handouts with asterisks are those which you may want to modify or replace with information more reflective of your eradication programme. (See pages 10 & 11 for comments on making adaptations.)

Course Introduction

Agenda
Course Objectives
Pretest--optional

Guinea Worm Overview

Prevention Methods
Guinea Worm Coordinator Roles*

Surveillance

Preparing for the Case Search
Guidelines for the Case Search
Reporting Case Search Data
Example Village Summary Form*
Example District Summary Form*
Example Case Search Form*

Community Assessment

Community Assessment Topics
Community Leaders and Groups
Community Beliefs and Practices
Community Resources
Community Water Supply
Water Supply Protection Options
Meeting Process
Solution Tables

Promoting Community Action

Steps in Promoting Community Action for Guinea Worm Eradication
Ideas for Community Projects
Sample Implementation Plan
Implementation Plan
Exercise Problem Descriptions

Promoting Individual Action

Health Education Talk Summary
Guide to Using the Health Education Visual Aids
Health Education Talk A
Health Education Talk B
Health Education Talk C

Handouts, continued

Vector Control

Characteristics of Temephos
Using Temephos Appropriately
Preparing the Village for Temephos
Applying Temephos
Temephos Application Record*
Safety Guidelines for Temephos

Case Treatment

Guinea Worm Classification and Treatment Matrix*
Patient Education Messages
Guinea Worm Treatment Record*

The following handouts should not be included in the participant folders; they should be handed out when needed during the course. You will need one for each participant.

Surveillance

Case recognition cards--optional
Example Case Search Forms for practice exercise

Community Assessment

Community Situation Descriptions A, B, and C

Promoting Individual Action

Health Education Visual Aids--includes for each participant:

- 1 Life Cycle Flipchart
- 5 Intervention Posters
- 15 Drinking Water Source Cards

Course Closing

Posttest
Course Evaluation
Course Certificates

Health Education Visual Aids

You need to make one set of the visual aids for each participant. One example of each type of visual aid is provided along with a black and white reproduction of each. Use the black and white reproduction for having copies made for the participants. Descriptions of each visual aid and specifics for making copies are described below:

Life Cycle Flipchart-- a seven-page flipchart to use with villagers in teaching them that guinea worm comes from the drinking water

- Type of paper
8 1/2" X 11" (or metric equivalent) card stock, light-colored
- Printing specifications
Print on both sides, head to head, as shown in example, black ink
- Binding
plastic spiral binders or ring binders

Intervention Posters-- five posters which can be left with the villagers to post in and around their village (If your programme has already produced its own posters, you may want to use them instead.)

- Type of paper
8 1/2" X 11" (or metric equivalent) light colored paper
- Printing specifications
black ink on one side

Drinking Water Source Cards-- a set of 15 cards which show various types of drinking water sources

- Type of paper
5" X 5" (or metric equivalent) card stock, light-colored
- Printing specifications
print on both sides, head to head, black ink

For information on how to use the visual aids, refer to the handout titled "Guide to Using the Health Education Visual Aids" on page PIA-16 in the Facilitator's Guide.

Pretest and Posttest

The pretest and the posttest are exactly the same, except that the pretest has two parts. The pretest is given on the morning of the first day of the course and the posttest is given on the morning of the last day. The pretest is optional. However, it is recommended that it be used for the following reasons:

- It gives you an idea of what the participants know at the beginning of the course. This helps the facilitators to tailor their presentations to meet the knowledge level and needs of the participants.
- It gives you something to compare the posttest results to, providing you and the facilitators with an idea of how much the participants have increased their knowledge during the course.
- It gives the participants a preview of what they will be learning during the week and emphasizes the most important course information.

It is very important that the participants understand how to answer the test questions. Make sure that the directions are clearly explained and that the participants go over the practice questions at the beginning of the test. If the participants answer the pretest questions with no trouble, then the practice questions for the posttest can be skipped.

Part II-- Part II of the pretest is optional. It surveys the experience that the participants have had with guinea worm eradication activities and the experience they have had in teaching this knowledge to others. Part II can give you an idea of the background and ability of the participants. It is attached to the pretest, but not the posttest. If you are using the posttest only and wish to use Part II, you will have to attach it to the posttest.

Facilitator's Guide

With the course materials, you should have received one copy of the Facilitator's Guide. You will need to make one copy for each of the facilitators. For ease of use, it is recommended that the copies be compiled and placed in loose-leaf notebooks with dividers between each section. Below is a list of the components of the Facilitator's Guide in the order in which they should appear.

Acknowledgements
Introduction
Table of Contents
Course Objectives
Agenda
Course Introduction facilitator section
Course Introduction handouts*
Guinea Worm Overview section
Guinea Worm Overview handouts*
Surveillance section
Surveillance handouts*
Community Assessment section
Community Assessment handouts*
Drinking Water Source Illustrations
Promoting Community Action section
Promoting Community Action handouts*
Promoting Individual Action section
Promoting Individual Action handouts*
Vector Control section
Vector Control handouts*
Case Treatment section
Case Treatment handouts*
Course Closing section
Course Closing handouts*
Reference Section

*For the Facilitator's Guide, all of the participant handouts should be printed on colored paper, if possible. This can help to remind the facilitators of which materials the participants have and which materials they lack.

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Facilitator's Guide

Acknowledgements

This manual is a collaborative effort of the Training and Laboratory Program Office (TLPO) and the Division of Parasitic Diseases, Center for Infectious Diseases (CID) of the U.S. Centers for Disease Control (CDC) and Global 2000, Inc. of the Jimmy Carter Presidential Center. Significant support was also provided by the United Nations Development Program.

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INTRODUCTION

This Facilitator's Guide contains all of the documents required to conduct the Training Course for Guinea Worm Coordinators. The following information provides details about the purpose of the training, the target audience, your role as facilitator, the course materials, using the Facilitator's Guide, and tips for successful training.

Purpose of the Training

Your goal as a facilitator is to ensure that the Guinea Worm Eradication Programme workers are prepared to carry out their responsibilities for guinea worm eradication at their level of operation. This effort should focus on accomplishing the objectives specified for each section of the course.

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Your Role as Facilitator

This course is recommended to be conducted by at least one lead facilitator with several assistant facilitators to help in the small group exercises. The course director may participate as a facilitator, as well as assume his/her duties of directing the course. The course director will designate the responsibilities of the facilitators and assign topics for each facilitator to present based on their expertise.

It is your responsibility as a facilitator to deliver lectures, lead discussions, and facilitate other training activities in the section of the course to which you have been assigned. This can be accomplished by using the traditional instructional mode of drawing from your previous experience and knowledge, presenting new material and techniques, and discussing the value of the information.

In addition, this course features a more interactive approach by involving participants in small group discussions and activities that allow them to discover their own answers and conclusions. With this approach, you need to provide a good learning environment that encourages open communication and an atmosphere conducive to thought and discussion. You will need to be alert to which ideas the participants are accepting, rejecting, and/or having trouble comprehending.

Course Materials

- The Participant Folders contain course handouts, some of which are used to stimulate discussion during the course and some of which can be used to help the participants at their jobs, such as charts for keeping records, checklists, guidelines, etc. The participant folders are to be passed out to the participants on the first day of the course.
- The Health Education Visual Aids include a Life Cycle Flipchart, Drinking Water Source Cards, and Intervention Posters. They are given to the participants during the discussion of health education. The participants practice using them during the course and on the field trips. For a complete description of these materials see the handout on page CIA-16.
- The Facilitator's Guide contains directions for course preparation, discussion outlines, participant exercises, and evaluation materials. Copies of everything in the participant folders are included in the Facilitator's Guide on colored paper. The Guide is divided into eight sections: 1) Course Introduction, 2) Guinea Worm Overview, 3) Surveillance, 4) Community Assessment, 5) Promoting Community Action, 6) Promoting Individual Action, 7) Vector Control and 8) Case Treatment.

Field Trips

Three field trips are scheduled during this course. The purpose of the field trips is to provide an opportunity for the participants to practice in a village what they have learned about in class. Groups of 10 to 12 participants should go out to local villages accompanied by a facilitator. Each group should go to the same village each day. Activities to conduct during each field trip are outlined below:

First Day Field Trip--The focus of this field trip is to practice conducting a case search and to begin a community assessment.

1. The whole group meets the chief. A spokesperson should introduce the group and explain the purpose for being there. The activities which the group wants to conduct in the village for the next two days should be explained.
2. Begin the community assessment by finding out about what community leaders and groups there are in the village.
3. Ask the chief if he will form a committee (or identify an existing committee) to work on solving the village's guinea worm problem. Explain that the group would like to return and talk to this committee tomorrow.
4. The group breaks up into pairs and practices administering the case search questionnaire forms. Each pair should conduct at least three household interviews.

Second Day Field Trip--The focus of this field trip is to continue the community assessment and practice giving health education talks.

1. The group meets the committee designated by the chief and introduces themselves and explains their purpose.
2. Ask the committee about community beliefs and practices, community resources, and the local drinking water sources.
3. Discuss possible solutions to the guinea worm problems of the community.
4. Announce that the group will be back tomorrow to discuss a plan for implementing the solutions (that is, if feasible solutions can be agreed upon).
5. Divide up into smaller groups and practice giving health education talks on the causes of guinea worm and the importance of filtering (if applicable).
6. Arrange to see the drinking water sources, if possible. (This may be a good opportunity to practice measuring water volume for temephos application.)

Third Day Field Trip--The focus of this field trip is to continue making a plan for the community's guinea worm activities. If desirable, the participants can also practice treating cases (under medical supervision).

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2. Identify, classify, and treat cases.
3. Complete a case treatment form.
4. Meet again with the chief and summarize visit. Thank him for his cooperation.

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Each section within this Facilitator's Guide consists of information, activities, and handouts required to train the participants.

The first page or two of each section contains the following information:

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Background Reading for Facilitators-- presents articles and other relevant information which you should read before presenting the section. The articles can be found in the reference section located at the back of this Facilitator's Guide.

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The text on the left side of the page indicates the titles of the subsections and the topics to be covered within the subsections. Materials that will be needed by you or the participants for each topic is listed in brackets.

Recommended amount of time for subsection		
Subsection title	HEALTH EDUCATION MESSAGES 25 min.	
Text will explain how to prepare flipchart	[Prepared flipchart]	For guinea worm eradication, there are five main messages to be communicated to villagers. These messages are included in three health education lesson plans which the participants will learn to present in this section of the course.
Indicates handout needed by participants for this discussion or exercise	Examining drinking water supply protection options [Handout]	Once Guinea Worm Coordinators have classified a drinking water source as safe or unsafe, they should be able to offer options for how the villagers can protect themselves from the unsafe water.
Title of handout needed is underlined and found within adjacent text		<ul style="list-style-type: none"> a) Discuss the <u>Water Supply Protection Options</u> in the handout. This chart describes three water supply scenarios and lists the options which might be used to protect the residents from potential guinea worm infection. b) Use the Water Source Cards 7 through 13 to illustrate these options. <u>Ask</u> participants to discuss the feasibility of each option. c) <u>Ask</u> what other options the participants know of. d) Emphasize that health education is a most powerful protection option.
Letters indicate steps for leading discussions and exercises	Topic 5 [Handout]	<p><u>Community Resources</u></p> <p>Lead a discussion about finding out what local resources are available for guinea worm eradication activities. Refer to <u>Topic 5, Community Resources</u>, in the handout.</p> <p>Explain that in the Community Assessment process, there is no need to answer this last question in great detail; rather, the purpose here is to <u>start</u> exploring potential resources. This information will guide the Guinea Worm Coordinators' recommendations for guinea worm solutions.</p>
Breaks indicated by dotted lines		BREAK 15 min.

Tips for Successful Facilitators

Because the participants will probably need to teach others about what they learn in this course, it will be important for you to use, as well as demonstrate, effective facilitation techniques. The participants can greatly benefit from your good example.

The next several pages include the following six areas on how to be a successful facilitator: Learning Principles, Presentation Skills, Dealing with Difficult Participants, Discussion Techniques, Roleplays, and Flipcharts.

1. Learning Principles

Learning principles describe the elements which enhance learning. Below are the learning principles on which the design of this course is based. Following each principle are methods you can use to apply the principle during training.

- People learn more by doing than by listening. If participants are actively involved in the learning process (instead of just listening to a lecture) they will learn more effectively.

Use discussions, exercises, role plays, "hands-on" experiences, and field trips to involve the participants. Also, ask questions to encourage trainees to "discover" the facts on their own.

- People learn through different methods. People remember 10% of what they read, 20% of what they hear, 30% of what they see, and 50% of what they see and hear, and 90% of what they do.

To achieve maximum learning, use several methods of teaching. For example, discuss the material, use visuals (flipcharts, photos, etc.), and refer to the accompanying handouts. This will enable participants to hear the information, as well as see it, and read about it. Try to provide as many opportunities for practice as possible. In this course three field trips will be taken to allow the participants a chance to practice what they have been taught.

Provide several explanations for the same information if participants do not understand the material.

- People need feedback on how they are progressing. Letting participants know how they are doing (feedback) encourages them to continue to participate and also guides them when they are making mistakes.

Ask questions and look for non-verbal signs (smiles, frowns, nods, etc.) to determine if participants understand the material. When participants give a correct answer or are successful in other ways, acknowledge and confirm it. If a participant makes a mistake, ensure that he/she can answer the question correctly or show correct behavior by the end of the session.

- Learning that is rewarded is much more likely to be retained. Everyone wants approval from friends, peers, and superiors. You can build on this by praising and giving credit to participants who do their best.

Acknowledge instances of successful accomplishments of the participants. This arouses the interest of the class and lets the participant know that he/she has succeeded. It also lets the other participants know what accomplishments you think are important.

A simple "Yes, that's right." or recognition for attempting to contribute can mean a great deal to a trainee.

Give sincere praise. False praise can result in the participants distrusting anything you say.

Avoid criticism that is not constructive. When you need to correct someone, do it tactfully. Acknowledge initiative, hard work, and answers (even when incorrect). If an answer is not completely wrong, identify the part of the answer that is right.

- Feedback and reinforcement should be provided as soon as possible. The impact of the reward is affected by time. If you wait to praise or correct an individual's activity, it will not mean as much as doing so immediately following the activity.

Give feedback on the results of tests or exercises as quickly as you can.

- People gradually forget what they have learned. Frequently recalling the learned material will help the participants remember it.

Periodically summarize the information presented or ask a participant to summarize it.

Ask questions about material presented previously. Ask the participants to compare/contrast material being presented now with material presented previously.

Include review periods that ask participants to recall information.

- Make the material meaningful to the participants. Whenever possible, relate the information presented to the participants' previous experience and knowledge. Inform the participants about how the new information will be useful to them.

Ensure that each point is fully understood before going on to the next point.

Build on the prior personal and work-related experiences of the participants. Ask their opinions about the material and what experiences they have had that relate to the subject.

Discuss how the information will help the participants perform their role as a guinea worm eradication workers.

- Learn from your mistakes. This will be a learning experience for you, as well as for the participants.

Be flexible and try new methods if something fails to achieve the desired results.

2. Presentation Skills

The way a facilitator presents his/her material can strongly affect the participants' motivation and learning. Consider the following points:

- Use eye contact to let the participants know that you are talking to them not at them.
- Talk naturally and be relaxed so that the participants feel at ease. If you are anxious, the participants will feel anxious too.
- Show enthusiasm for the material. If you are enthusiastic about the course, it will help motivate the participants.
- Listen to the participants, especially during activities. Let them know that their opinions are important.
- Try to stand close to the group. This will encourage participation because you will seem to be with them rather than at a distance.
- Sit down for different sections of the course. Sitting removes you as the authority figure and encourages the group to take over the activity. This can be beneficial for discussions when participants act as group leaders.
- Practice presenting the material before the course begins. The more familiar you are with the information and how you are going to present it, the smoother the course will go.

3. Dealing With Difficult Participants

Occasionally a participant may cause problems or create a difficult situation. The following methods can help you if this occurs.

- If a participant makes negative remarks, use his/her comments to generate a discussion. Ask the other participants what their opinions are about the comments.
- Over-qualified participants can work with the other participants by helping to teach in their areas of expertise. Provide them with more advanced exercises if possible.
- Most participants want to learn and experience success. If someone is causing problems, there is probably a reason for it. Find out what the problem is before assuming that he/she is just out to get you.

4. Discussion Techniques

The purpose of the discussion is to get participants to actively talk and share information about a topic, problem, or its possible solutions. As the main discussion leader, keep these points in mind:

- Generate discussion by asking questions.

Questions are perhaps one of the facilitator's most valuable tools because they help to stimulate discussion, clarify information, arrive at conclusions, and provide a means for individual participation. The way questions are asked is very important because how they are stated can either encourage or discourage participants to answer freely.

- The most effective questions are usually those that cannot be answered by a simple "yes" or "no." Questions asking who, what, why, when, where, and how stimulate thinking and participation. These are called probing or open-ended questions.
- "Yes" and "no" questions (or close-ended questions) can be helpful in terminating a prolonged discussion.
- Questions should be clearly worded and easily understood.
- Refrain from answering the question yourself. Give the participants adequate time to think of the answer. Wait at least 10 seconds before stepping in. If no one is able to answer, rephrase the question, suggest a possible answer, and ask for the group's reaction to it.
- Questions should never be sarcastic. They should always give the participants a feeling of satisfaction in providing the answers.
- Verbally reward the participants for answering -- even if he or she is wrong. Pay close attention to all answers and indicate that each contribution is of value.
- Draw each person into the discussion by giving him or her an opportunity to answer questions.
- Provide opportunities for participants to ask questions during every section on the course. This can help to clear up any misunderstandings and let you know if the participants are comprehending the content.
- Play scribe for the group. Recording comments removes you from a dominating position; yet you can always ask for clarification to get the discussion back on track, if necessary.

- Summarize the discussion.

- Briefly recall all key points.
- Compare or contrast to previously learned material or material to be covered next.
- Recall the objectives.
- Stress important concepts.

5. Roleplays

Roleplay is an instructional technique where participants act out a situation, condition, or circumstance. It is a valuable tool because it gets participants to practice what they are being taught, and not just talk about it. As stated previously, people learn more from doing than from listening. It provides a form of practice. Roleplays enable participants to:

- See what the skill or performance looks and feels like in action
- To experience another person's point of view
- Observe and learn from peers in action
- Practice a skill or procedure
- Receive feedback on the performance

As the facilitator, you will want to keep the following points in mind when conducting a roleplay.

- Introduce the roleplay.
 - Explain the background, roles, and situation to be dramatized.
 - Explain the purpose of the roleplay and how it relates to the objectives.
 - Give those not participating in the roleplay something to observe for.
 - Explain related activities which will take place after the roleplay.
 - Explain if there are any rules or constraints.
- Monitor the roleplay. Watch the roleplay and troubleshoot if necessary. Intervene only when the participants get off the track. Ask questions to help get the activity back on track. Do not provide answers, but ask guiding questions.
- Have a concluding discussion of the roleplay. Lead a closing discussion on content and feelings. Find out what the participants and observers felt about and learned from the experience.
- Learn from the experience. If the activity does not work as planned, be honest with the participants and ask them what could help to make it a successful activity.

6. Flipcharts

During the course, flipcharts are used in group discussions to indicate important information, list participants' comments, etc. Occasionally the materials call for a "prepared flipchart." This means that you need to write something on the flipchart before beginning that section of the course. Following are some suggestions for using flipcharts.

- Write (or print) legibly.
- Write large enough so that the participants at the back of the room can read it.
- Plan ahead of time how you will organize the information to be recorded on the flipchart.
- Talk to the participants, not the chart, when presenting the information. Refrain from facing the flipchart.
- Write on every other page if the ink from the pens bleeds onto the following page.
- Write down exactly what is said when recording participant comments, if possible. If you need to shorten or rephrase the comment, get the participant's agreement that it is what he/she meant.

Training Course for Guinea Worm Coordinators

Facilitator's Guide

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Reference Section

Training Course for Guinea Worm Coordinators

Course Objectives

Guinea Worm Overview

1. Describe the extent of the guinea worm problem in this country and region.
2. Describe the life cycle of the guinea worm and causes of the disease.
3. List the various methods used to prevent guinea worm.
4. Describe the Guinea Worm Eradication Programme and the part Guinea Worm Coordinators play in it.

Surveillance

1. Describe the functions of the existing communicable disease case reporting system, ongoing village-level monitoring, and case searches in the control and elimination of guinea worm disease.
2. Describe the Guinea Worm Coordinator's responsibilities for ongoing surveillance.
3. Describe how to prepare for a case search.
4. Describe how to administer and fill out case search forms correctly.
5. Describe how to complete a surveillance report form for a village and district and what the procedure is for forwarding the reports to appropriate authorities.

Community Assessment

1. Describe how the community assessment process fits in with the overall Guinea Worm Eradication Programme.
2. Describe the four community assessment topics: Community Leaders and Groups, Community Beliefs and Practices, Community Resources, Community Water Supply.
3. Describe the procedure for finding out information on the four community assessment topics.
4. Given the description of a community, summarize key considerations for conducting an appropriate community assessment.

Course Objectives, Continued

Promoting Community Action

1. List at least three qualities of a community guinea worm project that helps to promote community action and participation.
2. Describe how the brainstorming method could be used to get community members involved in planning guinea worm projects.
3. Describe how to plan for and conduct a community meeting.
4. Develop an implementation plan for a community project that describes at least three tasks, dates for their completion, and persons responsible.

Promoting Individual Action

1. Describe the five primary health education messages.
2. Give a health education talk which teaches villagers that guinea worm comes from the drinking water and why it is important that persons with guinea worm ulcers not go into the drinking water.
3. Give a health education talk which teaches villagers to identify local drinking water sources which are safe from guinea worm and, if applicable, to describe ways to protect the water sources from guinea worm contamination.
4. Give a health education talk which teaches villagers to correctly filter drinking water which comes from unprotected sources.

Vector Control

1. Describe the major characteristics of temephos (Abate).
2. Describe situations most suitable for using temephos for vector control.
3. List the main points which should be discussed with village leaders when trying to gain their support for temephos application.
4. Describe safety precautions which should be taken when mixing, applying, storing, and/or transporting temephos.
5. List the details which should be recorded for every temephos application.

Case Treatment

1. Distinguish whether a guinea worm case is pre-emergent, emergent, or complicated.
2. Describe the appropriate treatment response for emergent, pre-emergent, and complicated guinea worm cases.
3. State key patient education messages which should be communicated to patients with guinea worm disease.

Training Course for Guinea Worm Coordinators

Agenda

DAY 1

Morning

Registration
Welcome
Opening Ceremony
Pretest

Afternoon

Guinea Worm Overview
Surveillance

DAY 2

Morning

Community Assessment
Promoting Community Action (Part I)

Afternoon

Field Trip

DAY 3

Morning

Promoting Community Action (Part II)
Promoting Individual Action

Afternoon

Field Trip

DAY 4

Morning

Vector Control
Case Treatment

Afternoon

Field Trip

DAY 5

Morning

Field Trip Reports
Posttest
Course Evaluation
Closing Ceremony

Guinea Worm / Dracunculiasis Eradication Programme



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Third Day Field Trip--The focus of this field trip is to continue making a plan for the community's guinea worm activities. If desirable, the participants can also practice treating cases (under medical supervision).

1. Meet again with the committee and finalize the implementation plan. It may only be possible to do this for one or two activities.
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Organizational cues are used throughout the Facilitator's Guide. These are in the form of labels and titles located in the left margin that let you know when to ask questions, what materials to use with each part, suggested times, etc. A key for the various cues is provided on the next page.

The text on the right side of the page tells you, the facilitator, what to do and what content to cover. It should not be read directly to the participants, but should be explained in your own words. In your presentations, use terminology and concepts appropriate for the level and experiences of the participants. Use your judgment in adapting the materials to suit the training needs of the participants. If you feel an exercise is not appropriate or a topic is too advanced, revise it to meet the participants' needs.

The text on the left side of the page indicates the titles of the subsections and the topics to be covered within the subsections. Materials that will be needed by you or the participants for each topic is listed in brackets.

Recommended amount of time for subsection		
Subsection title	HEALTH EDUCATION MESSAGES	25 min.
Text will explain how to prepare flipchart	[Prepared flipchart]	For guinea worm eradication, there are five main messages to be communicated to villagers. These messages are included in three health education lesson plans which the participants will learn to present in this section of the course.
Indicates handout needed by participants for this discussion or exercise	Examining drinking water supply protection options [Handout]	Once Guinea Worm Coordinators have classified a drinking water source as safe or unsafe, they should be able to offer options for how the villagers can protect themselves from the unsafe water.
Title of handout needed is underlined and found within adjacent text		<ul style="list-style-type: none"> a) Discuss the <u>Water Supply Protection Options</u> in the handout. This chart describes three water supply scenarios and lists the options which might be used to protect the residents from potential guinea worm infection. b) Use the Water Source Cards 7 through 13 to illustrate these options. <u>Ask</u> participants to discuss the feasibility of each option. c) <u>Ask</u> what other options the participants know of. d) Emphasize that health education is a most powerful protection option.
Letters indicate steps for leading discussions and exercises	Topic 5 [Handout]	<p><u>Community Resources</u> Lead a discussion about finding out what local resources are available for guinea worm eradication activities. Refer to <u>Topic 5, Community Resources</u>, in the handout.</p> <p>Explain that in the Community Assessment process, there is no need to answer this last question in great detail; rather, the purpose here is to <u>start</u> exploring potential resources. This information will guide the Guinea Worm Coordinators' recommendations for guinea worm solutions.</p>
Breaks indicated by dotted lines	BREAK	15 min.

Tips for Successful Facilitators

Because the participants will probably need to teach others about what they learn in this course, it will be important for you to use, as well as demonstrate, effective facilitation techniques. The participants can greatly benefit from your good example.

The next several pages include the following six areas on how to be a successful facilitator: Learning Principles, Presentation Skills, Dealing with Difficult Participants, Discussion Techniques, Roleplays, and Flipcharts.

1. Learning Principles

Learning principles describe the elements which enhance learning. Below are the learning principles on which the design of this course is based. Following each principle are methods you can use to apply the principle during training.

- People learn more by doing than by listening. If participants are actively involved in the learning process (instead of just listening to a lecture) they will learn more effectively.

Use discussions, exercises, role plays, "hands-on" experiences, and field trips to involve the participants. Also, ask questions to encourage trainees to "discover" the facts on their own.

- People learn through different methods. People remember 10% of what they read, 20% of what they hear, 30% of what they see, and 50% of what they see and hear, and 90% of what they do.

To achieve maximum learning, use several methods of teaching. For example, discuss the material, use visuals (flipcharts, photos, etc.), and refer to the accompanying handouts. This will enable participants to hear the information, as well as see it, and read about it. Try to provide as many opportunities for practice as possible. In this course three field trips will be taken to allow the participants a chance to practice what they have been taught.

Provide several explanations for the same information if participants do not understand the material.

- People need feedback on how they are progressing. Letting participants know how they are doing (feedback) encourages them to continue to participate and also guides them when they are making mistakes.

Ask questions and look for non-verbal signs (smiles, frowns, nods, etc.) to determine if participants understand the material. When participants give a correct answer or are successful in other ways, acknowledge and confirm it. If a participant makes a mistake, ensure that he/she can answer the question correctly or show correct behavior by the end of the session.

- Learning that is rewarded is much more likely to be retained. Everyone wants approval from friends, peers, and superiors. You can build on this by praising and giving credit to participants who do their best.

Acknowledge instances of successful accomplishments of the participants. This arouses the interest of the class and lets the participant know that he/she has succeeded. It also lets the other participants know what accomplishments you think are important.

A simple "Yes, that's right." or recognition for attempting to contribute can mean a great deal to a trainee.

Give sincere praise. False praise can result in the participants distrusting anything you say.

Avoid criticism that is not constructive. When you need to correct someone, do it tactfully. Acknowledge initiative, hard work, and answers (even when incorrect). If an answer is not completely wrong, identify the part of the answer that is right.

- Feedback and reinforcement should be provided as soon as possible. The impact of the reward is affected by time. If you wait to praise or correct an individual's activity, it will not mean as much as doing so immediately following the activity.

Give feedback on the results of tests or exercises as quickly as you can.

- People gradually forget what they have learned. Frequently recalling the learned material will help the participants remember it.

Periodically summarize the information presented or ask a participant to summarize it.

Ask questions about material presented previously. Ask the participants to compare/contrast material being presented now with material presented previously.

Include review periods that ask participants to recall information.

- Make the material meaningful to the participants. Whenever possible, relate the information presented to the participants' previous experience and knowledge. Inform the participants about how the new information will be useful to them.

Ensure that each point is fully understood before going on to the next point.

Build on the prior personal and work-related experiences of the participants. Ask their opinions about the material and what experiences they have had that relate to the subject.

Discuss how the information will help the participants perform their role as a guinea worm eradication workers.

- Learn from your mistakes. This will be a learning experience for you, as well as for the participants.

Be flexible and try new methods if something fails to achieve the desired results.

2. Presentation Skills

The way a facilitator presents his/her material can strongly affect the participants' motivation and learning. Consider the following points:

- Use eye contact to let the participants know that you are talking to them not at them.
- Talk naturally and be relaxed so that the participants feel at ease. If you are anxious, the participants will feel anxious too.
- Show enthusiasm for the material. If you are enthusiastic about the course, it will help motivate the participants.
- Listen to the participants, especially during activities. Let them know that their opinions are important.
- Try to stand close to the group. This will encourage participation because you will seem to be with them rather than at a distance.
- Sit down for different sections of the course. Sitting removes you as the authority figure and encourages the group to take over the activity. This can be beneficial for discussions when participants act as group leaders.
- Practice presenting the material before the course begins. The more familiar you are with the information and how you are going to present it, the smoother the course will go.

3. Dealing With Difficult Participants

Occasionally a participant may cause problems or create a difficult situation. The following methods can help you if this occurs.

- If a participant makes negative remarks, use his/her comments to generate a discussion. Ask the other participants what their opinions are about the comments.
- Over-qualified participants can work with the other participants by helping to teach in their areas of expertise. Provide them with more advanced exercises if possible.
- Most participants want to learn and experience success. If someone is causing problems, there is probably a reason for it. Find out what the problem is before assuming that he/she is just out to get you.

4. Discussion Techniques

The purpose of the discussion is to get participants to actively talk and share information about a topic, problem, or its possible solutions. As the main discussion leader, keep these points in mind:

- Generate discussion by asking questions.

Questions are perhaps one of the facilitator's most valuable tools because they help to stimulate discussion, clarify information, arrive at conclusions, and provide a means for individual participation. The way questions are asked is very important because how they are stated can either encourage or discourage participants to answer freely.

- The most effective questions are usually those that cannot be answered by a simple "yes" or "no." Questions asking who, what, why, when, where, and how stimulate thinking and participation. These are called probing or open-ended questions.
- "Yes" and "no" questions (or close-ended questions) can be helpful in terminating a prolonged discussion.
- Questions should be clearly worded and easily understood.
- Refrain from answering the question yourself. Give the participants adequate time to think of the answer. Wait at least 10 seconds before stepping in. If no one is able to answer, rephrase the question, suggest a possible answer, and ask for the group's reaction to it.
- Questions should never be sarcastic. They should always give the participants a feeling of satisfaction in providing the answers.
- Verbally reward the participants for answering -- even if he or she is wrong. Pay close attention to all answers and indicate that each contribution is of value.
- Draw each person into the discussion by giving him or her an opportunity to answer questions.
- Provide opportunities for participants to ask questions during every section on the course. This can help to clear up any misunderstandings and let you know if the participants are comprehending the content.
- Play scribe for the group. Recording comments removes you from a dominating position; yet you can always ask for clarification to get the discussion back on track, if necessary.

- Summarize the discussion.

- Briefly recall all key points.
- Compare or contrast to previously learned material or material to be covered next.
- Recall the objectives.
- Stress important concepts.

5. Roleplays

Roleplay is an instructional technique where participants act out a situation, condition, or circumstance. It is a valuable tool because it gets participants to practice what they are being taught, and not just talk about it. As stated previously, people learn more from doing than from listening. It provides a form of practice. Roleplays enable participants to:

- See what the skill or performance looks and feels like in action
- To experience another person's point of view
- Observe and learn from peers in action
- Practice a skill or procedure
- Receive feedback on the performance

As the facilitator, you will want to keep the following points in mind when conducting a roleplay.

- Introduce the roleplay.
 - Explain the background, roles, and situation to be dramatized.
 - Explain the purpose of the roleplay and how it relates to the objectives.
 - Give those not participating in the roleplay something to observe for.
 - Explain related activities which will take place after the roleplay.
 - Explain if there are any rules or constraints.
- Monitor the roleplay. Watch the roleplay and troubleshoot if necessary. Intervene only when the participants get off the track. Ask questions to help get the activity back on track. Do not provide answers, but ask guiding questions.
- Have a concluding discussion of the roleplay. Lead a closing discussion on content and feelings. Find out what the participants and observers felt about and learned from the experience.
- Learn from the experience. If the activity does not work as planned, be honest with the participants and ask them what could help to make it a successful activity.

6. Flipcharts

During the course, flipcharts are used in group discussions to indicate important information, list participants' comments, etc. Occasionally the materials call for a "prepared flipchart." This means that you need to write something on the flipchart before beginning that section of the course. Following are some suggestions for using flipcharts.

- Write (or print) legibly.
- Write large enough so that the participants at the back of the room can read it.
- Plan ahead of time how you will organize the information to be recorded on the flipchart.
- Talk to the participants, not the chart, when presenting the information. Refrain from facing the flipchart.
- Write on every other page if the ink from the pens bleeds onto the following page.
- Write down exactly what is said when recording participant comments, if possible. If you need to shorten or rephrase the comment, get the participant's agreement that it is what he/she meant.

Training Course for Guinea Worm Coordinators

Facilitator's Guide

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Reference Section

Training Course for Guinea Worm Coordinators

Course Objectives

Guinea Worm Overview

1. Describe the extent of the guinea worm problem in this country and region.
2. Describe the life cycle of the guinea worm and causes of the disease.
3. List the various methods used to prevent guinea worm.
4. Describe the Guinea Worm Eradication Programme and the part Guinea Worm Coordinators play in it.

Surveillance

1. Describe the functions of the existing communicable disease case reporting system, ongoing village-level monitoring, and case searches in the control and elimination of guinea worm disease.
2. Describe the Guinea Worm Coordinator's responsibilities for ongoing surveillance.
3. Describe how to prepare for a case search.
4. Describe how to administer and fill out case search forms correctly.
5. Describe how to complete a surveillance report form for a village and district and what the procedure is for forwarding the reports to appropriate authorities.

Community Assessment

1. Describe how the community assessment process fits in with the overall Guinea Worm Eradication Programme.
2. Describe the four community assessment topics: Community Leaders and Groups, Community Beliefs and Practices, Community Resources, Community Water Supply.
3. Describe the procedure for finding out information on the four community assessment topics.
4. Given the description of a community, summarize key considerations for conducting an appropriate community assessment.

Course Objectives, Continued

Promoting Community Action

1. List at least three qualities of a community guinea worm project that helps to promote community action and participation.
2. Describe how the brainstorming method could be used to get community members involved in planning guinea worm projects.
3. Describe how to plan for and conduct a community meeting.
4. Develop an implementation plan for a community project that describes at least three tasks, dates for their completion, and persons responsible.

Promoting Individual Action

1. Describe the five primary health education messages.
2. Give a health education talk which teaches villagers that guinea worm comes from the drinking water and why it is important that persons with guinea worm ulcers not go into the drinking water.
3. Give a health education talk which teaches villagers to identify local drinking water sources which are safe from guinea worm and, if applicable, to describe ways to protect the water sources from guinea worm contamination.
4. Give a health education talk which teaches villagers to correctly filter drinking water which comes from unprotected sources.

Vector Control

1. Describe the major characteristics of temephos (Abate).
2. Describe situations most suitable for using temephos for vector control.
3. List the main points which should be discussed with village leaders when trying to gain their support for temephos application.
4. Describe safety precautions which should be taken when mixing, applying, storing, and/or transporting temephos.
5. List the details which should be recorded for every temephos application.

Case Treatment

1. Distinguish whether a guinea worm case is pre-emergent, emergent, or complicated.
2. Describe the appropriate treatment response for emergent, pre-emergent, and complicated guinea worm cases.
3. State key patient education messages which should be communicated to patients with guinea worm disease.

Training Course for Guinea Worm Coordinators

Agenda

DAY 1

Morning

Registration
Welcome
Opening Ceremony
Pretest

Afternoon

Guinea Worm Overview
Surveillance

DAY 2

Morning

Community Assessment
Promoting Community Action (Part I)

Afternoon

Field Trip

DAY 3

Morning

Promoting Community Action (Part II)
Promoting Individual Action

Afternoon

Field Trip

DAY 4

Morning

Vector Control
Case Treatment

Afternoon

Field Trip

DAY 5

Morning

Field Trip Reports
Posttest
Course Evaluation
Closing Ceremony

COURSE INTRODUCTION

SUMMARY

The course introduction is scheduled for the morning of the first day of the course. It includes a brief welcome given by the Course Director and is followed by the opening ceremony. Then the participants and facilitators get to know one another by participating in an introductory exercise. The pretest is given and then the participants break for lunch.

NOTE: The pretest is optional. The Course Director will decide if it is needed or not.

MATERIALS NEEDED

Flipchart and Felt Tip Markers for introductory exercise.

Handouts: Course Agenda
Course Objectives
Pretest

SCHEDULE

Total Time: 3 hours

Welcome	15 minutes
Opening Ceremony	60 minutes
Introduction Exercise	45 minutes
BREAK	15 minutes
Pretest	45 minutes

WELCOME 15 min.

[Handouts]

The course director welcomes the participants to the course and introduces the facilitators and any visitors.

The nature of the course and the types of activities that will take place should be explained. Briefly go over the Agenda indicating the major topics that will be covered in the course. Call participants' attention to the list of Course Objectives. Do not go over the objectives in detail now, because they will be discussed at the beginning of each section.

Miscellaneous details should be discussed at this time including breaks, lunches, collection of travel allowances, location of restrooms, smoking areas, etc. This is also a good time to discuss trainee responsibilities such as

- attending all sessions
- being on time
- participating actively
- providing constructive feedback
- course evaluation
- others

OPENING CEREMONY 60 min.

INTRODUCTION EXERCISE 45 min.

[Prepared flipchart]

The purpose of this exercise is to help the participants get to know one another and to feel at ease. The facilitators may participate in this exercise also. Follow this procedure:

a) Display a flipchart page with the following topics written on it:

- Name
- Location of work
- Experience in health field
- Experience with guinea worm disease

b) Get the participants to divide into pairs and interview each other on the topics listed on the flipchart. Allow 10 minutes for the interviewing.

BREAK 15 min.

If needed, this is a good time for a morning break.

c) Call the participants back to the plenary session and allow 30 minutes for the participants to each give a one minute introduction of the person they interviewed.

Purpose

Explain that the purpose of the pretest is to find out what the participants already know about guinea worm eradication. The information will be used to tailor the course to the needs and experience level of the participants. It will indicate areas where the facilitators should go into less detail and/or areas where the facilitators should go into more detail.

Explain that the test results will not be shared with anyone except the facilitators. Participants should not be concerned if they do not know the answers. The same test will be given at the end of the course to see how much they have learned.

Directions

Clearly explain the directions for answering the questions on the pretest. Make sure the participants understand how to mark their answers. Before allowing participants to start answering the test questions, go over the three practice questions as described below.

Practice Question A-- Go over this question orally with all participants answering out loud. Explain that every question has four answer choices. There can be one, two, three, or four correct answers. Make sure the participants understand that they mark their answer choices by placing a tick mark in the blank by the answer(s) they think are correct. Correct answers for the practice questions are indicated below.

A. Causes of guinea worm include...

- allowing people with guinea worm ulcers to enter the drinking water.
- drinking water with guinea worm larvae in it.
- someone with an emerging guinea worm bathing in the drinking water source.
- drinking filtered water.

Practice Question B-- Tell the participants you will give them time to answer this question on their own and then will announce the answer when everyone has completed the question. When everyone has had a chance to answer the question, announce the correct answers. Ask if there are any questions about how to mark the answers.

B. Important guinea worm prevention method(s) include...

- winding guinea worms on sticks.
- filtering water before drinking it.
- not wading in guinea worm contaminated ponds.
- keeping people infected with guinea worm out of the drinking water.

Practice Question C-- This question is an example of the True-False questions which appear at the end of the test. Explain that the participants should indicate whether they think the statement is true or false by circling the appropriate word, "True" or "False." Allow the participants time to answer this question on their own and then explain the correct answer. Ask if there are any questions.

C. True or False The main purpose of surveillance is to find out which villages have guinea worm and how many cases there are in each village.

Allow 40 minutes for the pretest. Since it is followed by lunch, allow participants who need it a few extra minutes to complete the pretest.

Scoring the tests

Be sure to score the tests on the evening of the first day so that you will have an idea of what topics the participants need to have emphasized most. Part I measures knowledge that the participants have and Part II inventories the types of experiences that the participants have had with guinea worm. Do not give the pretest scores to the participants.

The answers to the pretest are given on the Pretest Answers located at the back of this Course Introduction section.

LUNCH 60 min.

Training Course for Guinea Worm Coordinators

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Guinea Worm Overview
Surveillance

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Morning

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Promoting Community Action (Part I)

Afternoon

Field Trip

DAY 3

Morning

Promoting Community Action (Part II)
Promoting Individual Action

Afternoon

Field Trip

DAY 4

Morning

Vector Control
Case Treatment

Afternoon

Field Trip

DAY 5

Morning

Field Trip Reports
Posttest
Course Evaluation
Closing Ceremony

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Course Objectives, Continued

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4. Give a health education talk which teaches villagers to correctly filter drinking water which comes from unprotected sources.

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1. Describe the major characteristics of temephos (Abate).
2. Describe situations most suitable for using temephos for vector control.
3. List the main points which should be discussed with village leaders when trying to gain their support for temephos application.
4. Describe safety precautions which should be taken when mixing, applying, storing, and/or transporting temephos.
5. List the details which should be recorded for every temephos application.

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2. Describe the appropriate treatment response for emergent, pre-emergent, and complicated guinea worm cases.
3. State key patient education messages which should be communicated to patients with guinea worm disease.

TRAINING COURSE FOR GUINEA WORM COORDINATORS
PRETEST

Name _____

Current Job _____ Years in Current Job _____

Town/Village _____ District _____

Region _____

PRACTICE QUESTIONS

A. Causes of guinea worm include...

- allowing people with guinea worm ulcers to enter the drinking water.
- drinking water with guinea worm larvae in it.
- someone with an emerging guinea worm bathing in the drinking water source.
- drinking filtered water.

B. Important guinea worm prevention method(s) include...

- winding guinea worms on sticks.
- filtering water before drinking it.
- not wading in guinea worm contaminated ponds.
- keeping people infected with guinea worm out of the drinking water.

C. True or False The main purpose of surveillance is to find out which villages have guinea worm and how many cases there are in each village.

PART I

For questions 1 through 32, tick the answer or answers that are most appropriate. Some questions may have more than one appropriate answer.

1. Someone may become infected with guinea worm by...

- walking barefoot on a farm.
- wading in contaminated pond water.
- eating fruit that has fallen on the ground.
- drinking unfiltered water from a guinea worm contaminated pond.

2. Effective and affordable methods for preventing guinea worm disease include...

- filtering drinking water through cloth.
- keeping infected persons out of the drinking water.
- adding alum to water.
- defecating in a latrine.

3. A community assessment can help you find out more information about...

- who the community leaders and groups are.
- community beliefs and practices.
- community water supply.
- local resources.

4. Case searches...

- involve visiting villages in order to detect all cases of guinea worm.
- may be used to collect initial information for use in planning intervention activities.
- miss counting most of the guinea worm cases.
- require accuracy and validation.

5. The existing communicable disease reporting system which counts the number of cases seen in dispensaries, health posts, and hospitals...

- misses counting most of the guinea worm cases.
- can help to monitor the overall occurrence of guinea worm cases.
- can be strengthened by ongoing village-level monitoring.
- is an ongoing surveillance activity.

6. Temephos (Abate) is a chemical which...

- can be added to a pond to kill cyclops, thereby preventing transmission of guinea worm.
- requires competence in calculating the correct dose.
- is tasteless, colorless, and odorless except for an unpleasant odor and milky color present for several hours after application.
- is used as a primary guinea worm prevention method for most villages affected by guinea worm.

7. Ongoing village-level case monitoring...

- uses villagers to find out how many guinea worm cases are in their villages.
- helps to strengthen the existing communicable disease reporting system.
- requires that a health worker be posted in every village.
- depends on the Guinea Worm Coordinators to find responsible villagers to report case numbers to them.

8. A community assessment should be conducted...

- as one of the first guinea worm activities in a community.
- after all programme activities have been implemented.
- to count the number of complicated and uncomplicated guinea worm cases.
- so that the Guinea Worm Coordinator can identify appropriate solution options to a community's guinea worm problems.

9. A 30-year-old woman with three children has four guinea worms: two in her right leg, one in her right breast, and one in her left arm. This is a complicated case and should be referred to a medical facility because she...

- has more than three guinea worms.
- is over 25 years of age.
- has a guinea worm located in her breast.
- has more than two children.

10. In the Community Assessment process, information is gained by...

- reading literature written by authorities on guinea worm.
- meeting with the community leaders.
- conducting a house-to-house survey of all families with guinea worm.
- trying out a prevention programme in a community to see how the villagers respond.

11. A guinea worm community project should have one or more of these qualities. It...

- is something the community wants to do.
- makes use of local resources.
- is funded by the government.
- is directed by local community leaders.

12. When talking to villagers about how guinea worm comes from the drinking water...

- give a detailed scientific explanation of the guinea worm life cycle.
- an important message to communicate is that persons with guinea worm blisters or ulcers must stay out of the drinking water.
- use visual aids, if possible.
- combine traditional beliefs with modern explanations, if applicable.

13. Guinea worm disease has a bad effect on...

- productivity of villages.
- family-income.
- attendance at schools.
- adult males only.

14. Brainstorming is a good method to use for getting community members involved in guinea worm projects because...

- uneducated and inexperienced people can participate.
- the leader chooses the ideas he thinks are best.
- unusual ideas are rejected.
- it encourages everyone to submit ideas.

15. A community implementation plan for a village should...

- list the dates for completing each project task.
- indicate persons responsible for each task.
- consist of specific tasks.
- be developed solely by a district level health worker.

16. When giving health education talks to villagers, you should...

- use local names when telling stories.
- demand that the villagers change their practices to more sensible behaviors.
- ask villagers questions to determine if they understand the messages.
- be aware of the objective(s) of each talk.

17. Villagers can make unsafe drinking water safe by...

- filtering water through a cloth.
- using water treated with temephos.
- putting water out in the fresh air to settle.
- boiling water.

18. In preparing for a case search, it is important to...

- get permission and cooperation of the village chief.
- plan eradication activities for the village.
- learn how to administer and fill out the case search forms correctly.
- find out the local term for guinea worm disease.

19. Using temephos as a guinea worm intervention is appropriate for...

- villages where previous attempts to change villagers' behavior have consistently failed.
- areas where there is very little transmission remaining and rapid elimination is desired (such as in the final stages of the eradication programme).
- small ponds (less than 500 cubic meters).
- villages with no feasible alternative safe water sources.

20. The main point(s) to discuss with village leaders when trying to gain their support for temephos application include(s)...

- temephos is a substance which can be added to the water to kill guinea worm babies and help rid the village of guinea worm.
- it is very safe and will not harm humans or animals.
- no other prevention measures will be needed.
- it is worth the risk, because the illnesses caused by temephos are not as serious as guinea worm disease.

21. Important health education messages that should be communicated to villagers include...

- Persons with guinea worm ulcers or blisters must stay out of the drinking water sources.
- Drink water which is safe from guinea worm contamination.
- Work with your community to protect your water sources from guinea worm contamination.
- It is safe to drink guinea worm contaminated water, if you do not drink it more than once a week.

22. Safe storage and use of temephos requires that it be kept...

- in the open where it can be quickly and easily reached.
- away from skin and eyes.
- in a secure place.
- away from food.

23. A villager with a guinea worm blister and mild swelling can be classified as...

- a pre-emergent case.
- an emergent case.
- a complicated case.
- someone who requires medical attention immediately.

24. Treatment for an emergent guinea worm case includes...

- applying animal dung or root remedies to the wound.
- eating raw vegetables.
- giving patient education messages.
- giving analgesics (medicine for pain) and/or antibiotics, if necessary.

25. When conducting a community meeting, you should...

- discourage discussion so the meeting will end on time.
- invite community leaders to attend.
- make sure that you are in charge so you can make the major decisions.
- prepare an agenda for the meeting.

26. Patient education messages for guinea worm patients includes explaining that...

- it is safe to enter the drinking water only if the wound is bandaged.
- the wound should be kept clean and dry.
- the patient should seek medical attention if he or she gets a high fever or the wound becomes very swollen.
- they must wind the worm around a stick every day.

27. The purpose(s) of filtering drinking water is to...

- remove adult guinea worms from the water.
- make the water clear.
- clarify the chemical temephos.
- remove cyclops from the water so that the water cannot spread guinea to persons who drink it.

For questions 28 - 32, circle your response indicating whether the statement is true or false.

28. True or False Empty temephos containers make good wash tubs to use when cleaning guinea worm wounds.
29. True or False Every application of temephos should be accurately recorded including details on the type of water body, measurements, water volume, amount of chemical applied, date of application, and person applying the temephos.
30. True or False Health education and the promotion of community action are two guinea worm intervention activities which may or may not be necessary.
31. True or False A man has an extremely swollen guinea worm wound and limited movement of his knee. The proper treatment response is to offer him analgesics, antibiotics, and tetanus toxoid, if available; deliver patient education messages; and refer him to a clinic or physician.
32. True or False The main events in the life cycle of the guinea worm occur in this order:
- A person drinks water containing cyclops which have eaten guinea worm larvae.
 - The guinea worm causes a painful blister to appear on the person's skin.
 - The guinea worm matures and mates within the person's body.
 - When coming into contact with the water, the blister breaks and thousands of tiny guinea worm larvae are expelled into the water where they can be transmitted to someone else.
-

PART II

For each of the tasks listed below:

- If you have ever done any of the tasks, put a check in the "done" column.
- If you have experience training others to do the task, put a check in the "trained others" column.
- If you have both done and trained others, check both columns.
- If you have no experience with the task, do not check anything.

	I have <u>done</u> the following:	I have <u>trained others</u> to do the following:
Participated in a village case search		
Given a health education lesson or health talk		
Treated a person with guinea worm		
Used visual aids to teach villagers about health problems		
Advised village leaders on implementing a community project		
Worked on a guinea worm intervention project		
Assessed community problems with village leaders		
Organized a community meeting		
Developed a written community project plan		
Measured the volume of a pond or other body of water		
Added temephos or other chemical to a body of water according to an exact formula		
Compiled surveillance data for a report		

PRETEST ANSWERS

TRAINING COURSE FOR GUINEA WORM COORDINATORS
PRETEST

Name _____

Current Job _____ Years in Current Job _____

Town/Village _____ District _____

Region _____

PRACTICE QUESTIONS

A. Causes of guinea worm include...

- allowing people with guinea worm ulcers to enter the drinking water.
- drinking water with guinea worm larvae in it.
- someone with an emerging guinea worm bathing in the drinking water source.
- drinking filtered water.

B. Important guinea worm prevention method(s) include...

- winding guinea worms on sticks.
- filtering water before drinking it.
- not wading in guinea worm contaminated ponds.
- keeping people infected with guinea worm out of the drinking water.

C. True or False The main purpose of surveillance is to find out which villages have guinea worm and how many cases there are in each village.

PART I

For questions 1 through 32, tick the answer or answers that are most appropriate. Some questions may have more than one appropriate answer.

1. Someone may become infected with guinea worm by...

- walking barefoot on a farm.
- wading in contaminated pond water.
- eating fruit that has fallen on the ground.
- drinking unfiltered water from a guinea worm contaminated pond.

2. Effective and affordable methods for preventing guinea worm disease include...

- filtering drinking water through cloth.
- keeping infected persons out of the drinking water.
- adding alum to water.
- defecating in a latrine.

3. A community assessment can help you find out more information about...

- who the community leaders and groups are.
- community beliefs and practices.
- community water supply.
- local resources.

4. Case searches...

- involve visiting villages in order to detect all cases of guinea worm.
- may be used to collect initial information for use in planning intervention activities.
- miss counting most of the guinea worm cases.
- require accuracy and validation.

5. The existing communicable disease reporting system which counts the number of cases seen in dispensaries, health posts, and hospitals...

- misses counting most of the guinea worm cases.
- can help to monitor the overall occurrence of guinea worm cases.
- can be strengthened by ongoing village-level monitoring.
- is an ongoing surveillance activity.

6. Temephos (Abate) is a chemical which...

- can be added to a pond to kill cyclops, thereby preventing transmission of guinea worm.
- requires competence in calculating the correct dose.
- is tasteless, colorless, and odorless except for an unpleasant odor and milky color present for several hours after application.
- is used as a primary guinea worm prevention method for most villages affected by guinea worm.

7. Ongoing village-level case monitoring...

- uses villagers to find out how many guinea worm cases are in their villages.
- helps to strengthen the existing communicable disease reporting system.
- requires that a health worker be posted in every village.
- depends on the Guinea Worm Coordinators to find responsible villagers to report case numbers to them.

8. A community assessment should be conducted...

- as one of the first guinea worm activities in a community.
- after all programme activities have been implemented.
- to count the number of complicated and uncomplicated guinea worm cases.
- so that the Guinea Worm Coordinator can identify appropriate solution options to a community's guinea worm problems.

9. A 30-year-old woman with three children has four guinea worms: two in her right leg, one in her right breast, and one in her left arm. This is a complicated case and should be referred to a medical facility because she...

- has more than three guinea worms.
- is over 25 years of age.
- has a guinea worm located in her breast.
- has more than two children.

10. In the Community Assessment process, information is gained by...

- reading literature written by authorities on guinea worm.
- meeting with the community leaders.
- conducting a house-to-house survey of all families with guinea worm.
- trying out a prevention programme in a community to see how the villagers respond.

11. A guinea worm community project should have one or more of these qualities. It...

- is something the community wants to do.
- makes use of local resources.
- is funded by the government.
- is directed by local community leaders.

12. When talking to villagers about how guinea worm comes from the drinking water...

- give a detailed scientific explanation of the guinea worm life cycle.
- an important message to communicate is that persons with guinea worm blisters or ulcers must stay out of the drinking water.
- use visual aids, if possible.
- combine traditional beliefs with modern explanations, if applicable.

13. Guinea worm disease has a bad effect on...

- productivity of villages.
- family-income.
- attendance at schools.
- adult males only.

14. Brainstorming is a good method to use for getting community members involved in guinea worm projects because...

- uneducated and inexperienced people can participate.
- the leader chooses the ideas he thinks are best.
- unusual ideas are rejected.
- it encourages everyone to submit ideas.

15. A community implementation plan for a village should...

- list the dates for completing each project task.
- indicate persons responsible for each task.
- consist of specific tasks.
- be developed solely by a district level health worker.

16. When giving health education talks to villagers, you should...

- use local names when telling stories.
- demand that the villagers change their practices to more sensible behaviors.
- ask villagers questions to determine if they understand the messages.
- be aware of the objective(s) of each talk.

17. Villagers can make unsafe drinking water safe by...

- filtering water through a cloth.
- using water treated with temephos.
- putting water out in the fresh air to settle.
- boiling water.

18. In preparing for a case search, it is important to...

- get permission and cooperation of the village chief.
- plan eradication activities for the village.
- learn how to administer and fill out the case search forms correctly.
- find out the local term for guinea worm disease.

19. Using temephos as a guinea worm intervention is appropriate for...

- villages where previous attempts to change villagers' behavior have consistently failed.
- areas where there is very little transmission remaining and rapid elimination is desired (such as in the final stages of the eradication programme).
- small ponds (less than 500 cubic meters).
- villages with no feasible alternative safe water sources.

20. The main point(s) to discuss with village leaders when trying to gain their support for temephos application include(s)...

- temephos is a substance which can be added to the water to kill guinea worm babies and help rid the village of guinea worm.
- it is very safe and will not harm humans or animals.
- no other prevention measures will be needed.
- it is worth the risk, because the illnesses caused by temephos are not as serious as guinea worm disease.

21. Important health education messages that should be communicated to villagers include...

- Persons with guinea worm ulcers or blisters must stay out of the drinking water sources.
- Drink water which is safe from guinea worm contamination.
- Work with your community to protect your water sources from guinea worm contamination.
- It is safe to drink guinea worm contaminated water, if you do not drink it more than once a week.

22. Safe storage and use of temephos requires that it be kept...

- in the open where it can be quickly and easily reached.
- away from skin and eyes.
- in a secure place.
- away from food.

23. A villager with a guinea worm blister and mild swelling can be classified as...

- a pre-emergent case.
- an emergent case.
- a complicated case.
- someone who requires medical attention immediately.

24. Treatment for an emergent guinea worm case includes...

- applying animal dung or root remedies to the wound.
- eating raw vegetables.
- giving patient education messages.
- giving analgesics (medicine for pain) and/or antibiotics, if necessary.

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- the wound should be kept clean and dry.
- the patient should seek medical attention if he or she gets a high fever or the wound becomes very swollen.
- they must wind the worm around a stick every day.

27. The purpose(s) of filtering drinking water is to...

- remove adult guinea worms from the water.
- make the water clear.
- clarify the chemical, temephos.
- remove cyclops from the water so that the water cannot spread guinea worm to persons who drink it.

For questions 28 - 32, circle your response indicating whether the statement is true or false.

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- A person drinks water containing cyclops which have eaten guinea worm larvae.
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 - The guinea worm matures and mates within the person's body.
 - When coming into contact with the water, the blister breaks and thousands of tiny guinea worm larvae are expelled into the water where they can be transmitted to someone else.
-

GUINEA WORM OVERVIEW

SUMMARY

In this section, the facilitator gives an overview of guinea worm and describes the current guinea worm problem in the country and in areas represented by the Guinea Worm Coordinators. The facilitator leads the participants through some discussions and exercises familiarizing them with the various guinea worm prevention methods and their advantages and disadvantages. The section concludes with a discussion of the Guinea Worm Coordinators' important role in the guinea worm eradication programme.

OBJECTIVES

At the end of this section, participants should be able to do the following:

1. Describe the extent of the guinea worm problem in this country and region.
2. Describe the life cycle of the guinea worm and causes of the disease.
3. List the various methods used to prevent guinea worm.
4. Describe the Guinea Worm Eradication Programme and the part Guinea Worm Coordinators play in it.

MATERIALS NEEDED

Flipchart and Felt Tip Markers for use in small group exercises and by the facilitators in their presentations. Prepare flipcharts according to the directions indicated in the exercises in which they are used.

Recent Guinea Worm Surveillance Data for country and areas represented by participants, if available.

Film, "Guinea Worm: The Fiery Serpent" Check with Ministry of Health headquarters to find out about sources of this film in your country. If not available, see address for ordering in list of Additional Materials in the Reference Section at the end of this Facilitator's Guide. This film is available in English or French.

If the film cannot be obtained, use the Life Cycle Flipchart included in the health education visual aids for the course.

Handouts: Prevention Methods
Guinea Worm Coordinator Roles

SCHEDULE

Total Time: 2 hours 10 minutes (excluding 60 minute lunch break)

Introduction	5 min.
Film	25 min.
Prevention Methods	30 min.
LUNCH	60 min.
Prevention Methods cont.	60 min.
Terminology	5 min.
Conclusion	5 min.

BACKGROUND READING FOR TRAINERS

National and Regional Guinea Worm Eradication Plans (if available)

Descriptions of successful guinea worm interventions in this country or other countries to describe to participants

INTRODUCTION 5 min.

History and current data

Ask participants what their first recollection of guinea worm is. Establish the fact that guinea worm has been around for hundreds of years.

Ask participants how many cases each has seen in the past season.

Give a brief description of the guinea worm problem in this country and in the region(s) represented by the participants. Discuss which areas have the most cases and when the cases are occurring. If available, present the latest surveillance data indicating number of cases reported in the whole country, in each region, and in each district represented at the training session. Note that there are probably many more unreported cases. Emphasize that the success of the eradication programme will depend a great deal on the programme's ability to accurately monitor the number of cases in each affected area. Explain that a lot of time will be spent talking about surveillance in this course.

If appropriate, motivate the participants by describing a successful guinea worm intervention programme in this country (or in another country if data from this country is not available). Emphasize that this group has the potential to have an equally successful programme.

Section objectives

Review the objectives for this section. Explain that this is what the participants will be learning from this part of the course.

FILM 25 min.

"Guinea Worm: The Fiery Serpent"
[Film]
(See next page if film not available)

Show the film, "Guinea Worm: The Fiery Serpent." Explain that most of the scenes were shot in Anambra State, Nigeria. It runs about 20 minutes. A video copy of the film should be available from the Ministry of Health Headquarters. The film is available in English or in French.

If feasible, inform participants that if they would like to show the film to their staff or co-workers, they may be able to acquire it through their supervisors. This film is not designed for showing to villagers, however.

(Option--If film not available)
Life cycle and causes
[Life Cycle Flipchart]

If the film is not available to show at this course, use the Life Cycle Flipchart as described below to discuss the life cycle and causes of guinea worm. Instead of reading the script printed on the back of the flipchart pages, explain the pictures as follows:

1. Humans get guinea worm by drinking water containing cyclops which have ingested guinea worm larvae.
 2. Once a person has drunk guinea-worm-infested water, it takes about one year for the guinea worm to mature and move to a position where it emerges from the person's body.
 3. When the worm is ready to come out, a blister appears, which causes a painful burning feeling. The infected person may try to relieve the pain by immersing the blister in water.
 4. When coming into contact with the water, whether to relieve the pain, to gather drinking water, or for any other purpose, the blister breaks and thousands of tiny guinea worm larvae are expelled into the water.
 5. The most common place for a worm to come out of the body is either the legs or the feet. However, a worm may sometimes emerge from the hand, arm, head, breast, chest, or other body part. It is possible for one person to have several guinea worms coming out at once from different sites.
 6. Once in the water the guinea worm larvae either die or are eaten by water fleas called cyclops. Inside the cyclops, the larvae continue developing. When a human drinks the water containing these cyclops with guinea worm larvae inside, the human provides the final "home" where the guinea worm can continue its development into an adult. Over the next year, it matures and mates in the human's abdomen and then it migrates to the surface of the skin to emerge as an adult. And so the cycle continues.
-

Effects of guinea
worm
[Flipchart]

Discuss the following questions and record answers on a flipchart.

- Who does guinea worm usually affect?
- What effect does it have on them?

Be sure that the following facts are discussed:

- Males and females of all ages can become infected.
 - Guinea worm has a tremendous negative effect on the productivity of villagers.
 - The effect on family-life is very disruptive. Mothers cannot take care of their children, prepare meals, or do household chores. The men and women in the family cannot tend their crops, thus adversely affecting the family income.
 - During times when most guinea worm occurs, the absenteeism rate in primary and secondary schools is very high.
 - Results of several research studies documented the following facts:
 - the average period of disability is 30-90 days
 - over half of the cases in one study were unable to leave their compound
 - up to 40-90% of adults in each household were incapacitated due to guinea worm for a period of 3-4 weeks
-

Listing prevention
methods
[Flipchart]

Ask participants to name methods of preventing guinea worm. Encourage them to mention methods they saw in the film or any methods they have used or heard of in their work. Methods named may range from practices used by traditional healers to expensive modern interventions. Record them on a flipchart as they are mentioned. Allow about 10 minutes for this discussion.

If any important prevention methods are left out, add them to the list. Be sure that the following methods are included:

- Using health education and community mobilization methods to promote both individual and community action deterring people with guinea worm from entering the drinking water sources (e.g., information campaigns, designating persons to gather water for infected persons)
- Building physical barriers to keep people with guinea worm from entering the drinking water sources (e.g., walls around wells, piers on large ponds, fences around pools)
- Filtering drinking water [Explain that in this course, the term "filtering" implies the use of cloth filters.]
- Boiling drinking water [See note to facilitator below.]
- Constructing new safe drinking water sources (e.g., boreholes, dug wells, rainwater catchment systems)
- Vector control with temephos (Abate)

Note to facilitator: This course does not emphasize boiling as a prevention measure, because of its adverse effect on water taste, its impracticality in most settings, and the scarcity of firewood. If it is appropriate in certain situations, it can be mentioned as an option. Participants may want to discuss this.

Group discussion of
methods
[Prepared flipcharts
for each group]
[Handout]

Have participants discuss the prevention methods which you just listed on the flipchart by breaking up into small groups. Follow this procedure:

- a) Divide the participants into groups of six or seven persons and give each group a flipchart with the following column headings written across the top of the page: "Prevention Method", "Advantages", and "Disadvantages." Assign to each group an equal portion of the prevention methods previously listed. Each method should be assigned to at least one group.
- b) Assign a facilitator to lead the discussion in each group. Each group should spend 20 minutes discussing the methods and describing their advantages and disadvantages. Someone in the group should be appointed recorder to summarize the group's opinions on the flipchart under the appropriate column headings. Group members should choose a spokesperson to report their conclusions to the plenary session.

LUNCH 60 minutes

- c) Group Presentations--60 minutes for six groups (Adjust time if you have a greater or smaller number of groups.) Reconvene the groups in a plenary session and allow each group five minutes for reporting and five minutes for questions and discussion from the rest of the group.
- d) After the reports, refer participants to the handout titled Prevention Methods. Discuss ideas on the handout which may have been left out of the reports. Allow a few minutes for participants to add to the handout any additional ideas which may have come up in the reports and discussions.
- e) Conclude this exercise by asking the following questions:
 - Can any one of these prevention methods be used alone to successfully eliminate guinea worm in a village? [Answer-- Yes, but a combination of approaches will usually be most successful.]
 - Are there any prevention methods which should be used in all situations? [Answer-- Yes, some health education and community action activities are necessary for all interventions.]

Summarize by making the point that the success of the different prevention measures will depend a great deal on the particular social, cultural, and geographic settings in which they are applied.

Eradication programme terminology
[Prepared flipchart]

The following terms describe important concepts related to the guinea worm eradication programme and are terms that will be used throughout the course. Write each on a flipchart page and briefly discuss, making sure the participants understand each one. If necessary modify the terms to reflect the eradication programme represented by the participants. Be sure to use terminology that the participants can understand.

Guinea worm case--Any person who now has an emerging guinea worm, or any person who reports having had an emerging guinea worm during the past year.

Affected community-- A local administrative or social unit (e.g., village, hamlet, town) in which cases of guinea worm have been reported.

Elimination--Absence of new indigenous cases of guinea worm disease in a region or country for at least two years.

Eradication--Global elimination of human guinea worm infection.

Certification-- The formal confirmation by an independent group that guinea worm disease has been eliminated from a region, state, or country.

Incubation period-- Time from ingestion to emergence of guinea worm, usually about one year

Safe water source--Source of drinking water that prevents the immersion of a guinea worm ulcer or adult worm in the water and prevents the water from running back into the source. Also referred to as a protected water source. Is usually underground water. A flowing river or stream and water sources properly treated with temephos are also classified as a safe water sources. (This definition and the following one apply to guinea worm disease only, because these sources could be contaminated with something else.)

Unsafe water source--Source of drinking water that allows immersion of a guinea worm ulcer or adult worm in the water or permits the water to run back into the source. Also referred to as an unprotected water source. Is usually standing or stagnant surface water.

CONCLUSION 5 min.

Section conclusion
[Handout]

Conclude this section with a discussion stressing the vital role Guinea Worm Coordinators play in the national eradication programme. Refer to the handout, Guinea Worm Coordinator's Role. This handout shows the relationship of the Guinea Worm Coordinator's roles to all of the sections of this course. You may want to include the following points in your discussion:

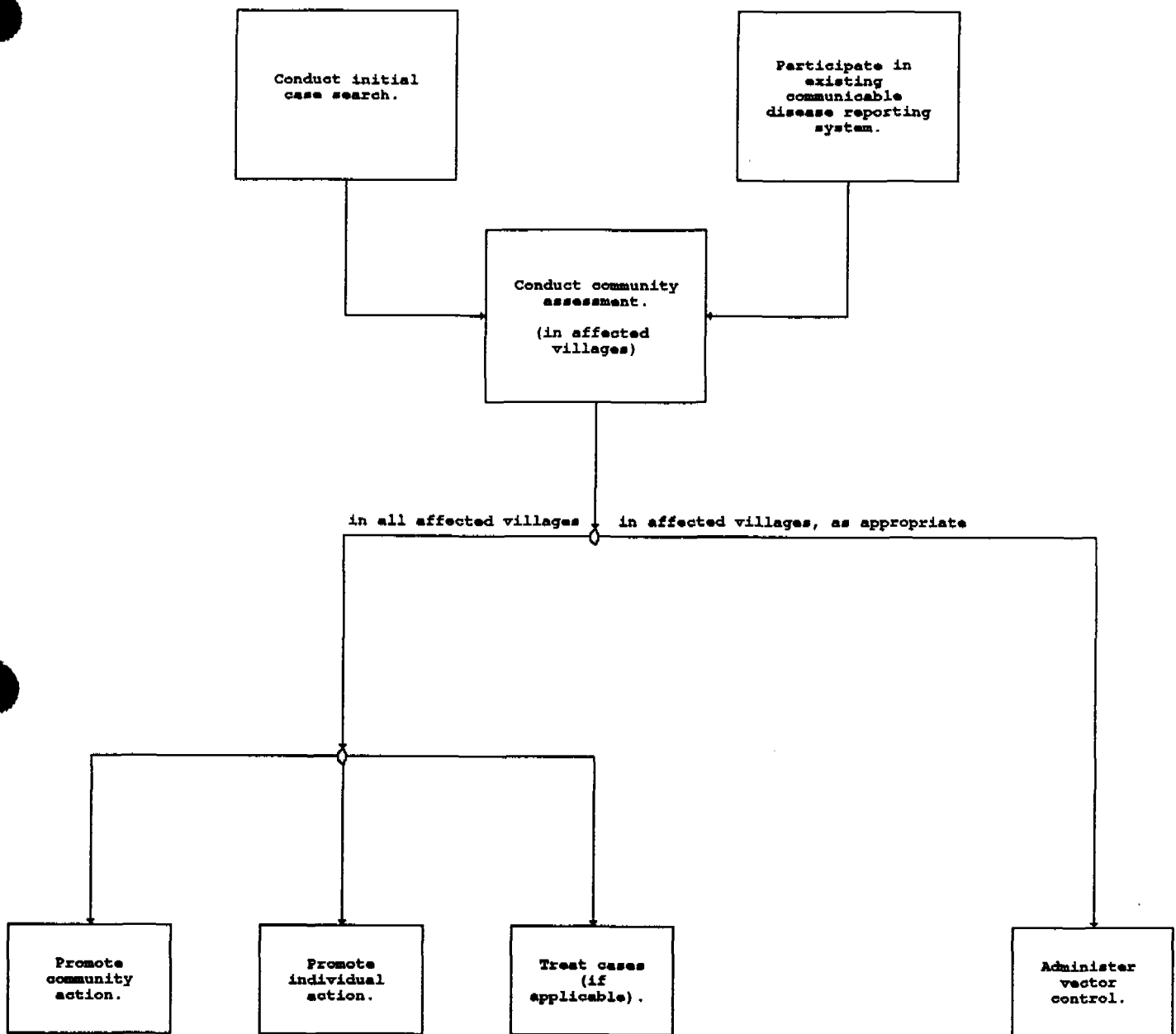
- The Guinea Worm Coordinator can provide valuable insight into which prevention methods are most appropriate for each village they serve.
 - The Guinea Worm Coordinator is in a position to report and respond quickly to guinea worm outbreaks.
 - The Guinea Worm Coordinator should be aware that other agencies will be involved in guinea worm eradication, such as the Water and Sanitation Ministry, the Education Ministry, the Agriculture Ministry, private voluntary organizations, etc. Efforts should be coordinated with these other agencies as much as possible.
-

Prevention Methods

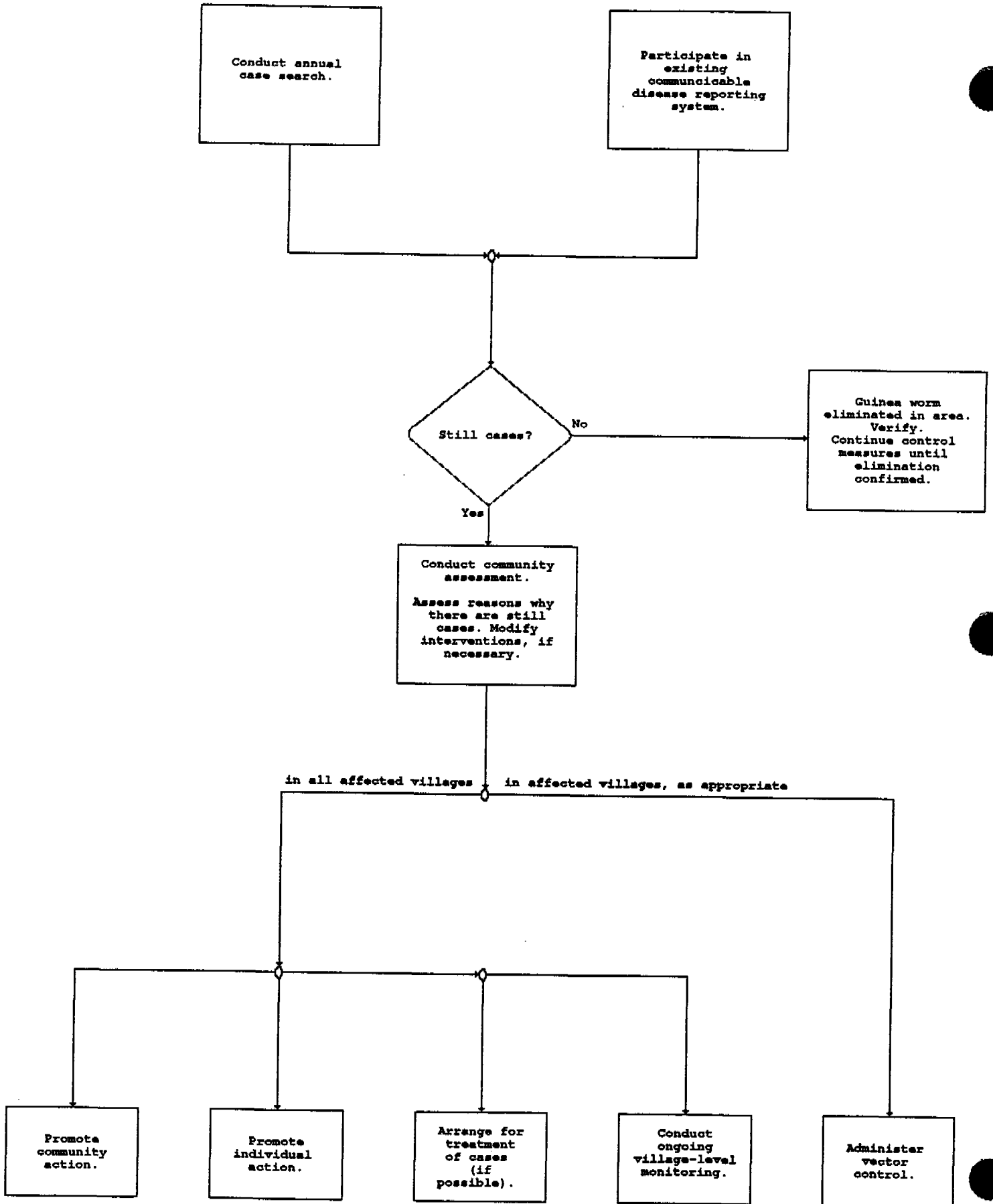
Prevention Method	Advantages	Disadvantages
Health education and community action to deter infected persons from entering drinking water	low cost, fairly effective, minimal need for outside support	may depend on quality of education, one infected person can contaminate water source for whole community, changing behaviors takes time
Filtering drinking water	low cost, effective, minimal need for outside support	temporary solution, may not be locally accepted, larvae can get through if used incorrectly, does not protect whole village--just individuals
Building physical barriers to keep infected people from entering drinking water (e.g., walls)	low to moderate cost, fairly effective, permanent if properly maintained	may require some maintenance, under certain circumstances larvae can still get into water source, rising water level may affect barrier
Constructing safe water sources	very effective, permanent if properly maintained, protects against other water-related diseases	high cost, depends on outside support, takes time to implement, requires maintenance
Boiling drinking water	effective, minimal need for outside support, kills other disease-causing germs	temporary solution, effects taste of water, requires time, fuel may be unavailable or expensive, may not be locally accepted
Vector control	very effective, with proper training and supplies villagers may be able to implement themselves, minimum behavior change required, protects all users	moderate cost, temporary solution, may not be locally accepted, depends on imported material, requires precise measuring and application skills

Guinea Worm Coordinator Roles

Beginning Eradication Programme



Ongoing Eradication Programme



SURVEILLANCE

SUMMARY

The surveillance activities described in this section may be different from those planned for the areas represented by the participants. If so, modify the content and activities of this section accordingly.

This section begins with a discussion of the importance of surveillance to the guinea worm eradication programme. Three types of surveillance are described along with the Guinea Worm Coordinator's roles and responsibilities for each. The three types include the existing communicable disease case reporting system, ongoing village-level monitoring, and case searches. The case search procedure is thoroughly reviewed and the directions for administering and filling out the case search form are explained. Participants then practice administering the forms by roleplaying with a partner. The procedure for reporting surveillance data is reviewed and example report forms are discussed. Finally, participants discuss ways in which they can use the surveillance data in their programmes.

OBJECTIVES

At the end of this section, participants should be able to do the following:

1. Describe the functions of the existing communicable disease case reporting system, ongoing village-level monitoring, and case searches in the control and elimination of guinea worm disease.
2. Describe the Guinea Worm Coordinator's responsibilities towards ongoing surveillance.
3. Describe how to prepare for a case search.
4. Describe how to administer and fill out case search forms correctly.
5. Describe how to complete a surveillance report form for a village and district and what the procedure is for forwarding the reports to appropriate authorities.

MATERIALS NEEDED

Flipchart and Felt Tip Markers for presenting information and recording participants' responses.

Case Recognition Card Photograph--Optional--Check with Course Director. If the programme administrators have decided that case recognition cards should be used in the case searches, the Course Director will provide recognition cards for each participant.

Handouts: Preparing for the Case Search
Guidelines for the Case Search

Example Case Search Form--Check with Course Director.

Participants will either use the example form provided with the course materials, or the Course Director will provide the case search questionnaire forms which will be used by the participants in their case searches. Make additional copies for participants to use in the practice roleplays.

Directions for Filling Out the Case Search Form

Reporting Case Search Data

Example Village Summary Form

Example District Summary Form

SCHEDULE

Total Time: 2 hours 45 minutes (including break)

Introduction	20 minutes
Sources of Surveillance Information	30 minutes
BREAK	15 minutes
Case Searches	85 minutes
Using the Data	15 minutes

BACKGROUND READING FOR TRAINERS

Guinea Worm Task Force, Division of Parasitic Diseases, Center for Infectious Diseases, Centers for Disease Control, 1988. Guidelines for Surveillance in Guinea Worm Disease Eradication Programs, Working Document.

Objectives

The purpose of this section is to help Guinea Worm Coordinators understand the importance of surveillance, to motivate them with the idea that guinea worm surveillance is comparatively simple, and to explain how the surveillance data will be used. Go over the objectives so that the participants understand what they should learn from this section of the course.

Purpose of guinea worm surveillance

Discuss the importance of surveillance. Cover the following material:

In the national guinea worm eradication programme the primary function of surveillance is to collect information on which villages have guinea worm and how many cases there are in each village. The surveillance system can also be used to locate and assess the various sources of drinking water in the affected villages. Later in the life of the programme, continued surveillance indicates the degree of effectiveness of the interventions at the village level. At the end of the programme, surveillance helps to assure that guinea worm has actually been eliminated.

The surveillance system acts as the eyes and ears of the programme, reflecting the status of guinea worm disease in each village. It provides the programme workers and administrators an accurate, up-to-date picture of the situation so that they can make appropriate decisions regarding eradication programme activities.

The Guinea Worm Coordinator's role in surveillance is to assume responsibility for accurate counting of cases, to report the required information to appropriate authorities on time, and to verify the accuracy of that information.

How data is used

Discuss the following ways in which surveillance data will be used in the guinea worm eradication programme:

- to define the location and seriousness of the problem and its effect on the economy
- for reports and proposals requesting political and financial support
- as a basis in planning for, allocating resources for, and implementing control activities
- as a major means of evaluating the success and effectiveness of control activities
- as the final confirmation that eradication has been achieved

Stress the importance of being accurate and timely in reporting surveillance data.

Describe three sources of surveillance information [Flipchart]

In the guinea worm eradication programme, three major sources of surveillance information are being used. List the three sources on a flipchart page explain as described below:

Existing Communicable Disease Reporting System-- This is the existing routine surveillance system which collects data about all reportable diseases. It can be used to help monitor the number of guinea worm cases and to identify affected areas. Data is collected on the number of cases reported to health workers and cases seen in dispensaries, clinics, health posts, and hospitals. Unfortunately, for guinea worm disease, this system often misses detecting most of the cases.

Ongoing Village-Level Monitoring-- This is a way of strengthening the existing communicable disease reporting system. It is a special system in which responsible villagers are recruited to monitor cases in their villages and report the number. The Guinea Worm Coordinator collects these reports and sends the information to the appropriate health officials.

Case Searches-- Case searches are active, intensive investigations with the purpose of identifying all areas where guinea worm occurs and enumerating all cases. In a case search, every potentially affected village is visited in order to detect all cases, as well as to list their drinking water sources. Case searches may be national, regional, or local in scope.

Most programmes will start with a base-line case search to collect initial information on the status of guinea worm disease and then continue with annual case searches to monitor the progress of the programme.

Disadvantages of
the existing case
reporting system

To explain why guinea worm eradication depends so much on case searches, discuss the shortcomings of the existing communicable disease reporting system. Ask participants to discuss why they think the existing reporting system misses most of the guinea worm cases. Include the following points in the discussion:

- It occurs in remote, rural areas where health facilities are scarce.
- Many victims are crippled by the disease and cannot get to health facilities.
- There is no effective treatment for an emerging guinea worm; therefore, there is little incentive to attend medical facilities.
- The disease is extremely focal regarding the time and location of occurrence. Depending on their drinking water sources and habits, two similar and adjacent villages may differ widely in the number of guinea worm cases and/or when they occur.
- Medical personnel are often overburdened with clinical responsibilities and may neglect the case reporting paperwork.

Surveillance
stages

The nature and focus of surveillance will change during the life of the eradication programme.

As the program begins, case searchers will investigate the whole country to identify all affected villages. The number of cases will be calculated and will serve as a basis for the national and regional plans of action.

Once control activities are underway, surveillance will serve many purposes. It will be used to monitor areas where guinea worm has not been eliminated, as well as to identify newly infected villages. It will be used to evaluate the effectiveness of control activities and will signal the need for closer investigation into areas where cases continue despite the implementation of control activities.

When no more cases are reported, case searches will be used to certify elimination. Case searches will be required for at least two years after the occurrence of the last documented case to confirm the complete absence of cases.

Review terminology

Discuss the following terms:

Case definition-- A) Any person who now has an emerging guinea worm, B) or any person who reports having had an emerging guinea worm during the past year.

Note to Facilitator: Discuss with the Course Director which definition to present to the participants. It will depend on the type of searches being conducted in the geographic area where the course participants will be working. If authorities want to know the number of current cases, Part A. of the definition should be used; if authorities want to know the number of cases which occurred during the past year, both parts A. and B. of the definition should be used.

Current case-- Case which has a visible emerging guinea worm. Emphasize that the worm must be seen before the case can be counted as current.

Indigenous case-- Case of guinea worm disease whose infection was acquired within the same region where the case is residing at the time of case counting.

Imported case-- Case of guinea worm disease whose infection was acquired in a region other than where the case is residing at the time of case counting.

Ongoing surveillance responsibilities

Orient the Guinea Worm Coordinators to their responsibilities towards ongoing surveillance. This will vary depending on the national or regional surveillance plan; therefore, adapt the following list of responsibilities for the participants you are training. (These responsibilities are separate from duties related to case searches.) Responsibilities may include:

- identifying responsible individuals within villages to serve as case reporters
- maintaining accurate and timely data for all geographic areas assigned
- filling out surveillance report forms and reviewing them for accuracy
- sending the reports promptly to the appropriate authorities
- monitoring new cases
- encouraging villagers to report cases
- sharing the data with other district and local agencies, ministries, and religious organizations which may be involved in guinea worm eradication activities

Ask participants the following questions:

What type of person would you look for in the village to serve as village case reporter? Answers should include the following: (Listed in order of importance.)

- should be literate, reliable, and respected, such as:
 - village health worker or dispenser
 - teacher
 - local political worker
 - a village member selected by the elders

How might this person help you in carrying out your case reporting responsibilities? Answers should include the following:

- monitors every case in village
- constantly reminds villagers to inform him or her of cases
- solicits help of the chief
- serves as your prime contact in village

BREAK 15 min.

CASE SEARCH 85 min.

Case search
overview

If a case search is scheduled to take place in the participants' region(s), discuss the following operational details (if applicable):

- dates and duration of case search
- areas to be covered, route of search
- organization of case searchers (description of teams, supervisors, etc.)
- area each search team is responsible for
- number of villages to be covered each day by each team
- logistics (transportation, distribution and collection of report forms, giving villages advance notice)
- plans for validation
- plans for continuing annual searches
- plans for other search techniques

Case search
responsibilities

Orient the Guinea Worm Coordinators to their specific responsibilities for the case search. They include the following: (Adapt to suit participants' situations.)

- conducting house-to-house surveys
 - filling out village and district summary reports
 - assuring accuracy of the reports
 - forwarding the reports promptly to the appropriate authorities
 - using the data to help plan and monitor community guinea worm eradication activities
-

Case search procedure
[Handout]

Now that the participants understand their responsibilities in the case search, discuss how the participants should prepare for the search and collect the required case information. The handouts for this section can be used to guide this discussion.

Note to Facilitator: The handouts contain guidelines for preparing for and conducting the case search, as well as examples of a village summary form, and a district summary form. If the eradication programme already has its own guidelines and forms developed for these purposes, substitute them for the forms in the handout. If appropriate, the handout summary report forms may be used as examples for the participants' own record-keeping purposes, in addition to those "official" forms supplied by the programme.

Begin the discussion with preparation procedures. Go over the guidelines on the handout, Preparing for the Case Search. Actual preparation time within the village may be limited, but following these guidelines can enhance the collection of case data.

Include the following discussion points:

- Stress the importance of finding out and using the local term for guinea worm when questioning the villagers. This can help to prevent miscommunication.
 - If it is possible, identify the best times of day to find villagers at home and find out if there are places to avoid for certain reasons.
 - Above all, the case searchers should be aware of local customs and contact the proper leaders, when entering a village.
-

Conducting the search

Once preparations are made in a village, the case search is ready to begin. The case search questionnaire form is used by the case searchers to collect information through a house-to-house survey on the occurrence of guinea worm in the village. To help orient the participants to all the activities involved in the case search, go over the Guidelines for the Case Search handout.

Discuss the following operational procedures, if applicable:

- Describe how villages and houses will be assigned to team members. Emphasize the importance of questioning someone from every household in the village.
- Describe how to assign identification numbers to houses.
- Describe what to do if the occupants of a household are not present.

During the case searches, the searchers may be expected to treat guinea worm cases. Since the goal of a case search is to identify all guinea worm cases within a geographic area in a limited time, case treatment cannot be a high priority during the search. The planners of the case search should provide guidelines for treating or referring cases during the search.

Administering the case search form [Handouts]

Discuss in detail the case search questionnaire forms and directions for administering them. If available, the Course Director will provide you with the case search forms designed for use in the region(s) served by the participants. If these case search forms are not available, you can use the handouts, Example Case Search Form and Directions for Filling out the Case Search Forms, and adapt them to incorporate the case search procedure to be used in the participants region(s).

Go over the whole questionnaire form and directions as the participants follow along in their handouts. Point out each part of the form and explain what information goes there, how to find it out, and how to correctly mark the responses.

Practice
administering case
search form
[Case Search Form]

Distribute additional copies of the Case Search Form. Have the participants practice administering the form by roleplaying. Follow this procedure:

- a) Ask the participants to divide up into pairs so they can practice using the forms with each other. One participant should play the role of the case searcher, while the other participant plays the role of the village chief or head-of-household. Encourage the participants to play the villager roles as realistically as possible.
- b) Participants should switch roles after 10 minutes so that everyone experiences the role of case searcher. Allow twenty minutes for this practice activity.
- c) Call the pairs back to the plenary session and explain that sometimes complications may arise which may prevent the case searcher from obtaining the necessary information. To help prepare the participants for this, discuss how they might react to the following situations.

Describe several of the problem situations below and ask participants how they might react. (You may substitute other problem situations which you have encountered or heard of.)

- All authority figures for the village are gone.
 - The chief just died and there is a chieftancy dispute.
 - The village chief demands that the "government" build a well for the village.
 - A villager suspects that this is a census and will be used for tax collecting or some other onerous purpose.
-

Reporting case search
data
[Handout]

Review the Reporting Case Search Data handout.

Provide operational details, according to the eradication programme requirements, on when the Guinea Worm Coordinators should report their data, to whom, and through what channels. Discuss the following important points:

- Forward case search data as soon as possible because having up-to-date data at all levels of the eradication programme is important to the success of the programme.
- Participants should monitor at both the village and district levels for accuracy, completeness, and timeliness of reporting.
- Estimations are not adequate, exact figures must be determined and reported.

Refer to the Example Village Summary Form and the Example District Summary Form handouts. Explain that the participants can use these forms to keep track of the number of cases in the areas they serve.

Note to facilitator: If a case search form like the example questionnaire form from Ghana is being used, the Example Village Summary Form may not be necessary because it records the same information as in part A of the case search questionnaire.

Validation

Validating (or verifying) the case search data is an important part of the surveillance programme. This usually involves independent surveillance activities periodically conducted by national or regional authorities or outside consultants to check the case search procedures and the accuracy of data collected. Explain that this is a routine part of the surveillance program and the participants should expect a validation team to pay repeat visits to some of the villages searched.

In addition to the independent validation which will take place, the Guinea Worm Coordinators should conduct their own validations by routinely reviewing and verifying the information collected in their regions or districts.

How to use the data

On a flipchart, list the three major areas in which surveillance data will be used.

- Planning
- Monitoring Progress
- Confirming Elimination

Discuss how the participants might use data from a surveillance report in each area.

Planning

Classify all villages in the Guinea Worm Coordinator's geographic area according to the number of cases, e.g., zero cases, 1-9 cases, 10-49 cases, 50 or more cases. This will give the Guinea Worm Coordinator an idea of which villages need the most immediate attention.

Classify affected villages according to whether they have only unsafe drinking water, only safe drinking water, or both. This information will help the Guinea Worm Coordinator to determine the most appropriate prevention methods for each affected village.

Monitoring Progress

The data can signal areas which need closer monitoring. If the number of cases in a community does not decline, the Guinea Worm Coordinator should examine these possibilities:

- the prevention method(s) may need to be revised or added to
- further assessment of the community members' behaviors and needs may be required
- cases may be imported from other areas

If reports of new cases in areas previously reported to be free of guinea worm are received, they should be investigated as soon as possible to identify the source of infection and to prevent further transmission.

Confirming Elimination

The surveillance reports will be examined as part of the basis for the official confirmation that guinea worm has been eliminated from an area.

When areas under the jurisdiction of the Guinea Worm Coordinator are reported to be free of guinea worm, he or she should be aware of the following potential problems:

- Major changes in living conditions resulting from events such as civil unrest, drought, or other disasters may increase the risk of transmission.
- Villages using vector control as the primary prevention method may be relatively susceptible to renewed transmission if the vector control has been suspended.
- The greater the extent of migration into or through a village from a known affected area, the higher the risk of imported cases and continued or renewed transmission.

Summary

Close this section of the course by emphasizing the importance of the following key areas:

- Accuracy of reporting
 - Timeliness of reporting
 - Using the case definition for all reported cases
-

Preparing for the Case Search

- Meet and secure the permission and cooperation of the village chief (or other appropriate village leader). Discuss the following with the chief:
 1. State the purpose of the case search. Explain to the chief the importance of finding out exactly how many cases have occurred in this village.
 2. Request the assistance of the chief and the villagers.
 3. Inform the chief about when the search will take place.
 4. Discuss the procedures involved in the search.
 5. Describe the benefits that the village will gain from the search, such as being put "on the map" of affected villages, thus being brought to the attention of the national eradication programme and ultimately eliminating guinea worm altogether.

- Find out from the chief or other village leader what the local term for guinea worm disease is. Use a photograph showing a typical guinea worm case, if necessary (and if available). Plan to use this term and the photograph when questioning the villagers.

- If using an interpreter, make sure he/she is familiar with the local term(s) for guinea worm and with the questions on the case search form.

- Make sure you and your co-workers know how to administer the case search form correctly.

Guidelines for the Case Search

- Find out and use the local term for guinea worm. If you have been provided with a case recognition card, use it to show the villagers exactly what you are looking for.
- Numbers should be assigned to all households in the village and indicated on a map or on the houses themselves.
- Questions should be addressed to the designated head-of-household. If he is not present, interview another adult member of the household.
- Attempt to have as many household members present as possible during the survey.
- Questions must be asked about all members of the household, with parents answering for young children.
- Visiting family members who regularly live in another village must not be included in the questionnaire for this village.
- The questionnaire should be filled out as completely, accurately, and legibly as possible. When a box [] is supplied for an answer, put a check inside the appropriate box. Leave the other boxes empty, i.e., do not put a mark in the boxes which do not apply.
- If there is any doubt about a question, answer, or procedure, immediately contact your search team leader.
- Inform persons in villages affected with guinea worm about preventive measures. Emphasize the following:
 1. Stay out of the drinking water source(s).
 2. Drink only safe water. (well, flowing stream, piped, filtered, etc.)
 3. Filter or boil unsafe water.
- At the end of each village search, team members should get together and check each other's forms. If any mistakes or missing data are noticed, the surveyor should make corrections immediately. It will be easier to correct these while you are still in the village.

Example Case Search Form
(based on form used in Ghana)

Instructions: Complete PART A for all Villages.
Complete PARTS B and C for Villages
with cases now or in past year.

Date _____

PART A

1. Region _____

2. District _____

3. Village _____

4. CDR Unit No. _____

5. Source of village information (Name) _____

5a. Number of drinking water sources during DRY season _____

5b. Check sources of drinking water used in DRY season _____

Pond [] Dam [] Lake [] Stream [] Pool [] Spring []
Bore Hole [] Well [] Other _____
(pump) (hand dug) Describe

5c. What is the estimated village population? _____

Unknown []
The above estimate is based on: 1984 Census []
Tax Role [] (Year)
CDR Data [] (Year)
Other Estimate (Specify) _____

5d. Ask: Is there guinea worm disease in this Village or has there been guinea worm disease in this Village during the past year?

Yes [] No []

If no, go to next village.

If yes, get an estimate of the total number of cases, or do a house-to-house survey and complete PARTS B & C

PART B

6. Household Number _____

7. Head of Household (Name) _____

8. Length of Residence in Village _____

9. Do you migrate out of this village seasonally? Yes [] No []

10. Do you filter your drinking water? Always [] Sometimes []

Never []

Example

PART C

Give the following information for all members of the household.

Important Note:

1. "Current Cases of Guinea Worm" means the actual cases where the guinea worm is seen by the surveyor.
2. For "History of Guinea Worm," include those cases of guinea worm that occurred between January 19__ to the time of the survey, i.e., this year's transmission season. Do not include cases that occurred before 19__.

HH No.	Family Name	Current Cases of Guinea Worm		Age (Years)	M	F	HISTORY OF GUINEA WORM																Total No. of Worms Emerged		
		No	Yes				In past 12 months		Month Worm Seen												1	2	3 or more		
							No	Yes	J	F	M	A	M	J	J	A	S	O	N	D					

11. Total No. of Family Members.....
 12. Name of Surveyor.....

13. Title of Organisation.....

14. Date of Survey.....

Directions For Filling Out the Case Search Form

Begin with Part A. It is to be filled out only once for each village. This information should be supplied by the village chief, priest, or other reliable leader.

(Questions 1-4 can be filled out ahead of time.)

Questions 1-3 -- Write the names of the region, district, and village.

Question 4 -- Write the number of the local CDR Unit.

Question 5 -- Write the name and title (if applicable) of the person who is supplying you with the information for Part A.

Question 5a -- Enter the number of drinking water sources used by the villagers in the dry season.

Question 5b -- Check boxes indicating all types of drinking water sources which are used by villagers in the dry season. You may check more than one box. If there are drinking water sources used other than the ones listed, please write them in the blank labeled "Other."

Question 5c -- If it is known, enter a number indicating the population of the village. Check the box indicating the source of the number. For data which comes from the Tax Role or CDR Data, write the number of the year it was reported. If the estimate came from another source or was someone's guess, specify the source, e.g., "Chief's estimate."

Question 5d -- Ask the interviewee if there is currently guinea worm disease in the village or if there were any cases during the past year. Check the box indicating the answer. The answer to this question will determine whether to continue with a house-to-house search in this village or to move on to another village. If the answer is "No", your search is complete for this village and your team can continue with the next village. If the answer is "Yes", estimate the number of cases and proceed with the house-to-house search.

Parts B and C of the form should be filled out for every household in the infected village.

Part B is to be addressed to the head of each household in the village. If the head-of-household is absent, another adult member of the household may answer the questions.

Question 6 -- Write the household identification number. Each house in the village should be assigned a different number. If identification numbers are not being assigned, ask for the local popular name of the house.

Question 7 -- Write the name of the head-of-household.

Directions For Filling Out the Case Search Form, Continued

Question 8 -- Write the total length of time that this family has lived in this village as permanent residents. If they were born there, then write "since birth."

Question 9 -- Seasonal migration is defined as a temporary move of the family away from this village for at least two months at a time. For example, if a family moves to another location in June and returns to the village in August, you should check the "Yes" answer to this question; if the family's stay in another village was for seven weeks or less, you should check the "No" answer.

Question 10 -- Check the answer which indicates how often the family filters their drinking water.

Part C consists of a chart which case searchers should fill out while still in each house. It is used for recording data about the current number of active guinea worm cases and the history of cases over the past 12 months. This is the most important part of the form. Make sure that these data are recorded correctly.

Col. 1 -- Enter the household identification number.

Col. 2 -- Write the name of each infected family member in the household.

Col. 3 -- For each family member, check the "Yes" or "No" column indicating whether or not the family member has a current case of guinea worm. Do not check "Yes" unless you can actually see a guinea worm emerging from an ulcer. If you see an ulcer or a swelling under the skin surface but do not see a guinea worm, you must check the "No" column. Ask your team leader to verify if you are not sure.

Col. 4 -- For each family member, write the person's age in years. Estimate, if not known.

Col. 5 & 6 -- For each family member, check the column indicating whether he/she is male or female.

Col. 7 -- Check the column indicating whether or not each family member had guinea worm in the past 12 months.

Col. 8 -- For every "Yes" answer in the previous column, check the month when the worm(s) started emerging. Use local reference points for time estimation, e.g., festivals, planting season.

Col. 9 -- For every person having a guinea worm now or in the past 12 months, check whether he or she had one, two, or three or more worms emerging.

Question 11 -- Write the total number of family members reported as living in this household.

Directions For Filling Out the Case Search Form, Continued

Question 12 -- The surveyor should write his or her name here.

Question 13 -- The surveyor should write the name of his or her official designation here (e.g, MFU Technical Officer, Malaria Supervisor).

Question 14 -- Write the date of the visit of the search team to this village. If more than one day was taken for the search in this village, write all of the dates taken.

Reporting Case Search Data

- o Complete all required case report forms, including the village summary and district summary.
- o Review the data for accuracy.
- o Send reports to appropriate authority(ies) on time.
- o Use the results in planning prevention activities and monitoring their progress.

Example Village Summary Form

Guinea Worm Eradication Programme

Region _____ Village Population _____
 District _____ Name of Village Chief _____
 Village Name/No. _____ Date _____
 Health Worker's Name _____

Total number of cases* for this village _____ Check if none _____

Time frame for number reported above _____
 (current cases or cases over past year)

Drinking water source(s) for this village (Check all sources used.)

Pond _____ River _____ Tube Well With Hand Pump _____
 Dam _____ Pipes _____
 Lake _____ Rainwater Catchment _____
 Stream _____ Well _____
 (Hand Dug)
 Other (specify) _____

Please provide the following information, if known.
 Interventions used in this village in last year:

None _____
 Health Education _____
 Filtering (cotton or nylon cloth _____
 used by more than half of village)
 Application of temephos (Abate) _____
 Providing Safe Water Supply _____
 Other (specify) _____

*Case-- A) Any person who now has an emerging guinea worm B) or any person who reports having had an emerging guinea worm during the past year. Use Part A or Parts A and B depending on the type of search data desired.

COMMUNITY ASSESSMENT

SUMMARY

This section opens with a discussion of the importance of the community assessment process to the overall guinea worm eradication programme. The process involves answering questions on four topics for every affected village. Using handouts which explain how to conduct a community assessment, the participants review each topic and discuss methods of obtaining information for each. Illustrations of various types of drinking water sources are used to explain how to classify safe and unsafe sources. Participants then go over guidelines for collecting community assessment information in community meetings. This section ends with a small group exercise where participants are given a description of a community situation which they must assess, make conclusions, and then present to the whole group.

OBJECTIVES

At the end of this section, participants should be able to do the following:

1. Describe how the community assessment process fits in with the overall Guinea Worm Eradication Programme.
2. Describe the four community assessment topics: Community Leaders and Groups, Community Beliefs and Practices, Community Resources, Community Water Supply.
3. Describe the procedure for finding out information on the four community assessment topics.
4. Given the description of a community, can summarize key considerations for conducting an appropriate community assessment.

MATERIALS NEEDED

Flipchart Paper and Felt Tip Markers for presenting information and recording participants' comments during discussions.

15 Drinking Water Source Illustrations for discussing types of drinking water sources. They are located at the end of this section. The illustrations will be easier to use if you mount each one on stiff paper or cardboard.

Handouts: Guinea Worm Coordinator Roles, page 1 (from the Guinea Worm Overview section)
Community Assessment Topics
Community Leaders and Groups
Community Beliefs and Practices
Community Resources
Community Water Supply
Water Supply Protection Options
Meeting Process
Solution Tables
Community Situation Descriptions, A, B, and C

SCHEDULE

Total Time: 2 hours 30 minutes (including break)

Introduction	15 min.
Community Assessment Topics	50 min.
Community Assessment Process	15 min.
BREAK	15 min.
Small Group Exercise	50 min.
Conclusion	5 min.

BACKGROUND READING FOR TRAINERS

W. R. Breiger, J. Ramakrishna, J. Adeniyi, 1986. Community involvement in social marketing: the experience of guineaworm control. International Quarterly of Community Health Education, 7(1): 19-31.

INTRODUCTION 15 min.

Section objectives

Review the objectives for this section. Explain that they describe what the participants are expected to learn from this part of the course.

Community Assessment Overview

Introduce the Community Assessment section by presenting the following information:

- Successful implementation of the guinea worm eradication programme requires that Guinea Worm Coordinators know the relevant unique characteristics (such as water gathering practices, cultural beliefs, leadership structure, religion) of each community affected by guinea worm disease in their area.
 - A community assessment is an information gathering process which Guinea Worm Coordinators can use to help the communities they serve to assess their guinea worm problems.
 - A community assessment involves gathering information from community leaders which will then be used
 - to identify what kind of programme activities might be appropriate for the community,
 - to tailor Guinea Worm Programme activities to suit the community's needs, and
 - to enable the Guinea Worm Coordinator to work with the community to plan the guinea worm activities they want to implement.
 - This is an especially important part of the guinea worm programme because persons at the Regional and National levels need this information to make decisions on the most appropriate actions to take at those levels to help eradicate guinea worm.
-

Importance of community assessment to programme [Handout]

Refer again to the handout, Guinea Worm Coordinator Roles, from the Guinea Worm Overview section of the course and locate the community assessment boxes. Explain how it fits in with the other programme components. Emphasize that in the beginning stages of the guinea worm eradication programme, the community assessment takes place before implementing any of the intervention activities. Once the programme is well underway, community assessment continues.

When guinea worm cases still occur despite intervention activities, community assessment can help to determine why the problem still exists and identify alternative approaches. It will provide the Guinea Worm Coordinator with the information he or she needs to successfully choose and implement appropriate programme activities.

Importance of getting community input

Emphasize that one of the major purposes of this process is to get community members involved in planning and implementing their own solutions. Although this approach requires extra time and energy in the beginning, it will pay off in earlier and more frequent successes. Someone sitting in a distant office cannot truly know the community's needs and so cannot plan activities which will effectively solve a community's guinea worm problems.

COMMUNITY ASSESSMENT TOPICS 50 min.

[Handout]

In the community assessment process, Guinea Worm Coordinators work with community leaders to collect information regarding four topics. These four topics will be the basis for their initial contacts with the villages.

Refer to the handout, Community Assessment Topics. Read over the list of topics on this page. Each topic will be discussed in detail for the remainder of this section.

Community Leaders and Groups
[Flipchart]
[Handout]

Using a flipchart page to record participant answers, discuss the leaders and community groups which can become involved in solving the community's guinea worm problem. Lead the discussion as follows:

- a) First, discuss community leaders. In order for the guinea worm eradication programme to succeed, it is important to know who the local leaders are and to get them involved in planning and implementing guinea worm eradication activities.

Ask the participants who the most influential leaders are in the villages. List answers on the flipchart under the heading, "Community Leaders."

Examples of community leaders are:

- chief
- village elders
- religious leader
- community health worker
- school teacher
- leader of political organization such as Citizens for the Defense of the Revolution (in Ghana)
- health center employee
- traditional healer
- agricultural worker
- water supply worker
- literate villagers
- leader of women's group

- b) Next, discuss the community groups or organizations which can be influential.

On a flipchart page entitled, "Community Groups" list groups or organizations which may be found in the villages.

Examples of such groups are

- village development committee
- women's group
- parent-teacher organization
- village health committee
- agriculture club
- religious group
- political group
- youth association

- c) Using the two lists just compiled, ask the participants to identify the leaders and groups which might be the most supportive of guinea worm activities.

- d) Discuss the following questions with participants:

- How might these groups be identified?
- How might they be helpful?
- Are their activities compatible with guinea worm eradication?
- How might you approach them?

Once a community's leaders and groups have been identified, the leaders and representatives of those groups can become sources of information for the rest of the community assessment topics.

- e) Refer participants to the Community Leaders and Groups handout. They can use this page to guide their information collection for this topic.

Community Beliefs
and Practices
[Handout]

The next topic involves finding out about a community's beliefs and practices regarding guinea worm. Proceed as follows:

- a) Explain that the best way for Guinea Worm Coordinators to gain this information is to ask questions directly to community members. Refer to the Community Beliefs and Practices handout. Review the list of questions, one at a time. Include the following points in your discussion:
- b) Question 1--Ask the participants to describe some of the beliefs of villagers regarding what guinea worm is and where it comes from. You may want to mention some of the following:

Beliefs regarding the cause of guinea worm:

- Guinea worm occurs naturally in the body as part of the blood, or is a loose vein or tendon.
- A local god becomes angry and causes guinea worm.
- Guinea worms come out when they smell other nearby guinea worms.
- Guinea worm is inherited.
- Someone has done something taboo (like farming on forbidden days) which places a curse on the village.

- c) Question 2--Ask the participants to describe some of the treatment practices villagers use for guinea worm. You may want to mention some of the following:

Practices for treating guinea worm:

- Application of oils and herbs to draw the worm out.
- Not covering the wound so as not to anger the worm.
- Application of animal dung, ground bones, lantern soot, insecticides, or leaves.

If applicable, emphasize the importance of detecting the practice of applying animal dung. It can lead to tetanus which can be fatal. If the assessment reveals that this practice occurs in a village, then appropriate health education should be planned.

- d) Question 3--This question can provide the participants with details on the effects of guinea worm on the productivity and lifestyle of the village. The Guinea Worm Coordinator can use this information in later stages of the guinea worm program to help villagers recall the devastating effects of the disease and to motivate them to continue filtering their water, keeping infected persons out of the water, etc.
- e) Question 4--This information can help the Guinea Worm Coordinator to plan the timing of intervention activities so that they will have the most impact.

- f) Question 5-- Remind participants that when they are assessing the community leaders' knowledge of guinea worm causes and methods of prevention, villagers do not need to understand the whole life cycle: only 1) that they get the disease by drinking water, and 2) how the water gets contaminated by people. If the assessment reveals the need, the Life Cycle Flipchart (included in the Health Education Visual Aids) can be used to explain this.

Ask participants to share some of their experiences in explaining to villagers the causes and methods of prevention for guinea worm. Were they successful in gaining the villagers' support?

On the other hand, if community members seem to understand the causes of guinea worm and the methods of prevention, try to find out why guinea worm is still a problem in the community.

- g) Question 6--This question helps to clarify how important guinea worm elimination is to a community. Emphasize that in order for any guinea worm activity to be successful, it must be important to the community members. If there are other problems which they consider to be of higher priority, community members may not be ready or willing to address the guinea worm problem in their village. If a Guinea Worm Coordinator finds that a village is overwhelmed by other problems, he should emphasize that his main responsibility is guinea worm eradication, but he will try to refer the other problems to the proper authorities. Stress that the participants should not make any promises that they cannot keep.
- h) After discussing all of the questions, ask participants if there are any other questions which they might add to the handout list.

Community Resources
[Handout]

In addition to assessing the villagers and their beliefs, it is important to assess the local resources available for guinea worm eradication activities.

Refer to the Community Resources handout. It includes some, but not all, of the resources which may be needed for guinea worm interventions. Ask the participants if they have others to add to the list.

Explain that in the community assessment process, the purpose is to start exploring potential resources so that the Guinea Worm Coordinator can get an idea of the types of activities feasible for each community.

Community Water
Supply
[Handout]

Determining appropriate solutions to guinea worm depends on finding out as much as possible about a community's drinking water supply. Because the interventions taken in each community will depend a great deal on the types of water sources found there, part of the community assessment involves classifying a village's water sources as safe or unsafe from guinea worm contamination. Ask participants why they think this information might be important.

- a) Guinea Worm Coordinators need to know about every source of drinking water in each affected community. Encourage them to talk with community members and to try to visit as many of these water sources as possible in order to assess whether it is (or may become) a transmission site and, if so, to recommend ways to protect villagers from potential infection.
 - b) Refer to the Community Water Supply handout. Ask if there are other questions which participants may want to add to the list.
 - c) It is important to find out if villages share water sources. This can have a great effect on the guinea worm program, because all villages using a common drinking water source must cooperate with the guinea worm prevention activities if they are to succeed.
-

Classifying safe and unsafe sources of water

[Drinking Water Source Illustrations located at end of this section]

This exercise will help the participants to judge whether a drinking water source is a potential transmission site or not. Discuss guidelines for making this judgement using the illustrations found at the end of this section of the Facilitator's Guide. (These are the same illustrations found on the Drinking Water Source Cards which are included in the participants' Health Education Visual Aids.) Follow the procedure outlined below:

- a) Hold up illustrations 1 - 7 and ask the participants to tell you whether each source is safe or unsafe from guinea worm larvae. Discuss the information listed at the bottom of each illustration. Explain the following principles:
 - Cyclops are not usually found in deep wells, pipes, or running water. That is why water source illustrations 1 through 5 are usually safe from transmitting guinea worm larvae.
 - Cyclops thrive in shallow, stagnant water such as that shown on illustrations 6 and 7. Even though the Guinea Worm Coordinator cannot be sure that a particular pond or dam is a transmission site, it is best to assume that it is contaminated and prepare the villagers to take precautions.
- b) Explain the various options for achieving and maintaining safe water from unsafe sources. Present illustrations 8 - 14 and discuss the information listed at the bottom of each illustration.

For your information, on the next page is a list of all of the drinking water source illustrations.

Drinking Water Source Illustrations

Safe Sources

1. tube well with hand pump
2. well with rope and bucket
3. river, stream, or canal
4. rainwater catchment system
5. piped water

Unsafe Sources

6. large pond, lake, or dam
7. small pond or riverbed

Options For Making Water From Unsafe Sources Safe

8. filtering water
9. applying temephos (Abate) to water
10. boiling water

Options For Keeping Infected Persons Out Of Water

11. displaying posters at water source
 12. building a resting shelter at water source
 13. building a platform into water source
 14. posting local authority to monitor water source
 15. educating community members
-

Examining drinking
water supply
protection options
[Handout]

In the community assessment process, the participants will be trying to determine the best solutions for each community's water supply problems. After they have characterized each community's water supply, the next step is to offer options for how the villagers can protect themselves from guinea worm infection.

- a) Discuss the Water Supply Protection Options handout. This chart describes three water supply scenarios and lists the options which might be used to protect the residents from potential guinea worm infection.
 - b) Ask what other options the participants know of.
 - c) Emphasize that health education is a most powerful protection option.
-

COMMUNITY ASSESSMENT PROCESS 15 min.

Overview of
community assessment
process
[Handout]

Once all of the community assessment topics have been discussed, provide guidance on how the participants can put this process into practice. One could take any number of approaches to the collection of community assessment information; however, the basic requirement is that the Guinea Worm Coordinator go into the village to meet the leaders. Once key leaders and community groups have been identified, the next step is to bring them together for a meeting.

Meeting process

Present the guidelines for community assessment meetings on the handout, titled Meeting Process. Explain that these are guidelines for successfully preparing and conducting village meetings. Ask the participants if they have other suggestions to add.

Using the Solution
Tables
[Handout]

After the Guinea Worm Coordinators have met with community members and gathered sufficient information for all of the community assessment topics, they must then use this information to work with the community leaders in identifying the most suitable guinea worm activities for the community.

The Solution Tables handout can be used as a job aid to help process the information gained in the community assessment. It will help Guinea Worm Coordinators to:

- identify the major problems contributing to guinea worm in a community
- analyze reasons for the problems
- select options for solving the problems

The directions for using the Solution Tables are explained at the beginning of the chart. Briefly go over them with the participants to make sure they understand how to use the tables.

BREAK 15 min.

SMALL GROUP EXERCISE 40 min.

Community assessment exercises
[Community Situation Descriptions]

Divide the participants into groups of six to seven persons. Each group will have a task to complete and then report back to the whole group.

- a) Allow 5 minutes for Step a. Pass out the Community Situation Descriptions handout and assign one situation to each group. (Some groups will have the same community situation.) Their task will be to discuss and answer the questions and then make a presentation to the whole group.

Each group will have a facilitator assigned to lead the discussion. The facilitator's responsibility is to explain the exercise and keep the group on track. The group members should choose a spokesperson and a recorder. The spokesperson presents the group's conclusions back to the plenary session. The recorder summarizes the group's conclusions on a flipchart for the spokesperson to use in his presentation.

- b) Allow 20 minutes for Step b. Each group should read their Community Situation Description, complete the assigned task, and prepare a presentation.
- c) Allow 25 minutes for Step c. Small groups return to the plenary session where each spokesperson reports their group's conclusions. Allow time for discussion and comments by the rest of the participants. (Timing will vary depending on the number of groups you have.)

CONCLUSION 5 min.

Summarize process
[Prepared flipchart]

Briefly summarize the community assessment process by going over the following steps on a flipchart:

1. Find out who the local leaders and established groups are.
2. Contact the leaders and group representatives to assess their interest in supporting guinea worm eradication.
3. Plan meetings with the interested leaders and groups to find information on their community beliefs and practices, local resources, and water supply.
4. Analyze community assessment information gathered and use the Solution Tables to identify solution options.

Next steps

The next step is to bring the community together in a common understanding and commitment to eliminating guinea worm through activities which they help to select and plan. The next section of the course goes into detail about how to work with the community to do this.

Community Assessment Topics

For each community affected by guinea worm, find out information on the following topics:

1. Community Leaders and Groups
Who are the leaders and community groups which can become involved in solving the community's guinea worm problem?

2. Community Beliefs and Practices
What are the community's beliefs and practices regarding guinea worm?

3. Community Resources
What local resources are available for guinea worm eradication activities?

4. Community Water Supply
What is the status of the community's drinking water supply?

Community Leaders and Groups

1. Identify the community leaders and established groups in the community.

2. Find out those who might be interested in supporting guinea worm activities.

3. Check the leaders and groups below which you should arrange to meet.

Community Leaders

- ___ village elder or chief
- ___ religious leader
- ___ community health worker
- ___ school teacher
- ___ political organization representative (CDR)
- ___ health center employee
- ___ traditional healer
- ___ agricultural worker
- ___ water supply worker
- ___ women's group leader
- ___ other literate villagers
- ___ other _____

Community Groups

- ___ village development committee
- ___ women's groups
- ___ parent-teacher organization
- ___ village health committee
- ___ agriculture club
- ___ religious group
- ___ political organization (CDR)
- ___ other _____

Community Beliefs and Practices

Ask the following questions to community members:

1. What is guinea worm and where does it come from?

2. How do most people in this village treat guinea worm?

3. How much guinea worm is in this village and how does it affect the village?

4. During what times of the year is guinea worm most common?

5. Do the community leaders understand the causes of guinea worm and the methods of prevention? If not, explain causes and prevention methods to them; if so, ask why guinea worm is still a problem.

6. Do the people in this village want to take action to eliminate guinea worm?

Community Resources

Explore potential community resources by finding out if resources such as the following are locally available for guinea worm eradication activities.

- _____ local funds specifically designated for community improvement projects
- _____ persons skilled in well or pump maintenance
- _____ a teacher who resides in the village
- _____ a village health worker
- _____ appropriate storage facility for temephos
- _____ persons with the skills to sew filter cloth into usable filters
- _____ outlets for selling filters
- _____ churches or other donor groups who contribute to this village

Community Water Supply

Ask the following questions to community members:

1. What drinking water sources are used by members of this community?

2. Which drinking water sources are used by most of the people?

3. For each drinking water source, is it used
 - all of the time
 - frequently
 - some of the time
 - just during the dry season
 - just during the wet season

4. Where is each drinking water source located?

5. Are any drinking water sources shared with other villages?

It is helpful to sketch a map of the community, indicating all of this information.

Water Supply Protection Options

If the village has:	Do one or more of the following:
<p>No safe drinking water source available.</p>	<ul style="list-style-type: none"> • Promote filtering or boiling of water. • Promote keeping infected persons out of water sources. • Help villagers organize to raise money and/or donate labor for constructing well(s) or rainwater catchments. • Use temephos.

If the village has:	Do one or more of the following:
<p>A safe drinking water source available, but it is not used by all.</p>	<ul style="list-style-type: none"> • Conduct interviews to find out why the safe source is not used. • Promote personal protective measures (filtering, boiling). • Challenge the village: <i>Those who drink only from safe source will have no guinea worm next year.</i> • Promote keeping infected persons out of water sources.

If the village has:	Do one or more of the following:
<p>A potential safe drinking water source available, but it is currently contaminated.</p>	<ul style="list-style-type: none"> • Use temephos. • Promote keeping infected persons out of water sources. • Promote personal protective measures (filtering, boiling).

Meeting Process

Once you have identified the kinds of leaders and groups who can play a key role in guinea worm eradication, bring them together to plan solutions to their community's guinea worm problem.

Preparation

- Find a day and time that is convenient for the leaders you have identified and invite them to come talk with you about guinea worm in their community.
- Identify a convenient location to meet, such as a school, church, health center, or someone's house.
- Review the Community Assessment handouts to understand what you need to accomplish in this meeting.
- Prepare copies of the Life Cycle Flipchart and any other health education materials to teach the leaders about the causes and prevention of guinea worm.

The Meeting

- Explain that you represent the guinea worm eradication programme. Emphasize that your role is to help the village leaders to help themselves and their community.
- Discuss Community Beliefs and Practices and follow the suggestions in the handout.
- If necessary, educate the community leaders using the Life Cycle Flipchart.
- Discuss Community Resources and Community Water Supply and follow the suggestions in the handout.
- Suggest the formation of a guinea worm committee to work with you on solving the community's guinea worm problem.

Closing the Meeting

- Thank the attendees for the time they gave you. Tell them you look forward to working with them.
- Schedule a time and place to meet with the guinea worm committee.
- Ask if it would be possible for someone to take you to see the community drinking water source(s).

After the Meeting

- Visit the community drinking water sources.
- Go through the notes you made and make sure you understand all that you were told.
- Follow up, if clarification is necessary.

Once you have collected all the information for the community assessment, refer to the Solution Tables to help you identify appropriate solution options.

SOLUTION TABLES

The following eight tables reflect eight problems which you may have identified in the Community Assessment. For each of the applicable reasons listed on the left, consider the solution options listed on the right. The key to the solution options is on page 4.

1. Community leaders and organized groups are not committed to eliminating guinea worm from their community.	
If the reason is:	Then consider these options:
They are not aware that guinea worm can be eliminated	2, 3, 4, 7, 8, 11, 15, 17, 19, 21
They consider other problems to be higher priority	6, 11, 18, 19
They are not aware of impact of guinea worm on community	8, 11, 16, 18, 21
They are distrustful of outsiders	6, 7, 10, 11, 12, 16, 20, 21

2. The villagers do not understand that guinea worm comes from drinking contaminated water.	
If the reason is:	Then consider these options:
They are not aware of facts	2, 3, 4, 7, 8, 11, 15, 19
Facts conflict with customs or beliefs	6, 7, 11, 16, 19, 20

3. Most villagers do not filter or boil their water.	
If the reason is:	Then consider these options:
They don't know they should or how to	1, 2, 3, 4, 7, 8, 11, 13, 15
Filtering or boiling conflicts with customs or beliefs	6, 7, 11, 16, 17, 19, 20, 21
Nylon filters or fuel not available	5, 9, 10, 13, 17, 22

4. The villagers go into the drinking water source when they have guinea worm.	
If the reason is:	Then consider these options:
They are not aware they can contaminate water	2, 3, 4, 7, 8, 11, 15, 19
They have no other way to get water	5, 9, 10, 13, 17, 21
A few individuals are uncooperative	1, 5, 8, 9, 16, 17, 20, 21

5. The villagers use unsafe treatment methods for guinea worm ulcers.	
If the reason is:	Then consider these options:
They are not aware that treatment is unsafe and/or what safe alternatives are	1, 2, 3, 4, 12, 14, 15
Safe treatment conflicts with customs or beliefs	1, 2, 3, 4, 6, 11, 12, 14, 20
Treatment facility not accessible	1, 9, 10, 12, 14, 19

6. Some or all of the villagers are using an unsafe drinking water supply.	
If the reason is:	Then consider these options:
They are not aware that source used is unsafe and/or what alternatives they have.	1, 2, 3, 4, 6, 7, 8, 11, 15, 16, 19, 21
No safe water source is available	5, 9, 10, 11, 13, 15, 17, 19, 21
Using safe supply conflicts with customs, beliefs, and/or personal preference.	1, 6, 7, 11, 16, 17, 19, 20

7. The villagers do not work together to protect their drinking water sources from contamination.	
If the reason is:	Then consider these options:
They are not aware that they should or aware of protection options available	2, 3, 4, 5, 8, 9, 11, 15, 16, 18, 20
They do not know how to implement protection options	2, 3, 5, 9, 10, 11
Protection options conflict with customs or beliefs	1, 6, 7, 11, 16, 19, 20, 21

8. Resources are not available to support desired guinea worm activities.	
If the reason is:	Then consider these options:
Economic condition of area is poor	5, 9, 10, 18
Potential resources not developed	5, 9, 10, 11, 16, 18, 19, 20

Solution Options

1. make home visits to get support of individual families
2. meet with community women
3. have publicity campaign with posters, etc.
4. give health talks with role plays, songs, etc.
5. give problem solving sessions with brainstorming, consensus building, etc.
6. implement trust building activities , e.g., spending more time in village, helping with other village problems
7. give demonstrations, e.g., showing cyclops in water sample or cyclops on filter
8. show films or video
9. organize community action committee
10. link up with other organizations and agencies
11. tell about or have leaders visit other villages which have had successful guinea worm activities
12. set up temporary clinic in village to treat guinea worm patients
13. teach primary school children to build sand filters
14. train school children, village healer(s), or VHW to provide basic treatment of guinea worm
15. organize village theatre groups to promote guinea worm prevention
16. arrange for visit by district commissioner or local political figure to motivate villagers
17. implement vector control
18. publicize facts about impact guinea worm has on community, e.g., agricultural productivity, missed school days
19. teach school children where guinea worm comes from and how to prevent it
20. solicit help of local religious leader(s)
21. challenge villagers to filter water (or drink other types of safe water) and serve as an example to others
22. Use commonly available cloth for filtering, such as cotton gray baft

Community Situation A

In your initial visit to Village A, you met a very enthusiastic chief and identified several community leaders interested in guinea worm eradication. The chief agreed for you to return the next Tuesday to talk further with the leaders about how to solve their guinea worm problem.

Task:

Plan how you will conduct this meeting.

What information would you like from this group?

What questions will you ask?

What information will you present?

What will your next steps be after the meeting?

Plan a short dramatization of part of the community meeting.

Presentation:

Summarize your conclusions.

Dramatize a scene from the community meeting.

Community Situation B

You visit Village B (see diagram). This village has an active village development committee and an enthusiastic chief. A nearby dam is the main source of drinking water throughout the year. You explain about guinea worm and advise the villagers to ensure that no one with guinea worm enters their dam. They assure you that with the help of their defence committee, they will enforce your advice.

Task:

Do you think Village B will be successful in controlling guinea worm? Why or why not?

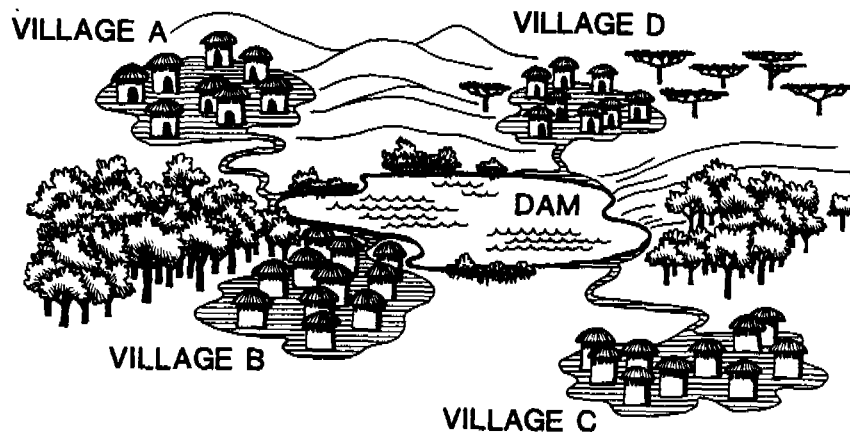
What additional information do you need?

How will you collect this information?

How will you use this information?

Presentation:

Summarize your conclusions.



Community Situation C

You visited Village C which has a population of 500 people. The village has one chief who seemed drunk when you visited him. There is a school with two male teachers from the district capital. During your first visit you met the chief sitting with five of his elders. After listening to you, the chief told you that guinea worm is not an important problem in his village. You know, however, from the Regional Guinea Worm Survey that Village C is a moderately high endemic area. During your visit, you observed several guinea worm cases (including one of the teachers).

Task:

What should your next step be?

What additional information do you need?

How do you intend to collect and use this information?

What will you say to the chief when you return to the village?

Plan a short dramatization your next meeting with the chief.

Presentation:

Summarize your conclusions.

Dramatize your meeting with the chief.

DRINKING WATER SUPPLY ILLUSTRATIONS



1. Tube well with hand pump--Safe source

Considerations:

- Villagers may not like the taste.
- May require more soap when used for washing.
- May require special funds for training and/or maintenance.
- Requires villagers to wait their turn to collect water.
- Water use tariff may be required by the government.



2. Well with rope and bucket--Safe source

Considerations:

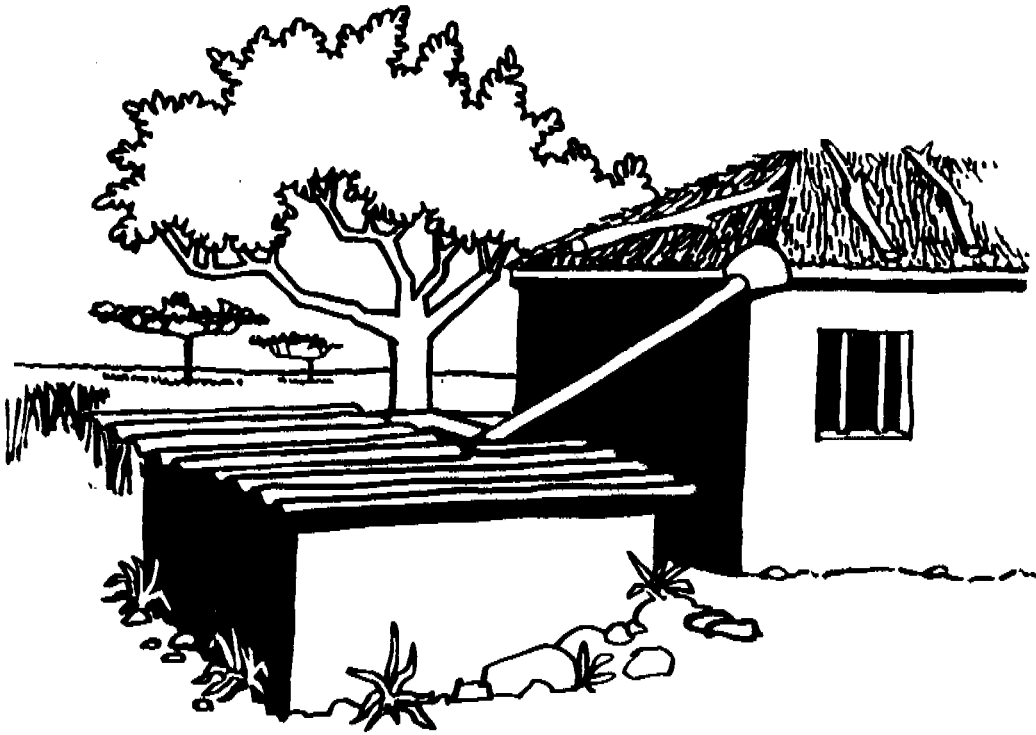
- Villagers may not be able to provide bucket and rope.
- Requires villagers to wait their turn to collect water.
- Water use tariff may be required by the government.
- Villagers must not climb upon the well and spill water with guinea worm larvae into the well.
- Requires more energy and effort than most other types of water sources.



3. River, stream, or canal--Safe source

Considerations:

- During dry season, pools may form or people may dig water holes in the river or stream bed which can become contaminated.
- Only safe if flowing.



4. Rainwater catchment system--Safe source

Considerations:

- Requires knowledge, labor, and materials for construction.



5. Piped water--Safe source

Considerations:

- Requires villagers to wait their turn to collect water.
- Water use tariff may be required by the government.



6. Large pond, lake, or dam--Unsafe source

Considerations:

- See illustrations 8 - 10 for options on how to make the water safe. See illustrations 10 - 13 for options on how to keep infected persons out of the water.
- When water volume is small enough (500 cubic meters or less), may be suitable for temephos (Abate).



7. Small pond or riverbed--Unsafe source

Considerations:

- See illustrations 8 - 10 for options on how to make the water safe. See illustrations 10 - 13 for options on how to keep infected persons out of the water.
- Application of temephos (Abate) may be appropriate.



8. Filtering water--Makes water safe by filtering out cyclops

Considerations:

- Accidental contamination occurs if filter material used improperly, or has tears.
- Requires consistent behavior.



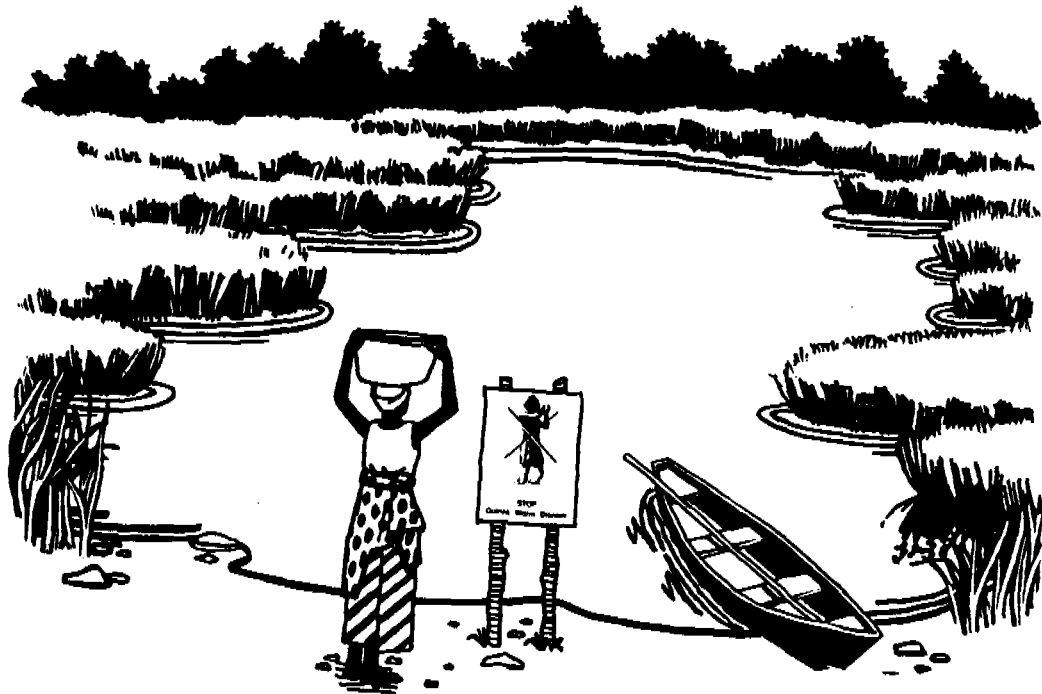
9. Applying temephos (Abate) to water--Makes unsafe water by killing all the cyclops in the body of water, thereby breaking the life cycle
- Considerations:
- Causes odor and cloudiness for a period after application.
 - Requires care in handling temephos.
 - Requires precision in calculating water volume and required dose.



10. Boiling water--Makes unsafe water safe by killing all of the cyclops in the water

Considerations:

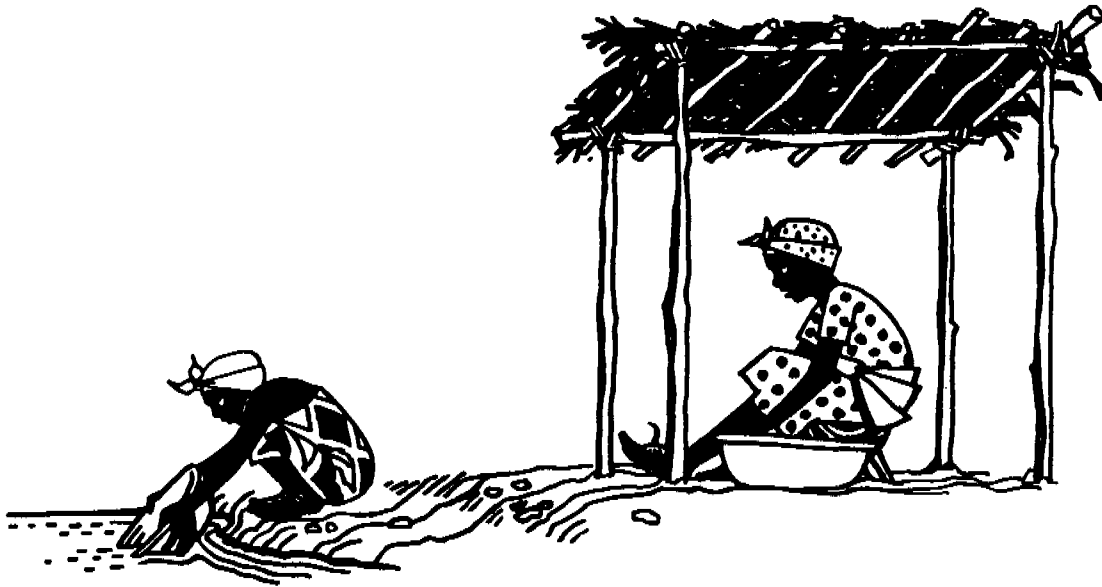
- Shortage or expense of fuel.
- Requires time for cooling.
- Affects the taste of water.
- May be difficult concept to teach. (There is no word for boiling in many local languages.)
- Boiling also kills other germs.



11. Displaying posters at water source--One way to keep infected persons out of the water

Considerations:

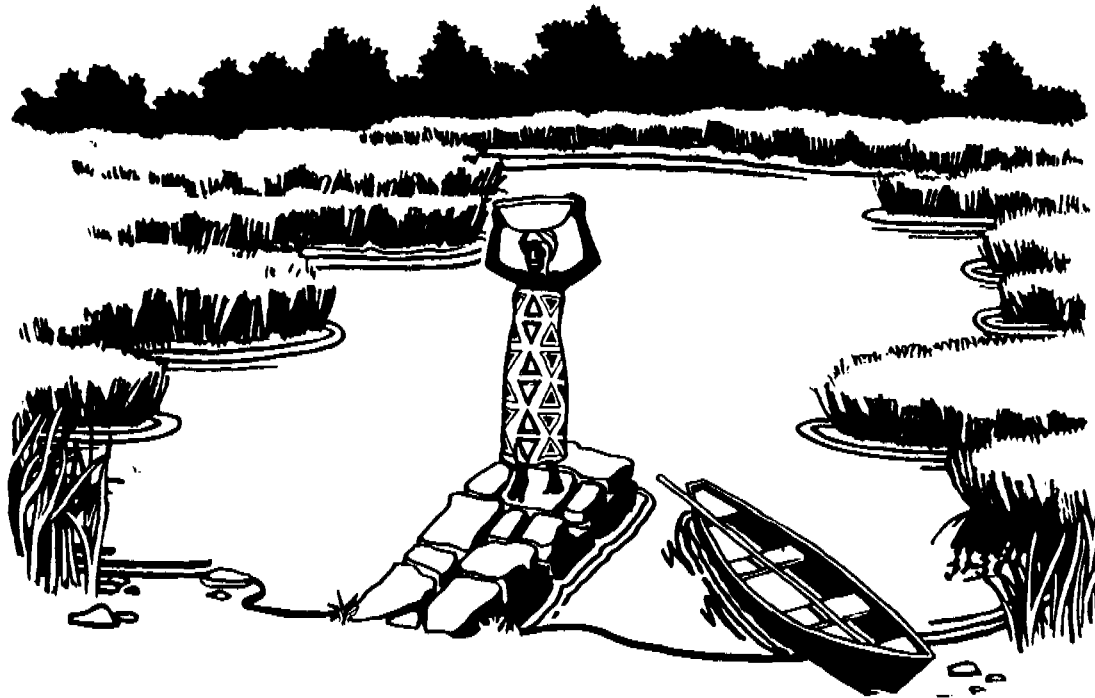
- Cannot be read by majority of villagers.
- Requires personal responsibility for compliance.
- Someone may remove poster.



12. Building a resting shelter at water source--One way to encourage infected persons to stay out of the water while a noninfected person gathers water for them

Considerations:

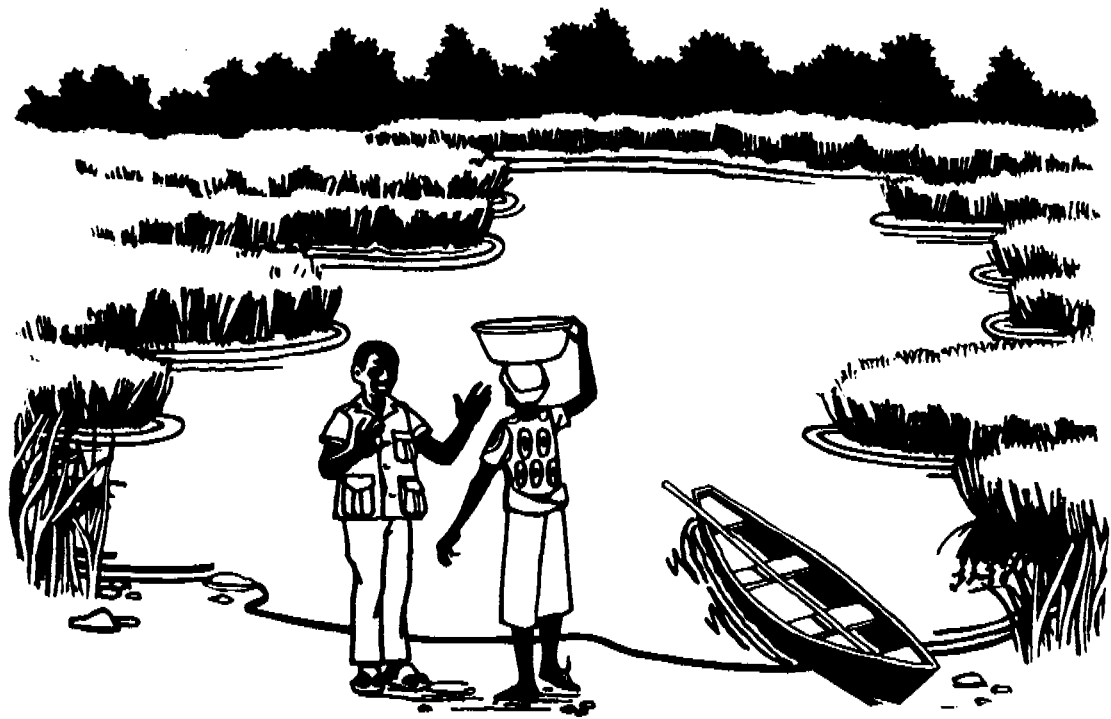
- Requires labor and materials for construction.
- Requires infected person to wait.
- Requires person willing to gather water.
- Requires maintenance.



13. Building a platform into water source--One way to keep infected persons from coming into contact with the water

Considerations:

- Contamination can still occur if people are careless.
- Requires labor and materials for construction.



14. Posting a local authority to monitor water source--One way to keep infected persons out of the water source

Considerations:

- Requires payment of watchman.
- Depends on proficiency of watchman.
- May be difficult to enforce where villages share a water source.



15. Educating community members--One way to keep infected persons out of the water source

Considerations:

- Requires visit by someone to deliver health education messages.
- Depends on ability of educator to communicate messages.
- Every one who uses water source must hear and understand messages.

PROMOTING COMMUNITY ACTION

SUMMARY

In this section, the participants discuss the key aspects of a community project which can help to ensure its success. The steps which a Guinea Worm Coordinator should follow to help a community get started with guinea worm eradication projects are presented. The rest of the section includes exercises and discussions in which the participants practice skills important to successful promotion of community action. The three skills highlighted involve 1) learning a brainstorming process, 2) preparing and conducting a community meeting, and 3) preparing a project implementation plan.

OBJECTIVES

At the end of this section, participants should be able to do the following:

1. List at least three aspects of a community guinea worm project that helps to promote community action and participation.
2. Describe how the brainstorming method could be used to get community members involved in planning guinea worm projects.
3. Describe how to plan for and conduct a community meeting.
4. Develop an implementation plan for a community project that describes at least three tasks, dates for their completion, and persons responsible.

MATERIALS NEEDED

Flipchart and Felt Tip Markers for presenting information and for use in the exercises.

Handouts: Steps in Promoting Community Action for Guinea Worm Eradication
Ideas for Community Projects
Sample Implementation Plan
Implementation Plan
Exercise Problem Descriptions

SCHEDULE

Total Time: 4 hours (Consists of two parts conducted on two days.)

Part I: 2 hours

Introduction 15 min.

Steps in Promoting
Community Action 15 min.

Brainstorming 90 min.

Part II: 2 hours

Community Meetings 20 min.

Implementation Plans 100 min.

BACKGROUND READING FOR TRAINERS

Foly A, Caudill D, 1987. Case study: Guinea Worm. Oklahoma City: World Neighbors.

PART I

INTRODUCTION 15 min.

The Community Assessment process previously discussed (this morning) will help the Guinea Worm Coordinator to identify the major problems contributing to guinea worm in a community and help him or her to select options for solutions. These solutions will most likely involve informing villagers about protective measures which they can practice individually, such as filtering their water before drinking it and staying out of the drinking water sources. Guinea worm eradication, however, will not succeed if only individual precautions are taken. The negligence of only one person in the community can contaminate the water for all, or the failure of one family member to filter the drinking water can infect the whole family; because of this, guinea worm eradication requires the cooperation of the whole community. This idea is often referred to as community action, community mobilization, or the community-based approach.

This course is based on the belief that community action and individual action must both take place for guinea worm to be eliminated. Today and tomorrow morning we will talk about how Guinea Worm Coordinators can promote community action by helping communities to plan, implement, and take primary responsibility for their own guinea worm projects.

Section objectives

Review the objectives for this section. Explain that the objectives describe what they should learn from this section of the course.

Key aspects of
community projects
[Prepared Flipchart]

Display a flipchart page listing the following key aspects of successful community projects:

- It is something that the community wants to do.
- It is directed by local community leaders.
- It makes use of local resources (people, money, supplies, etc.).
- It involves as many community members as possible.
- It helps community members develop better leadership and problem solving skills which they can apply in the future to other community problems.

Discuss how these qualities can stimulate community members to act together and increase the chances of achieving community goals. Urge the participants to try to include these qualities in the community projects they become involved with.

Other types of
community interventions

Describe several examples of non-community-based interventions such as those listed below. After describing each one, ask the participants to tell you whether they think it is community-based or not. (You may want to describe some real-life examples, instead of those listed below.)

- The chief demands that the government build a well for his village.
- The Regional Medical Officer makes arrangements for nylon filters to be donated to the village.
- The village chief decides that those who enter the water will be fined.

Explain that these examples are not bad; sometimes they might be necessary, but they are not the type of community intervention project discussed in this section of the course.

STEPS IN PROMOTING COMMUNITY ACTION 15 min.

[Handout]

Once the Guinea Worm Coordinators are familiar with some of the qualities of a good community project, discuss how they can help to get this type of project started.

Refer to the handout titled Steps in Promoting Community Action for Guinea Worm Eradication. These are the steps that a Guinea Worm Coordinator should take in mobilizing a community to assume responsibility for guinea worm projects. Discuss each step with the participants and ask if there are questions about any of the steps.

Suggested procedure

Each Guinea Worm Coordinator must decide the best way to carry out these steps, depending on his or her availability, location of the village, etc. The procedure will most likely involve setting up a meeting (or several meetings) with the village chief, elders, and/or a village committee to get their involvement in carrying out guinea worm activities.

Interested community leaders should be invited to attend. They may include an existing group, such as the Village Development Committee, or the major leaders identified in the Community Assessment. Another approach may be to encourage the villagers to organize a committee expressly for the purpose of planning and implementing guinea worm projects. The selection of participants for this meeting will depend on what the Guinea Worm Coordinator learned about the leadership potential in the Community Assessment.

Through meeting with the villagers, the Guinea Worm Coordinator can help them to develop a plan and should get their commitment to assume responsibility for implementing it. Those who attend the meeting should be encouraged to talk to other villagers and stimulate their interest in participating in the project. They should find out what resources villagers will be willing to commit to the project.

BRAINSTORMING 90 min.

Introduction to rest of section

Explain that for the rest of this section, participants will practice skills which will help them to carry out the steps for promoting community action. These include:

- learning a brainstorming process
 - conducting a community meeting
 - developing an implementation plan for a project
-

Brainstorming
community projects
[Exercise Problem
Descriptions]
[Flipcharts for
each group]

The purpose of this exercise is to give participants a chance to practice the brainstorming technique of thinking up ideas for problem solutions. The participants may already be familiar with this process. If so, you may want to shorten or modify this exercise.

Divide the participants into groups of six to seven persons. Each group will have a task to complete and will then report their results back to the whole group. A brainstorming approach will be used in completing the tasks.

- a) Allow a few minutes for Step a. A facilitator should be assigned to each group to lead the discussion. The facilitator's responsibility is to direct the brainstorming process, keep participants on track, and record suggestions made during the brainstorm on a flipchart. The group members should choose a spokesperson and a recorder. The spokesperson presents the group's conclusions back to the plenary session. The recorder summarizes the group's conclusions on a flipchart for the spokesperson to use in his or her presentation.

Ask the participants to get the Exercise Problem Descriptions out of their folders and assign each group one of the problems described. Their task will be to plan a community project or activity which could be used to address the assigned problem.

- b) Allow 20 minutes for Step b. The facilitators should lead the groups through a brainstorming process following this procedure:
 - Read the problem description. Ask participants to mention ideas for community projects that could be undertaken to solve this problem. Remind them of the qualities of a good community project discussed earlier. Write down all suggestions on a flipchart.
 - If participants seem reluctant to volunteer ideas, the discussion leader may bring up ideas of his or her own to get them started. Or the discussion leader may go around the group and have everyone mention an idea or add to another person's idea. These techniques are good ways to get started when participants are having difficulty or are not familiar with the brainstorm approach.

- Ask participants to say anything relevant that comes to mind. They should not worry about whether it is feasible or not, or if it may sound unusual or funny to others. The main purpose at this point is to get all ideas out.
 - Making judgments or remarks about others' suggestions is not allowed.
 - When there seem to be no more ideas, ask participants to look at all the suggestions listed and see if there are any similarities. Combine or group together those that are similar. Discuss the feasibility of each suggestion. Ask if there are any new suggestions or if anyone has ideas to improve the current suggestions.
 - On a piece of paper, each person should vote for the community project from the flipchart list which they think would be most successful in solving the problem.
 - Tally up the choices and see which suggestion received the most votes.
 - Discuss the winning suggestion(s). Work with the group to refine the idea and specify the details. Focus the discussion on deciding what each project would entail, how to go about getting the participation of community members, and what resources might be needed.
 - The recorder describes the problem solution on a flipchart page for the spokesperson to use in describing it to the rest of the participants.
- e) Group Presentations-- 60 minutes for 6 groups (Adjust time if you have a greater or smaller number of groups.) Small groups return to the plenary session where each spokesperson has 5 minutes to report on his or her group's conclusions. Allow each group an additional 5 minutes for discussion and comments by the rest of the participants.

During the group reports, look for opportunities to point out how two groups working on the same problem can come up with different ideas. This is one characteristic of brainstorming; it sometimes leads to new and creative ideas.

Also, during the reports, praise the ideas which make maximum use of community participation and encourage the health workers to aim for similar projects in their communities.

[Handout]

f) Finish this exercise by referring to the Ideas for Community Projects handout. It includes ideas of different kinds of community guinea worm projects. The Guinea Worm Coordinators can use this list as a reference when helping communities to plan projects. Give them a few minutes to add new ideas to the list.

Review brainstorming

Point out that the brainstorming process which was just used is an approach to getting community leaders' involved in planning what their community can do to eliminate guinea worm.

Ask if any of the participants have used this or a similar approach with villagers before. Discuss both the potential problems and benefits of the approach.

Remind the participants of the importance of allowing community leaders to come up with their own ideas. It is crucial that the leaders have a major voice in deciding what will be most appropriate and acceptable to their community.

Summarize by emphasizing the following advantages of brainstorming:

- Solutions are chosen by everyone involved, not just the group leader.
 - Participation is not limited to the most educated or most experienced.
 - Unusual, even impractical, ideas are welcomed for consideration.
 - One person's average idea can be combined with another person's average idea to make a great idea.
-

Conducting a
community meeting
[Flipchart]

The next topic concerns how to successfully prepare for and conduct a community meeting. Display a flipchart listing the following two topics: "Planning a Meeting" and "Conducting a Meeting." Ask participants to make suggestions from their experience for planning or conducting a successful meeting with villagers. Include the following items, if they are not mentioned by participants:

Planning a community meeting

- Decide on the major objectives of the meeting and prepare an agenda of topics which should be addressed.
- Don't try to cover too much; keep the agenda short.
- Invite community leaders to take part in the meeting, e.g., giving welcome, saying prayer, relating personal experience with guinea worm.
- Prepare an outline of your presentation with topics in logical order.
- Arrange for use of visual aids, if possible, e.g., chalk, posters, flipcharts.
- Anticipate all possible problems and think through ways of responding to them.

Conducting a community meeting

- Dress appropriately.
- Observe local customs.
- Stick to the agenda.
- Don't do all of the talking. Encourage discussion among the villagers.
- Use the brainstorming process to get ideas from the villagers.
- At the end of the meeting, thank the villagers and other speakers for their time.

ADJOURN

Adjourn for the day. Continue with Part II in the morning.

PART II

IMPLEMENTATION PLANS 100 min.

Discuss implementation plans
[Handout]

Even though community members may express interest and enthusiasm in solving their guinea worm problems and identify projects to work on, it will not be enough; they will need a clearly specified implementation plan. An implementation plan helps to confirm the "what, when, where, and by whom" details of the project. The participants should encourage every community interested in guinea worm eradication to develop such a plan.

Refer to the Sample Implementation Plan handout. Describe the following three main parts of an implementation plan:

Tasks

Call the participant's attention to the first task listed on the handout. Suggest that this may be the best task to start with in most villages.

Tasks should be small, discrete steps. They should be as specific as possible, stating numbers and methods where appropriate. One should be able to easily tell when the task is accomplished, such as the first task listed on the handout.

A task such as "publicize guinea worm prevention methods" is too vague. Show how this could be broken down into smaller steps.

Dates

These dates indicate when the task should be completed. Dates could be stated in terms relative to planting and harvesting season or other significant village events.

Person(s) Responsible

This refers to the person(s) responsible for seeing that the task is carried out by the completion date.

Refer to the Implementation Plan handout. It is a blank form which participants may want to duplicate and use in their work with communities.

Developing an
implementation plan
[Flipchart for
each group]

Ask the participants to divide up into the same groups they were in earlier. In this exercise, they will develop an implementation plan for the community project which they described in the earlier brainstorm activity. Follow this procedure:

- a) Display the community project flipchart from the brainstorming activity. A spokesperson and recorder should be identified for this activity.
- b) Allow 20 minutes for the participants to develop an implementation plan for the community project. The plan should include at least four tasks and indicate logical completion dates and persons responsible. The plan should be written on a flipchart page for presentation to the rest of the participants.
- c) Group Presentations-- 60 minutes for 6 groups (Adjust time if you have a greater or smaller number of groups.) Reconvene the groups in a plenary session and ask each spokesperson to present the group's plan. For each group, allow five minutes for presentation and five minutes for discussion and questions from the rest of the participants.

Conclusion

Close this section of the course by emphasizing the fact that mobilizing villagers around the guinea worm issue has many benefits. It begins to teach villagers that they can solve many of their own problems and teaches them ways to do so. It enables them to make rapid, visible, and substantial improvements in their lives. Furthermore, the lessons learned will be long-lasting and have positive effects beyond eliminating guinea worm.

Steps in Promoting Community Action for Guinea Worm Eradication

Planning

1. Present the major guinea worm problems that you identified in the Community Assessment to the community leaders.
2. Discuss the possible options for solutions which you consider appropriate, based on the Community Assessment. Present them merely as suggestions and emphasize that you would like to hear the community's ideas.
3. Help the leaders to generate acceptable solution(s) and community projects, using the brainstorming process.
4. Help the leaders to think of ways to get the commitment and involvement of as many villagers as possible.
5. Help the leaders to make an implementation plan for each project chosen. The plan should identify tasks, dates for achieving the tasks, and persons responsible for each task.

Implementing

6. Meet frequently with the villagers to show your interest and help them solve problems which may arise.
7. Check progress against the implementation plan. Revise, as necessary.
8. Recognize accomplishments. Celebrate small victories to help maintain enthusiasm and momentum.

Ideas for Community Projects

1. Community members develop a puppet show or play to demonstrate how guinea worm gets into the water.
2. Political leaders talk about the causes of guinea worm and how important it is not to blame the disease on superstition.
3. Community leaders demonstrate correct filtering procedures and encourage filtering throughout the whole village. They praise those whom they see practicing it.
4. The Village Mobilization Committee plans a scheme to use locally available cloth for filtering, local women or tailors to sew it into usable filters, and local merchants to market it.
5. Villagers build shelters (patas) using communal labor and local materials for infected persons to sit in while non-infected persons gather water for them.
6. Issue a "challenge" to all who want to avoid guinea worm disease to filter their drinking water for two years. Those who do not accept may continue to have guinea worm disease, while those accepting the "challenge" will serve as positive examples.
7. Teacher(s) teach village school children about how guinea worm is spread, how to protect village water supplies, and how to filter their families' drinking water.

Sample Implementation Plan

Village _____ Date _____

<u>Task</u>	<u>Date</u>	<u>Person Resp</u>
Recruit at least five members for Guinea Worm Eradication Committee (GWEC)	7/10/88	GWC*
First meeting of GWEC to elect chairman	14/10/88	GWC
Second meeting of GWEC to plan guinea worm rally	22/11/88	GWEC chair
Plan puppet show and make puppets to inform villagers about guinea worm prevention methods	25/11/88	GWEC membs.
Hold a rally to demonstrate use of filters and perform puppet show	5/12/88	GWEC membs.
Solicit donations from at least 20 families to go into a fund for maintaining the hand pump	10/12/88	chief
Have school children design posters to encourage filtering	10/12/88	teachers
Post posters at all drinking water sources	15/12/88	GWEC membs.

*Guinea Worm Coordinator

Promoting Community Action Handout

Implementation Plan

Village _____ Date _____

Task _____ Date _____ Person Resp _____

Exercise Problem Descriptions

1. In your community assessment for village A you discover that the residents believe that guinea worm is caused by a god whom they angered in some way. The main source of drinking water is a dam which is used by several villages and many migrants. The villagers cannot avoid walking into the water when they are infected with guinea worm, because there are no other means for them to fetch drinking water. What type of community project(s) might you recommend for this village?

2. In Village B many villagers with guinea worm walk into the drinking water source because they are unmotivated to cooperate with the District Health Worker's advice about preventing guinea worm. The health worker is a very impatient person and has not displayed much sensitivity to the customs and beliefs of the village in the past. The villagers have expressed unwillingness to filter their drinking water because it is not a traditionally accepted practice; they also think it is too much trouble. You have just been designated to work in this District. What type of community project(s) might you recommend for this village?

3. In your community assessment for Village C, you discover that the major source of drinking water is a guinea worm contaminated pond. There is also a well in the village, but the villagers prefer to drink from the pond because they believe it is sacred and has a better taste. The residents treat their guinea worm ulcers using a method which often leads to serious infection. This is the method taught to them by the village healer who is highly respected throughout the village. What type of community project(s) might you recommend for this village?

4. The residents of Village D are interested in eliminating guinea worm from their village, but they have been suffering from a drought, leaving the village very poor and dependent on outside resources. They have a large pond which provides contaminated drinking water, but it could easily be protected from future guinea worm contamination by building a pier or some other physical structure which keeps people from coming into contact with the water. What type of community project(s) might you recommend for this village?

PROMOTING INDIVIDUAL ACTION

SUMMARY

In this section, plans for three health education talks with accompanying materials are presented. These health education talks are designed for use by the participants in their health education sessions with villagers. The session begins with a discussion of the primary messages included in the health education talks and the problems participants may encounter when trying to communicate these messages. Next, the facilitator reviews the content and materials in each health talk and demonstrates appropriate ways to use the materials with villagers. The session closes with a practice session during which small groups of participants practice and critique each health education talk.

OBJECTIVES

At the end of this section, participants should be able to do the following:

1. Describe the five primary health education messages.
2. Give a health education talk which teaches villagers that guinea worm comes from the drinking water and why it is important that persons with guinea worm ulcers not go into the drinking water.
3. Give a health education talk which teaches villagers to identify local drinking water sources which are safe from guinea worm and, if applicable, to describe ways to protect the drinking water sources from guinea worm contamination.
4. Give a health education talk which teaches villagers to correctly filter drinking water which comes from unprotected sources.

MATERIALS NEEDED

Flipchart Paper and Felt Tip Markers for presenting information and recording participants' comments during discussions.

Cotton and Nylon or Polyester Filter Cloth and if available, examples of different types of filter designs.

Three Practice Stations, one for each health education talk. Each station should be prepared with all materials needed for presenting the talk.

Handouts: Health Education Talk Summary
Guide to Using the Health Education Visual Aids
Health Education Talk A
Health Education Talk B
Health Education Talk C

Health Education Visual Aids: (see handout describing Visual Aids)

Life Cycle Flipchart

Intervention Posters (includes 5 posters)

Drinking Water Source Cards (includes 15 cards)

SCHEDULE

Total Time: 2 hours 15 minutes

Introduction	5 min.
Health Education Messages	25 min.
Health Education Talk A	15 min.
Health Education Talk B	15 min.
Health Education Talk C	15 min.
Practice Exercise	60 min.
Conclusion	5 min.

BACKGROUND READING FOR TRAINERS

Akpovi SU, Johnson DC, and Brieger WR, 1981. Guinea worm control: testing the efficacy of health education in primary care. Intl J Hlth Educ, 24:229-37.

Gbary AR, Guiguemde TR, Ouedrago JB, 1987. La dracunculose, un fleau eradique dans trois villages du Burkina Faso par l'education sanitaire. Bull Soc Path Ex, 80:390-395.

INTRODUCTION 5 min.

Introduction

Introduce this section by presenting the following information.

The key to guinea worm eradication is to promote practices among individuals and families in affected villages that will enable them to avoid guinea worm infection. This can be accomplished through health education. The effectiveness of the other guinea worm programme activities depends on health education and its ability to help individuals and families change certain practices that continue the spread of guinea worm infection.

Section objectives

Review the objectives for this section. Explain that in this section they will learn how to present three health education lessons which will enable them to accomplish these objectives.

HEALTH EDUCATION MESSAGES 25 min.

[Prepared flipchart]

For guinea worm eradication, there are five main messages to be communicated to villagers. These messages are included in three health education talks which the participants will learn to present in this section of the course.

Display a flipchart page listing the following messages:

1. Guinea worm comes from the drinking water.
2. Persons with guinea worm ulcers or blisters must not go into the drinking water sources.
3. Work with your community to protect your water sources from contamination.
4. Drink only water which is safe from guinea worm contamination.
5. If only unsafe drinking water is available, always filter or boil it before drinking.

Explain to participants that in this section of the course they will discuss how they can communicate these messages to villagers. They will discuss three health education talks and visual aids and will practice using them with each other.

Communicating with
villagers
[Flipchart]

Before discussing the health education talks and materials, discuss problems which the participants might face in trying to change practices in villagers.

- a) Ask the participants what problems they anticipate in getting villagers to accept the messages. Ask them to describe some of the problems they have had when trying to change the way villagers do things. List participants' answers on a flipchart page labeled with the word "Problems" on the left side.
 - b) After participants have named as many problems as they can think of, have them suggest possible solutions to the problems and list these in the column on the right half of the page labeled "Solutions." On the next page is a list of possible answers.
 - c) Make sure participants understand the following important point--it is very important to stress to the villagers that even if their village follows all of these protective measures, someone can still get guinea worm next season because the guinea worm larvae were already inside them. The protective measures will have to be followed for two guinea worm seasons before all guinea worm disease can be eliminated.
 - d) Another problem which a Guinea Worm Coordinator may be confronted with is the dilemma between following traditional protocol and setting a good example of not drinking unfiltered water. Ask the participants what they would do if a village chief offered them a drink of unfiltered water. How would they avoid offending the chief?
-

Possible answers

<u>PROBLEMS</u>	<u>SOLUTIONS</u>
Community is very distrustful of outsiders and not willing to cooperate	Convince one family to serve as model family--to follow prevention measures and serve as example of guinea worm-free household the following season; invite person from nearby village who eliminated guinea worm from his/her family; provide incentives if possible, e.g., filters, recognition, certificates
Community has strong traditional beliefs about the cause of guinea worm	Try to combine traditional beliefs with modern explanation, e.g., the god that causes guinea worm is most active during the dry season--that is why you have to be especially careful to avoid unsafe water at that time
Desired behavior considered "too much trouble"--unsafe water easiest to collect, filtration takes too long	Try to help villagers see that changing their behavior is "less trouble" than having guinea worm next year
One or more community members contaminate drinking water, while everyone else makes effort to stay out of it	Help villagers think of ways to make it socially unacceptable for anyone with a worm or ulcer to enter drinking water; urge villagers to filter their drinking water
Method of communication is inappropriate for villagers	Find way to communicate with villagers which is more appropriate--stories, songs, proverbs, demonstrations, etc.; use local names in stories and songs

Proper treatment of
guinea worm cases

Explain that although the most important information to communicate to villagers is the need to protect their drinking water, the health workers should also provide health education about proper treatment of guinea worm ulcers. Case treatment will be covered later in the course.

Health education
talks and materials
[Handout]

Introduce the participants to the health education talks and materials. Explain that they can use the three health talks and accompanying materials to present the health education messages. Refer participants to the handouts for this section. Look at the handout, Health Education Talk Summary. It lists all the health talks and corresponding messages and visual aids.

Participants should try to present the health education talks as they are described in the plans, but certain circumstances may require adaptations. Encourage participants to bring up for discussion any adaptations which they might make based on their own experiences with villagers. Explain that these plans are just examples and that the participants may adapt them as needed.

The health talks could be presented at one time or they could be presented during several village visits. They should, however, be used in order (first A, then B, then C).

HEALTH EDUCATION TALK A 15 min.

Messages 1 and 2

The first two health education messages focus on explaining that guinea worm comes from the water and why it is important that persons with guinea worm ulcers not go into the drinking water. [Point to the first two messages on the flipchart.] Explain to participants that they can use Health Education Talk A to inform villagers about these two messages.

Health Education
Talk A
[Handout]

Go over the Health Education Talk A handout as described below:

- a) Ask participants to spend five minutes reading over the health talk plan.
- b) Answer any questions which participants may have about the plan.
- c) Call attention to the objective and explain that in the three health education talks, the purpose of the objective is to describe what the villagers should be able to do after participating in the health education talk.

During the talk, the Guinea Worm Coordinator should look for indicators that the objective is being achieved. Signs such as head-nodding and facial expressions can indicate the villagers' understanding of the talk. The Guinea Worm Coordinator should also ask questions such as those included at the end of the Life Cycle Flipchart, and get villagers to participate in demonstrations to check their understanding.

After the health education talk, the Guinea Worm Coordinator should look for actions taking place in the village over the following months which indicate achievement of the objective. For example, on a follow-up visit to the village, the guinea worm worker could take note of the number of posters displayed, observe to see what measures villagers have taken to protect the drinking water source(s), and ask to see if community organizations have planned any eradication projects.

Ask participants what other types of indicators they could look for to determine if the objective in Health Education Talk A was achieved.

Life Cycle Flipchart
demonstration

Demonstrate to the participants how they might use the Life Cycle Flipchart to communicate the first two messages to villagers. The purpose of this demonstration is to model how to use this flipchart with villagers. You may want to ask some volunteers to roleplay the part of villagers as you present the flipchart to them. Point out that when using the flipchart, the words are printed on the back of each flipchart page. At the end there are some discussion questions to ask the villagers. Possible answers are included.

In the demonstration, ask the participants to comment on how they think villagers might react to the content. Encourage them to suggest alternative terms or explanations which might be more acceptable to specific village cultures.

For villagers, it will not be necessary to go into great detail about the cyclops ingesting the guinea worm larvae. It will probably be sufficient to communicate that the guinea worm lays "babies" in the water and humans become infected when they drink the "babies."

Present the flipchart as follows: (This is the same script as printed on the back of the flipchart pages.)

1. One hot day Kofi went to get a drink of water from the village water hole. The water had guinea worm babies in it, but he could not see them. The babies went into his body where they will live and grow into adult guinea worms. (Picture shows Kofi drinking water with larvae in drinking vessel)
2. It will take about 12 months for a baby guinea worm to grow into an adult guinea worm. During this long time there is no way for Kofi to know that he has guinea worm. It will live inside his body and slowly move from the stomach to a place where it decides to exit through his skin. (Picture shows progression of time and worm coming out)
3. When the worm is ready to come out, a painful blister appears, which causes a burning feeling. Many people try to relieve the pain by putting the blister in water. (Picture of Kofi in pain, immersing blister in water)
4. When it touches water, the blister breaks, the worm starts to come out, and thousands of tiny guinea worm babies are released into the water. So whenever Kofi goes into the water to gather water, or just to relieve the pain, he is filling the water with guinea worm babies. (Picture of larvae being expelled)

5. Most of the time, a guinea worm comes out from either the legs or the feet. However, a worm may sometimes come out from the hand, arm, chest, head, breast, or other body part. It is possible for one person to have several guinea worms at once coming out of different places. Kofi has a worm coming out of his foot. His wife, Mary, has two worms, one on her leg and one on her arm. (Picture of Kofi with one worm coming out and Mary with several worms coming out of different sites)
 6. When Kofi's neighbor, Aya, comes to drink the water containing the babies, the cycle starts all over again. (Picture of Aya drinking infested water, Kofi expelling larvae into water, and a third person bending down to collect drinking water)
-

Discussion questions

Review the discussion questions listed on the final page of the flipchart. Villagers need not give these exact answers, but rather, use these questions to see if the villagers achieved the objective of explaining that guinea worm comes from the drinking water and the importance of keeping infected people out of the drinking water.

The purpose of question #4 is mainly to stimulate discussion and start the process of helping the villagers to realize that they have the power to prevent the transmission of guinea worm. Point out that in Health Education Talk B, participants will go into detail about the various methods of protecting drinking water sources.

Caution

Communicating the message that guinea worm comes from the water may be so contradictory to local beliefs that the participants may want to de-emphasize it and focus more on activities such as filtering. If a magnifying glass is available, the health worker may want to collect a water sample and show the guinea worm "babies" to the villagers.

HEALTH EDUCATION TALK B 15 min.

Messages 3 & 4

Messages 3 & 4 (point out on the flipchart) stress the importance of drinking only safe water and joining in with fellow community members to protect the existing drinking water sources from contamination. Explain to participants that Health Education Talk B uses cards with illustrations of different drinking water sources as a primary means of informing villagers about these two messages.

Drinking Water
Sources
[Drinking Water
Source Cards]

The Drinking Water Source Cards are used to facilitate discussion among villagers regarding safe and unsafe sources of drinking water in their community and options they have for protecting these sources from further contamination. The cards include illustrations of different kinds of water sources and protection measures. On the back of each card is a description of whether it is safe or unsafe and important considerations. These are the same illustrations used in the Community Assessment section.

The Drinking Water Source Cards are listed below:

Safe Sources

1. tube well with hand pump
2. well with rope and bucket
3. river, stream, or canal
4. rainwater catchment system
5. piped water

Unsafe Sources

6. large pond, lake, or dam
7. small pond or riverbed

Options For Making Water From Unsafe Sources Safe

8. filtering water
9. adding temephos (Abate) to water
10. boiling water

Options For Keeping Infected Persons Out Of Water

11. displaying posters at water source
12. building a resting shelter at the water source
13. building a platform into water source
14. posting local authority to monitor water source
15. educating community members

Health Education
Talk B
[Handout]

Go over the Health Education Talk B handout as described below:

- a) Ask participants to spend five minutes reading over Health Education Talk B.
 - b) Answer any questions which participants may have about the health talk plan.
 - c) Emphasize the importance of preparation for this health education talk, because much of the lesson content will depend on the particular water supply circumstances of each village.
-

Message 5

The last health education message concerns filtering drinking water which comes from unsafe sources. Explain to participants that they can use Health Education Talk C to inform villagers about this message. Before discussing the health talk, discuss the pros and cons of the different types of filtering devices available.

Types of filters

There are two types of filtering cloth which are effective for guinea worm prevention:

Nylon or polyester cloth, also referred to as monofilament, is a fine mesh gauze. It prevents the passage of even the smallest cyclops. It has advantages over other types of cloth in that it is more easily cleaned, is more durable, and has a shorter filtering time. Depending on the availability of the material, the health worker may want to urge villagers to use nylon or polyester filters.

Cotton cloth is the most common type of filtering material. It is much more accessible to villagers and less expensive than nylon or polyester. When using cotton cloth, encourage villagers to use a double layer because two layers will do a better job of filtering. A common type of cotton cloth which is widely available and has been proven effective for filtering cyclops is called gray baft.

Types of filters-- According to local water gathering practices and available materials, there are different types of filter designs and ways to use them which can make filtering easier. Options include:

- making or purchasing filters with elastic around the edge which fit over the mouth of any container
- sewing filter material into the center of a piece of cloth (thus being able to make more filters out of same amount of filter material)
- making frames of pliable bark and nailing the cloth to the rim
- small filtering devices made especially for farmers to carry out in the field

Show examples of these types of filters if possible. Ask if they know of other types of filter designs or filtering methods.

Ask them to share ideas about how they might get the various types of filters into the villages.

Filter maintenance

Regardless of the type of filter, villagers must be taught how to care for the filter so that it will last as long as possible. The filter should be rinsed after each use and placed in the sun to dry.

When rinsing the filter, turn it over and wash off the debris that has collected on it, then place it in the sun to dry. If there is not enough time to completely dry the filter before its next use, turn over the filter and rinse it off from the back-side with some of the filtered water. Of course, care should be taken not to let the rinse water get into the drinking water because it contains cyclops.

When drying the filter, the cloth should not be hung on anything sharp which could puncture holes in it or tear it.

Demonstrate filtering

Demonstrate the filtering process, including backwashing, to the participants. Use the type of filter that will be most commonly available and feasible in the villages served by the participants. Emphasize the importance of filtering through the same side of the filter during each use.

Health Education
Talk C
[Handout]

Go over the Health Education Talk C handout as described below:

- a) Ask participants to spend five minutes reading over the plan.
 - b) Answer any questions which participants may have.
 - c) Emphasize that the activities in this health talk will depend on the type of filter cloth available in each village. Preparation time should be spent tailoring the health talk to the needs of each village by choosing appropriate activities from those listed in the plan.
-

PRACTICE EXERCISE 60 min.

Participant practice

This section concludes with a practice session in which participants either play the role of health educator or villager in demonstrations of each health education talk. Follow this procedure:

- a) Have six stations prepared: two for Health Education Talk A, two for Health Education Talk B, two for Health Education Talk C. (The total number of participants will determine the number of stations needed; this setup is for a total of 36 participants.) At each station have all materials needed for that health education talk available. There should be a facilitator posted at each station to help with the activities there.
- b) Divide participants into groups of six or seven persons.
- c) Each group goes to a station and spends fifteen minutes practicing the health talk. The practice can be conducted in either of the following ways.
 - One participant can present the complete health talk and the others can roleplay the part of villagers. Then participants can discuss good aspects of the presentation and make suggestions for how it could be improved. When the group switches to another station, a different participant should be the presenter.
 - Several participants can demonstrate different parts of the health talk. The performance would then be critiqued as above.
 - The facilitator can demonstrate the health talk. The demonstration could either be flawless or have some negative examples which should be presented differently. The participants would then critique the demonstration.
- d) When time is up, all groups should move to another station to practice a different health education talk. The groups should move twice so that they get practice with all three health talks.

e) The facilitators should observe the participants and offer suggestions as needed. Look for participants who may need extra guidance. Health education talks should include the following:

- cultural sensitivity
- assessment of participant learning
- involvement of villagers
- clear explanations in terms understood by villagers

CONCLUSION 5 min.

Conclude by emphasizing the importance of health education to guinea worm eradication. It is the most important part of the programme. Eradication cannot be achieved if the five health education messages are not understood and accepted by the villagers.

For review, ask for volunteers to recall the five health education messages discussed today.

Health Education Talk Summary

Health Education Talk	Message	Visual Aids Provided
A	<ol style="list-style-type: none"> 1. Guinea worm comes from the drinking water. 2. Persons with guinea worm ulcers or blisters must not go into the drinking water. 	<p>Life Cycle Flipchart</p> <p>Intervention Posters</p>
B	<ol style="list-style-type: none"> 3. Work with your community to protect your water sources from contamination. 4. Drink only water which is safe from guinea worm contamination. 	<p>Drinking Water Source Cards</p>
C	<ol style="list-style-type: none"> 5. If only unsafe water is available, always filter it before drinking. 	<p>Intervention Poster on filtering</p>

Guide to Using the Health Education Visual Aids

Uses of the health education visual aids are not limited to those described below. You will probably find other ways in which they can be used to support your health education activities.

Life Cycle Flipchart

This is a seven-page flipchart to use with villagers in teaching them that guinea worm comes from the drinking water. When using it, hold it upright in front of you so that the villagers can see the pictures. You will be able to see the words to read for each picture.

Intervention Posters

There are five posters which you can give to villagers to post in and around their villages. Distribute the posters which are most reinforcing of the health talk you are giving. You may want to leave all five in a village or just leave those that you think are most appropriate (e.g., the poster showing a bore-hole well may not be effective in a village with no bore-hole well). Be sure to explain the meaning of all posters that you leave with the villagers and encourage them to explain it to others. The five Intervention Posters include:

1. X through someone drinking water directly from a pond. ("X" stands for "do not do this.")
2. X through someone with an emerging worm going into the water. ("X" stands for "do not do this.")
3. A woman getting water from a bore-hole well. (Should be used as an example of a practice that can protect from guinea worm contamination. It is especially effective in villages where a bore-hole well is available, in addition to other unsafe drinking water sources.)
4. A woman filtering water. (Should be used as an example of a practice that can protect from guinea worm contamination.)
5. A man filtering water while farming. (Should be used to encourage men to filter their drinking water when they are away from home.)

Drinking Water Source Cards

This is a set of 15 cards which show various types of drinking water sources. They can be used in your health education talks to show which village drinking water sources are safe and which are unsafe. The cards you use may vary from village to village depending on the water sources found in each village. The cards include:

Safe Sources

1. Tube well with hand pump
2. Well with rope and bucket
3. River, stream, or canal
4. Rainwater catchment system
5. Piped water

Unsafe Sources

6. Large pond, lake, or dam
7. Small pond or riverbed

Options For Making Water From Unsafe Sources Safe

8. Filtering water
9. Adding temephos (Abate) to water
10. Boiling water

Options For Keeping Infected Persons Out Of Water

11. Displaying posters at water source
12. Building a resting shelter at the water source
13. Building a platform into water source
14. Posting local authority to monitor water source
15. Educating community members

Health Education Talk A

MESSAGES

- Guinea worm comes from the drinking water.
- Persons with guinea worm ulcers or blisters must not go into the drinking water.

PREPARATION

From information you gathered for the community assessment, you should have an idea of what the local beliefs about the causes of guinea worm are. If necessary, tailor this presentation to take these beliefs into consideration. You may want to gather a water sample containing guinea worm "babies" to show the villagers. (A magnifying glass may help.)

Substitute local names into the flipchart story if the existing names are unfamiliar to the villagers.

Objective: At the end of this lesson, villagers should be able to explain that guinea worm comes from the drinking water and why it is important that persons with guinea worm ulcers not go into the drinking water.

Time: 15 minutes

Materials: Life Cycle Flipchart

Four Intervention Posters

1. X through someone drinking water from a pond
 2. X through someone with emerging worm going into water
 3. someone getting water from bore-hole well
 4. a woman filtering water
 5. a man filtering water while farming
- (should have at least one copy of each to distribute--will depend on how many you have available and number and type of contaminated drinking water sources in village)

PROCEDURE

1. Introduce yourself.
2. Explain that you would like to talk about how people get guinea worm.
3. Present the Life Cycle Flipchart. Directions for what to say are on the back of each flipchart page.
4. Ask the review questions printed on the back of the flipchart. Assess whether villagers understood the messages. If necessary, review information which was misunderstood.
5. Explain the Intervention Posters and discuss how they could be used in the village. Ask for volunteers to display them throughout the village.
6. Summarize the important points of the lesson. Emphasize the two messages.

Health Education Talk B

MESSAGES

- Work with your community to protect your water sources from contamination.
- Drink only water which is safe from guinea worm contamination.

PREPARATION

From information you gathered for the Community Assessment you should know the type, location, and safety of the drinking water sources used in this village. You should also have a good idea of which methods of protection might be possible in this community.

Go through the Drinking Water Source Cards, select those showing drinking water sources and possible protection measures applicable to this community. You may also want to include drinking water sources found in surrounding areas which the villagers might have access to.

Remember that you should include boiling and temephos treatment only if they are practical for this community.

In this lesson you will briefly discuss the importance of taking community action to protect water sources against guinea worm contamination. You may want to review your course materials on Promoting Community Action before giving this lesson.

Objective: At the end of this lesson, villagers should be able to identify local drinking water sources which are safe from guinea worm and, if applicable, be able to describe ways to protect them.

Time: 15 minutes

Materials: Water Source Cards

PROCEDURE

1. Introduce yourself and explain that you would like to find out about local drinking water sources.
2. Ask villagers to name all the places where they collect drinking water. As each is mentioned, display the corresponding card (e.g., lay it on the ground or lean it against a wall).
3. Identify each unsafe source using one of the following methods:
 - draw guinea worm "babies" on the cards with a wipe-off marker
 - mark with a piece of tape
 - sprinkle grains of sand or dirt (representing guinea worm "babies") on them
 - group all unsafe sources together into one group
4. Explain why each source is safe or unsafe. Refer to the back of the card for a description. Explain that the unsafe sources are unsafe for drinking only; they may be safe for bathing and watering crops and animals.

Health Education Talk B, continued

5. Lead a discussion according to the situation described below.

If the village has only safe drinking water sources, discuss item A below. Remark on how lucky the village is in comparison to many villages.

If the village has only unsafe drinking water sources, discuss item B below.

If the village has both safe and unsafe drinking water sources, discuss items A, B, and C below.

- A. Discuss the importance of properly maintaining the safe drinking water sources. Ask what the villagers would do if any of the safe sources dried up or broke down. If there is no one qualified to repair wells, pumps, etc., you may want to suggest that they arrange for a local person to take on this responsibility.

Remind them to avoid unsafe sources when traveling to other locations and to protect their own water sources from infected visitors.

- B. Use the cards as described below to discuss ways individuals and families can clean the water which comes from unsafe drinking water sources. [Answers will depend on what is viable for this community.] Discuss what to do if any of the water sources are shared by other villages.

Display pictures of all the protection measures that this community could possibly undertake. Ask the following questions:

- o What do these pictures show?
- o Would any of these protection measures be useful in your village?
- o How might you get a for your village?

Lead villagers to the conclusion that these are all actions which they must join together in order to accomplish. They cannot achieve them as individuals or families. Discuss ways they, as a community, could organize their efforts (and join in with neighboring villages, if needed) to achieve these goals.

- C. Discuss the importance of drinking water only from safe drinking water sources.
6. For review, pick up the cards and remove identifying marks from them. Shuffle them up and display them again. (You may want to add some additional cards.) Ask a volunteer to come up and identify all the water sources which he/she would drink or gather from for his/her family. If he/she chooses any of the unsafe sources, he/she should mention that it should be filtered, boiled, or have been treated with temephos. Repeat this several more times or as long as there is interest or time. Assess whether villagers comprehended the message. If necessary, review information which was misunderstood.
7. Summarize the important points of the lesson. Emphasize the messages.

Lesson Plan C

MESSAGES

- If only unsafe water is available, always filter it before drinking.

PREPARATION

The activities in this lesson will depend on the type of filtering cloth available to this community.

Keep the village training session limited to a small group so that everyone can see and practice the filtering demonstration.

Objective: At the end of this lesson, villagers should be able to correctly filter drinking water which comes from unsafe sources.

Time: 15 minutes

Materials: filters appropriate for this community
containers of guinea worm contaminated water
an empty container to filter water into
copies of Intervention Poster on filtering
two clear glass or plastic containers
magnifying glass, if available

PROCEDURE

1. Introduce yourself and explain that you would like to show how to filter drinking water so that it will be safe from guinea worm.
2. Discuss how filtering removes the guinea worm "babies" from contaminated water. Remind villagers which local water sources may be contaminated and stress the importance of filtering all drinking water which comes from these sources.
3. Demonstrate pouring a vessel of contaminated water through a filter cloth into another vessel.
4. After demonstrating how to pour the water through the filter, show the "babies" on the filter cloth to the villagers.
5. Compare the filtered water to the unfiltered water by putting each into a clear glass container, holding it up into the light, and observing with a magnifying glass. (If a magnifying glass is unavailable, villagers can still see some difference with the naked eye.)

Health Education Talk C, continued

6. If nylon or polyester filters are a viable option, explain that they are preferable because they last longer and can filter faster.
 7. Show the Intervention Poster on filtering and ask villagers for suggestions of places to display it. Ask for volunteers to take responsibility for putting up the posters around the community.
 8. Assess whether villagers understood message. If necessary, review information which was misunderstood.
 9. Summarize the important points of the lesson. Emphasize the message.
-

VECTOR CONTROL

SUMMARY

In this section the facilitator gives an overview of vector control, explaining how it can be used to break the transmission cycle of guinea worm. Handouts containing guidelines for vector control are discussed. Major topics include deciding when to recommend temephos as an intervention and preparing a village for the use of temephos (AbateTM). Checklists and report forms which may be useful in the participants' vector control activities are discussed.

NOTE: This course does not teach participants how to measure water volume and calculate the required amount of temephos. If this is one of the duties of the participants you are training, refer to the document included in the reference section titled Guidelines for Vector Control in Guinea Worm Disease Eradication Programs. It provides details on how to measure and apply temephos. If possible, you should schedule a special session sometime during the week of the course to demonstrate and provide practice opportunities for measuring bodies of water, calculating the appropriate amounts of temephos, and applying the chemical to the water.

OBJECTIVES

At the end of this section, participants should be able to do the following:

1. Describe the major characteristics of temephos.
2. Describe situations most suitable for using temephos for vector control.
3. List the main points which should be discussed with village leaders when trying to gain their support for temephos application.
4. Describe safety precautions which should be taken when mixing, applying, storing, and/or transporting temephos.
5. List the details which should be recorded for every temephos application.

MATERIALS NEEDED

Handouts: Characteristics of Temephos
Using Temephos Appropriately
Preparing the Village for Temephos
Applying Temephos
Temephos Application Record
Safety Guidelines for Temephos

Optional--Demonstration samples: Small amount of temephos (approximately 56 ml. of 50% emulsifiable concentrate) to demonstrate amount required for average size pond; several litres of water in clear container in which to add a drop of temephos; microscope and sample of water containing live cyclops

SCHEDULE

Total Time: 1 hour 30 minutes

Introduction	15 minutes
About Temephos	15 minutes
Temephos Application	60 minutes

BACKGROUND READING FOR TRAINERS

Guinea Worm Task Force, Parasitic Diseases Branch, Division of Parasitic Diseases, Center for Infectious Diseases, Centers for Disease Control, Atlanta, Georgia, 1988. Guidelines for Vector Control in Guinea Worm Disease Eradication Programs, Draft.

INTRODUCTION 15 min.

Session objectives Present the objectives for this session. Explain that achievement of these objectives is crucial if vector control is going to be used as an intervention. Urge the participants to speak up in class if anything is not clear and to ask for help if needed.

Explanation of vector control

In the life cycle of guinea worm, persons with guinea worm ulcers who enter the drinking water sources release larvae into the water. The larvae are then ingested by small water fleas called copepods (or cyclops). Inside cyclops, the larvae undergo development for about 14 days and become infective to humans. The larvae are transmitted to humans when they drink water containing these infected cyclops. Sixty to ninety days after being swallowed by humans, the larvae mate; the male larvae stop growing and may die; and after 10 to 12 months, the females grow into adult guinea worms, which are then ready to exit from the human's body.

Vector control involves breaking this guinea worm life cycle by killing cyclops in the drinking water sources, thereby preventing the transmission of the disease. The cyclops can be killed by adding tiny amounts of a chemical called temephos to the drinking water sources. Temephos is also known by the brand name, Abate™.

ABOUT TEMEPHOS 15 min.

Explanation of the safety of temephos

Temephos has been thoroughly studied by scientists and has proven to be extremely safe for use in drinking water when applied correctly. It has been used to control guinea worm and river blindness in many countries without adverse effects. It is endorsed by the World Health Organization as a safe means of vector control.

It only takes a small amount (1 mg. per litre or 1 part per million) of temephos to kill cyclops; when applied in this amount it will not harm humans, domestic animals, or fish. The most readily available and cost-effective form of temephos for cyclops control is the liquid form, 50% emulsifiable concentrate (EC).

Characteristics of temephos
[Handout]

Refer to the handout titled Characteristics of Temephos. Briefly go over each point listed.

Demonstration of
samples
[optional activity--
depending on avail-
ability of samples]

Prepare a sample of temephos to show participants what it looks like and the small amount required for treatment of water. Preferably, you should have the amount required for an average size pond. For example, a 7 X 4 X 1 meter pond will require 56 milliliters of temephos.

Another way to help the participants to visualize the small amount of temephos required is to explain that .05 milliliters (approximately 1 drop) is the amount required for 25 liters of water.

To demonstrate the cloudiness and odor which temporarily occur, place a tiny drop of temephos into a couple of litres of water and observe; call attention to it again at the end of the section to see if the cloudiness and odor have subsided.

Another experience from which the participants can benefit is to examine a water sample containing live cyclops under a microscope. This can be done by setting up the microscope and letting participants take turns observing the cyclops during the break.

How temephos is used

Temephos is applied to water sources which are identified as guinea worm transmission sites. It is added according to the amount of water the source contains; therefore, the volume of water should be measured first. The application is easy: the chemical is mixed in a bucket with some water and sprayed or poured uniformly over the surface of the water. It will start to kill the cyclops immediately.

It is not always appropriate to use temephos, but when it is used, it should only be as a supplement to other interventions. For example, if a well is scheduled to be built in a guinea worm infected village, temephos may be used, along with health education, to help prevent transmission until the well is built. It may be used as a quick response to an outbreak until a more complete community assessment of intervention needs can be undertaken. Vector control is always accompanied by activities which promote individual and community action; it will be ineffective without these basic components of the programme.

It is not appropriate to use vector control in every affected village. For example, if a village's source of drinking water is a large pond or lake, it may be too expensive to treat that much water. The suggested maximum size of water body to be treated is 500 cubic meters. Treating larger bodies of water will not be cost effective.

Importance of
correct application

The correct calculation of the volume of the water source and the amount of temephos to be added is of highest priority since any miscalculation may cause serious problems. If too much temephos is added, it can harm or kill other animals who live in or drink the water; if too little is added, it will not kill the guinea worm vectors and the programme will have wasted the time and resources employed in the application.

TEMEPHOS APPLICATION 60 min.

Identifying when
temephos is needed
[Handout]

Explain to participants that since they may be the first health workers to respond to guinea worm outbreaks and are often the only health workers to see the drinking water sources in many villages, it is important for them to know what situations are most appropriate for recommending vector control and what situations are inappropriate.

Discuss each of the guidelines listed on the handout, Using Temephos Appropriately. Participants can use these guidelines to help them decide when it would be appropriate to recommend that temephos be used. Temephos application will usually be managed from the regional level. Emphasize the fact that vector control is not a solution in itself to guinea worm disease, but is a supplemental control measure. It should be used only under certain circumstances.

Preparing the village
[Handout]

If temephos is to be used as part of the solution for a village's guinea worm problem, all contaminated drinking water sources must be identified and then action should be taken to get support from the villagers. If vector control is to be successful, the community must willingly cooperate. Health workers must first obtain permission from the village leader(s) to apply the temephos. If it is not accepted and sanctioned by the leader(s), there will be trouble in gaining the cooperation of the village as a whole.

Refer to the handout, Preparing the Village for Temephos. Allow several minutes for the participants to read over this page. Ask if there are any questions or comments.

[Optional roleplay]

If vector control will be frequently used in the geographic areas represented by the participants at this training session, you may want to spend some time roleplaying how the village leader might be oriented to vector control. Ask for several volunteers to roleplay a conversation between the chief and health worker using the outline on page 3 of the handout.

Steps for applying
temephos
[Handout]

Refer to the handout, Applying Temephos. Explain that this is a checklist listing all the steps for proper application of temephos. The person most likely to perform each step is indicated. If this does not apply for the areas you are training, make corrections. As you discuss each step, present the guidelines listed below:

1. Obtain permission from the village leader(s). [GWC]

Guidelines for this first step were covered in the previous discussion on preparing the community.

2. Determine appropriate times to apply temephos. [GWC]

If the use of temephos is for the purpose of immediate control in response to an outbreak or while waiting for a well to be built, treatment should begin as soon as possible.

If temephos is to be part of the regular ongoing intervention for a village, it should be scheduled in advance according to the peak guinea worm season in that village or area.

The timing will vary for different villages, but the following general guidelines will apply to most:

- The first application should be made approximately one to two months prior to the expected first case of guinea worm (unless transmission occurs year round).
- Follow-up applications should continue at fixed intervals of every four to six weeks for as long as active cases remain in the village, even if there is no evidence of the presence of cyclops. Usually four to six applications are necessary per year, though year-round application may be needed in some areas.

3. Prior to the first application of temephos, inform the villagers about the reasons for its use and gain their acceptance. (Continue to emphasize personal protection measures.) [GWC]

Much of this can be done by the village leader(s). You should also include it as part of your health education activities. Emphasize the same points that you discussed with the village leader(s).

4. Inform villagers of the time scheduled for application and encourage them to gather water before this time or at least several hours afterwards. (Remind them to filter or boil this untreated water before drinking.) [GWC]

The time it takes for the odor and color of the chemical to dissipate varies considerably depending on the setting; therefore, it is impossible to recommend a standard waiting period. Late evening may be the best time for application.

5. Accurately calculate the water volume of the targeted drinking water source. [VCW]

This is the most important step. It is crucial that this step be performed accurately. If there is a miscalculation, the temephos mixture may be too strong causing wastage and problems with odor and taste, and drinking too much temephos may cause people and animals to become ill. If the temephos mixture is too weak, it will be ineffective against guinea worm.

NOTE TO THE TRAINER: Since this is such a crucial step, it requires extensive hands-on training. Therefore, teaching methods of measuring and calculating water volume will not be included in this course. If it is appropriate and can be scheduled during the week of this course, you may plan a special exercise on calculating water volume and dosage of temephos by referring to the Guidelines for Vector Control in Guinea Worm Disease Eradication Programs included in the reference section of this Facilitator's Guide.

6. Determine the correct amount of temephos to be applied. [VCW]

Once the water volume is known, a chart listing amounts of temephos for specific water volumes is consulted. The chart will indicate the amount of temephos to be added to that volume of water.

7. Prepare the temephos mixture and disperse into the body of water. [VCW]
8. Wash containers used for preparing and dispersing mixture. [VCW]
9. Properly store unused portion of temephos. [GWC or VCW]
10. Record date, location, water volume, and amount of temephos applied on appropriate form and report to supervisor. [GWC or VCW]

Go over the Temephos Application Record handout, pointing out all information asked for. Explain that this is an optional form which the participants can use for their own records. The national or regional office managing the vector control component of the eradication programme may have their own forms required for record keeping.

Safety precautions
[Handout]

Ask participants to read over the Safety Guidelines for Temephos handout. Discuss each guideline and answer any questions participants may have. If the participants at this training course will be required to handle temephos, emphasize the importance of following these safety precautions.

Conclusion

Emphasize that vector control is being used as a secondary prevention measure and will not be appropriate in all situations.

Characteristics of Temephos

- It usually remains effective in the water for four to six weeks, if applied correctly.
- Unmixed temephos will keep approximately two years if stored properly.
- Four to six applications per year are adequate for most areas if transmission is seasonal and the chemical is used starting just before the season begins. Where transmission occurs year-round, more applications will be necessary.
- The timing of the first application should be one to two months before the expected appearance of guinea worm in the community.
- The recommended concentration of temephos for guinea worm control is 1 milligram per liter of water, or 1 part per million. [.05 milliliters per 25 liters of water]
- At recommended concentrations temephos has an unpleasant odor and causes the water to appear milky for several hours after application.
- Measuring the volume of the contaminated source accurately and calculating the correct amount of temephos can be difficult. It is extremely important that this be done accurately.
- Once accurate calculations have been determined, it is easy to apply.
- Whoever administers the chemical must be competent in measuring, mixing, and applying the exact amount required.

Using Temephos Appropriately

It is appropriate to recommend the use of temephos only when a village is affected by guinea worm and one or more of the following conditions exist:

- Provision of alternative safe drinking water sources is not feasible.
- Previous attempts to change villagers' behavior have consistently failed.
- The water source is frequently used, the probability of villagers coming into contact with the water is high, and no other intervention is immediately available.
- There is a large outbreak, but the village must wait for provision of safe drinking water source(s).
- The body of water is small to moderate in size. (Treating volumes of water greater than 500 cubic meters is considered not to be cost effective.)
- The local guinea worm transmission cycle is known and the application can be timed appropriately.
- The area has many migrants passing through, some of whom might contaminate the water.
- The area has very little transmission remaining and rapid elimination is desired (most likely in the final stages of the eradication programme).
- There is lack of control over who uses the drinking water source, e.g., several villages, including some infected people, share the same water source.
- Political pressure demands vector control.

Preparing the Village for Temephos

It is important to get the support of the village leader(s) before applying temephos. Follow this outline in talking to the leaders.

- I. Explain that you wish to add a substance called temephos to (specify targeted drinking water sources). It will kill the guinea worm babies in the water which grow into the adult guinea worms that cause the villagers so much pain and disability. This substance can help to rid the village of guinea worm disease; however, villagers will still need to avoid contaminating the water source.
- II. Explain that a very small amount of the substance will be used and assure the leaders that the treated water will not harm any villagers or their livestock. Except for the guinea worm babies, it will not harm any animals living in the water. If possible, show the leaders how small the required amount of temephos is by showing him an amount of water in a bucket approximate to the amount of temephos to be added.
- III. Warn that the water may look and smell differently for a couple of hours after the treatment; however, it is still safe to drink and will quickly return to normal. Get the leaders to help you decide what time of day would be best for the application; for example, if water fetching is heaviest during the morning, then treatment can be made late in the day. If possible, plan the application so that the odor and color of the chemical have time to disappear before most people fetch the water.
- IV. Remind the leaders of how long it takes for a guinea worm baby to grow into an adult after a person drinks it, and that because of this long growth period, the effects of this application of temephos will not be seen until next season. (You probably have already introduced the idea of the long period of guinea worm development in your initial visits with the village leaders.)
- V. Emphasize the need to continue to keep persons infected with guinea worm out of the water. In addition, the leaders must stress to the villagers that they should drink only water that has been treated with temephos, filtered, boiled, or taken from a safe well.
- VI. Request the leaders' assistance in teaching the rest of the community members about temephos and gaining their acceptance and support.

Applying Temephos

Use this checklist to help keep track of all of the steps required in applying temephos.

Letters in brackets indicate who should perform each step.

GWC -- Guinea Worm Coordinator

VCW -- Vector Control Worker (qualified person designated by national or regional office--in some areas may be the GWC)

- _____ 1. Obtain permission from the village leader(s). [GWC or VCW]

- _____ 2. Determine appropriate times to apply temephos. [GWC or VCW]

- _____ 3. Prior to the first application of temephos, inform the villagers about the reasons for its use and gain their acceptance. (Continue to emphasize personal protection measures.) [GWC or VCW]

- _____ 4. Inform villagers of the time scheduled for application and encourage them to gather water before this time or at least several hours afterwards. (Remind them to filter or boil this untreated water before drinking.) [GWC or VCW]

- _____ 5. Accurately calculate the water volume of the targeted drinking water source. [VCW]

- _____ 6. Determine the correct amount of temephos to be applied. [VCW]

- _____ 7. Prepare the temephos mixture and disperse into the body of water. [VCW]

- _____ 8. Wash containers used for preparing and dispersing mixture. [VCW]

- _____ 9. Properly store unused portion of temephos. [GWC or VCW]

- _____ 10. Record the date, location, water volume, and amount of temephos applied on appropriate form and report to supervisor. [GWC or VCW]

Temephos (Abate) Application Record

District _____ Village _____ Water Source ID # _____

Date of Initial Visit _____ Date of suspected first case of guinea worm _____ Type of Water Source _____

Permission of leader(s) granted? yes no Villagers prepared? yes no Name of person applying temephos _____

Date of application	Length	Width	Depth	Water volume (cubic meters)	Amount temephos used (mls)	Remarks

Safety Guidelines for Temephos

When mixing and applying temephos:

- Keep away from food.
- Keep out of the reach of children.
- Avoid splashing on skin or in eyes.
- Mark all containers and utensils used so that they will not be used for any other purpose.

After applying temephos:

- Thoroughly wash hands and any other body part that came into contact with the temephos.
- Change clothing if any temephos splashed on it.
- Do not reuse empty cans which contained temephos. Wash cans with five percent caustic potash (or other disinfectant), break them up so that they are unusable, and bury them in the ground.
- Wash equipment and facilities with soap.
- Properly label all containers of temephos.

When storing temephos:

- Keep chemical out of the reach of children.
- Keep away from food.
- Always use the temephos with the closest expiration date.
- Storage building should be
 - dry
 - secured by a lock and/or a watchman
 - weatherproof
 - cool and well ventilated (to avoid degradation due to excessive heat).

When transporting temephos:

- Check for leaks in the container.
- Keep away from food and clothing.

For treating emergencies:

- In case of contact to eyes, immediately flush eyes with plenty of water for at least 15 minutes. Seek medical attention. In case of contact to skin, flush skin with water.
- If swallowed, do not induce vomiting. Contact a physician immediately.

CASE TREATMENT

SUMMARY

This section begins with a brief introduction followed by a discussion of the types of guinea worm cases the participants may have observed or treated. A guinea worm classification and treatment matrix is discussed which classifies cases as pre-emergent, emergent, or complicated. The recommended treatment response for each type of case is discussed. (The Course Director may wish to modify or replace this classification and treatment matrix with a different one.) This is followed by a discussion of the importance of communicating patient education messages and keeping case treatment records. The section concludes with an exercise in which participants practice classifying cases.

OBJECTIVES

At the end of this section, participants should be able to do the following:

1. Distinguish whether a guinea worm case is pre-emergent, emergent, or complicated.
2. Describe the appropriate treatment response for emergent, pre-emergent, and complicated guinea worm cases.
3. State key patient education messages which should be communicated to patients with guinea worm disease.

MATERIALS NEEDED

Flipcharts and Felt Tip Markers for use in discussions and exercise.

Case Photographs includes six photographs of guinea worm cases for use in the practice exercise. If the exercise is not needed, the photographs can be used to illustrate the classification and treatment matrix. Consult with the Course Director about this.

Handout: Guinea Worm Classification and Treatment Matrix
Patient Education Messages
Guinea Worm Treatment Record

SCHEDULE

Total Time: 1 hour 30 minutes

Introduction	20 minutes
Case Classification and Treatment Response	25 minutes
Practice Exercise	45 minutes

Introduction

The purpose of this section is to introduce the Guinea Worm Coordinators to the recommended treatment responses for guinea worm disease. It will teach them to determine whether a case is pre-emergent, emergent, or complicated and what their treatment response should be for each type of case. The information from this section will help the participants reduce the pain and suffering associated with guinea worm.

Although case treatment plays a minor role in guinea worm eradication, it is part of this course partly for humanitarian reasons. It can be used to advance eradication by providing opportunities to teach villagers how to prevent guinea worm infection and by encouraging the reporting of cases. The main emphasis of an eradication program must be on prevention, not treatment of this disease.

Note to Facilitator: The Guinea Worm Classification and Treatment Matrix included in the handouts for this section presents a suggested approach. The eradication programme represented by the participants may be using a different case classification and treatment regimen. Consult with the Course Director on whether to use the Guinea Worm Classification and Treatment Matrix provided with the course materials, or whether to modify it or replace it with one developed solely for the eradication programme represented by the participants. If changes are made, the content of this section of the course will have to be changed accordingly.

Section objectives

Review the objectives for this section. Explain that this is what participants will learn in this section.

The treatment responses considered in this section are situation-specific; in certain situations a different response may be more appropriate than that which is recommended. Responses will vary depending on factors such as the patient's overall health, the cultural beliefs of the patient, the location of the village in relation to medical facilities, etc. Case treatment involves many judgments. Urge the participants to please ask questions when they are not sure of a recommendation.

Case treatment roles
[Prepared flipchart]

There is no known cure for persons infected with guinea worm. There are no drugs which can rid the patient of the developing larvae or destroy the mature worm. The Guinea Worm Coordinator can, however, help to reduce the negative consequences of guinea worm infection. Appropriate treatment responses from the Guinea Worm Coordinator can help do the following:

- Alleviate the patient's pain and suffering
- Prevent serious complications
- Return the patient to normal life and work as early as possible
- Inform the patient about ways to prevent guinea worm
- Diagnose and report cases of guinea worm

Write these roles on a flipchart page and review them with the participants.

Discussion
[Flipchart]

Stimulate discussion among the participants about the guinea worm cases they have seen and/or treated by asking the following questions. List answers on a flipchart page.

1. What methods do you know of that are used to treat guinea worm?
2. How do you know someone has guinea worm?
3. Sometimes guinea worm wounds get secondary infections and other complications. What kinds of complications have you seen in your experiences in the villages?

In the discussion of these questions call attention to local practices which are especially harmful. They are discussed below:

- Participants should discourage villagers from covering the wound with cow dung or remedies made from roots. This practice can cause serious complications, including tetanus..
 - If winding of the worm is practiced, the villagers should be encouraged to do it gently, because breaking the worm can cause serious complications.
-

CASE CLASSIFICATION AND TREATMENT RESPONSE 20 min.

Case classification
and treatment matrix
[Handout]

Ask participants to look at the Guinea Worm
Classification and Treatment Matrix handout.

Go over the stages of guinea worm cases and the recommended treatment response for each stage.

Appropriate treatment responses can prevent wounds from becoming complicated, or if the wound is already complicated, it can lessen the duration or the severity of the patient's disability. Unfortunately, these responses cannot guarantee that no further complications will arise, because there are many factors that cause complications.

Factors that
affect referral

When complications do arise, patients should be referred to a medical facility. They have developed infections which need to be treated by medical personnel. Unfortunately, this is not possible in many villages. Many factors can affect whether a patient should be referred or not and it is not always a clear-cut decision. The participants will have to use personal judgment in each situation to determine if referral is appropriate or not.

Following are some of the considerations that can affect the decision of whether to refer a patient to a medical facility.

- Are the medical facilities close to the village?
- Do the medical facilities have supplies to treat the number of cases referred?
- Are there more than three guinea worms emerging from the same patient?
- Is a breast, genital region, or joint affected?
- Does the person appear generally sick?

Positive (yes) answers to the above questions indicate that referral may be appropriate. Ask the participants what other considerations they can think of.

If the eradication programme has recommendations for what to do for a complicated case who cannot or will not seek appropriate medical treatment, discuss those recommendation now.

Patient education
[Handout]

Ask participants to look at the Patient Education Messages handout. Emphasize the importance of taking the opportunity when treating cases to communicate these important messages to the villagers.

Reporting of cases

Remind participants that all cases of guinea worm should be promptly reported.

Keeping records
[Handout]

Refer to the Guinea Worm Treatment Record handout. Participants can use this form to keep records on the cases they treat. Emphasize the importance of keeping accurate and detailed records. Explain the following items on the form:

Number-- Enumerate patients as they are treated.

Sex-- Sex of the patient.

Age-- Age of the patient. (Estimate, if necessary.)

Onset-- Date when the worm first emerged from the wound.

Duration-- Length of time since the worm emerged.

Site-- Location on the patient's body where the guinea worm wound is located. Be as specific as possible, e.g., "right side of the left thigh."

Number of worms-- Number of guinea worm wounds or worms seen emerging at time of treatment.

Stage-- Pre-emergent, emergent, or complicated.

Remarks-- Indicate patients which had complications and were referred and/or need follow-up treatment. Note unusual occurrences and observations.

PRACTICE EXERCISE 45 min.

Practice exercise
[Case Photographs]

This exercise provides practice in classifying guinea worm cases and appropriate treatment responses. Below is a list of the Case Photographs which will be used in the exercise and descriptions of each:

#1 Pre-emergent This worm can be seen under the skin, but has not yet emerged.

#2 Pre-emergent This foot has a blister caused by a guinea worm ready to emerge.

#3 Emergent This is a clean wound with no obvious complications. The worm has been wound on a matchstick.

#4 Emergent This clearly shows the ulcer and the emerging worm. There are no obvious complications.

#5 Complicated This knee joint is noticeably swollen and appears to be stiff. The patient should be observed or questioned regarding his or her ability to perform daily routine tasks.

#6 Complicated This foot shows several signs of complications, such as pus and a stiff-looking ankle. The patient should be observed or questioned regarding his or her ability to perform daily routine tasks.

- a) Divide the participants into six groups and give each group a Case Photograph. Each group should have a facilitator to act as a discussion leader, a spokesperson to present the group's conclusions back to the plenary session, and a recorder to summarize the group's conclusions on a flipchart.
- b) Allow 15 minutes for Step b. Each group should discuss the Case Photograph and decide on the stage and appropriate treatment response.
- c) Group Presentations-- 30 minutes Small groups return to the plenary session where each spokesperson has 5 minutes to report on his or her group's conclusions. This time includes discussion and comments by the rest of the participants.

Note to facilitator: If the participants do not need this practice (either because case treatment is not one of their responsibilities or they are already skilled in this area) you may want to delete this exercise and use the photographs, instead, as illustrations for your discussion of the case classification and treatment matrix. Consult with the Course Director on whether this practice is needed.

Guinea Worm Classification and Treatment Matrix

STAGE	SIGNS AND SYMPTOMS	TREATMENT RESPONSE
<u>Pre-emergent</u>	<ul style="list-style-type: none"> ● Blister ● Localized itchiness or burning ● Mild swelling ● Mild pain ● Worm visible under skin 	<ul style="list-style-type: none"> ● Patient Education Messages (refer to handout)
<u>Emergent</u>	<ul style="list-style-type: none"> ● Ruptured blister ● One to three worms emerging ● No or localized secondary infection ● Moderate pain ● Limited or no incapacitation (e.g., patient still able to perform daily routine tasks like bathing or toileting, not bed-ridden) 	<ul style="list-style-type: none"> ● Patient Education Messages ● Analgesics (e.g., aspirin) and/or antibiotics-- if necessary and available
<u>Complicated</u>	<ul style="list-style-type: none"> ● Severe secondary infection (e.g., cellulitis, discoloration, extensive swelling, pus) ● Involvement of joint (e.g., knee, elbow) ● Severe incapacitation (e.g., patient unable to perform daily routine tasks, bed-ridden) ● Location of worm in breast or genital region ● Cow dung or root remedies on wound ● More than three worms emerging 	<ul style="list-style-type: none"> ● Patient Education Messages ● Analgesics (e.g., aspirin), antibiotics, tetanus toxoid-- if available ● Refer to clinic or physician for appropriate treatment

Patient Education Messages

When you are treating guinea worm cases, be sure to explain the following important messages to the patients:

- When you have guinea worm, do not go into the drinking water sources.
- Keep your wound clean and dry.
- If you begin now to always filter your water, you will not have guinea worm next year.
- Do not cover your guinea worm wound with any kind of animal dung.
- If you get a high fever or your wound becomes very swollen, see a doctor or nurse as soon as possible. If you are unable to go, send someone in your family to bring the medical help to you.

Guinea Worm Treatment Record

Region _____

District _____

Date _____

Village _____

NUMBER	NAME	SEX	AGE	STAGE	NUMBER OF WORMS	SITE	ONSET	DURATION	REMARKS

COURSE CLOSING

SUMMARY

The course closing is scheduled for the morning of the last day of the course. It includes reports given by the participants summarizing their filed trip experiences. A brief summary of the course is given and participants are allowed to ask questions about any course-related material. The Posttests and Course Evaluations are completed, followed by the closing ceremony.

MATERIALS NEEDED

Handouts: Posttest
Course Evaluation
Course Certificates

SCHEDULE

Total Time: 3 hours 15 minutes

Field Trip Reports	90 minutes
Summary	30 minutes
BREAK	15 minutes
Posttest and Course Evaluation	60 minutes
Closing Ceremony	time will depend on local arrangements

FIELD TRIP REPORTS 90 min.

Each field trip group should present a brief summary of their field trips. Ask the participants to discuss the following topics in their presentations:

- Case search findings
- Meetings with community committees
- Health education talks
- Implementation plan
- Cases seen and/or treated
- Problems
- Successes
- Lessons learned

Allow the participants 30 minutes to prepare their presentations. Allow 60 minutes for all of the group reports.

SUMMARY 30 min.

During this time any topics which the facilitators feel need more emphasis can be reviewed. Also, allow the participants to ask questions about topics which they do not understand or want more information about. Proceed as an open discussion and close with a brief summary of the course.

POSTTEST AND COURSE EVALUATION 60 min.

Posttest
[Handout]

The purpose of the posttest is to find out how much the participants have learned. Distribute the Posttest and ask the participants to fill it out. Explain that it is the same test as the pretest (if it was used) and should be answered in the same manner. Explain the directions for completing the test. If the pretest was not used, go over the practice questions. They are explained on page CI-3 and 4 from the Course Introduction section.

Course Evaluation

Before participants start answering the Posttest, distribute the Course Evaluation forms and answer any questions about the instructions on the forms. Explain that the facilitators and the Course Director would like to know the participants' feelings and observations about the workshop. The information gained can be used both to improve future offerings of the course and to help the facilitators improve their performance in future courses. The Course Evaluation should be done anonymously to ensure more open feedback. Allow 60 minutes for completion of the Posttest and Course Evaluation.

Closing

If this is the last opportunity to speak to the participants, thank them for their participation and hard work during the course. Remind them of their importance to the guinea worm eradication programme.

BREAK 15 min.

CLOSING CEREMONY

[Handout]

Conduct whatever ceremony is locally appropriate. Distribute Course Certificates at the closing ceremony. The length of the closing ceremony will depend on the activities planned by the Course Director.

TRAINING COURSE FOR GUINEA WORM COORDINATORS
POSTTEST

Name _____

Current Job _____ Years in Current Job _____

Town/Village _____ District _____

Region _____

PRACTICE QUESTIONS

A. Causes of guinea worm include...

- allowing people with guinea worm ulcers to enter the drinking water.
- drinking water with guinea worm larvae in it.
- someone with an emerging guinea worm bathing in the drinking water source.
- drinking filtered water.

B. Important guinea worm prevention method(s) include...

- winding guinea worms on sticks.
- filtering water before drinking it.
- not wading in guinea worm contaminated ponds.
- keeping people infected with guinea worm out of the drinking water.

C. True or False The main purpose of surveillance is to find out which villages have guinea worm and how many cases there are in each village.

PART I

For questions 1 through 32, tick the answer or answers that are most appropriate. Some questions may have more than one appropriate answer.

1. Someone may become infected with guinea worm by...

- walking barefoot on a farm.
- wading in contaminated pond water.
- eating fruit that has fallen on the ground.
- drinking unfiltered water from a guinea worm contaminated pond.

2. Effective and affordable methods for preventing guinea worm disease include...

- filtering drinking water through cloth.
- keeping infected persons out of the drinking water.
- adding alum to water.
- defecating in a latrine.

3. A community assessment can help you find out more information about...

- who the community leaders and groups are.
- community beliefs and practices.
- community water supply.
- local resources.

4. Case searches...

- involve visiting villages in order to detect all cases of guinea worm.
- may be used to collect initial information for use in planning intervention activities.
- miss counting most of the guinea worm cases.
- require accuracy and validation.

5. The existing communicable disease reporting system which counts the number of cases seen in dispensaries, health posts, and hospitals...

- misses counting most of the guinea worm cases.
- can help to monitor the overall occurrence of guinea worm cases.
- can be strengthened by ongoing village-level monitoring.
- is an ongoing surveillance activity.

6. Temephos (Abate) is a chemical which...

- can be added to a pond to kill cyclops, thereby preventing transmission of guinea worm.
- requires competence in calculating the correct dose.
- is tasteless, colorless, and odorless except for an unpleasant odor and milky color present for several hours after application.
- is used as a primary guinea worm prevention method for most villages affected by guinea worm.

7. Ongoing village-level case monitoring...

- uses villagers to find out how many guinea worm cases are in their villages.
- helps to strengthen the existing communicable disease reporting system.
- requires that a health worker be posted in every village.
- depends on the Guinea Worm Coordinators to find responsible villagers to report case numbers to them.

8. A community assessment should be conducted...

- as one of the first guinea worm activities in a community.
- after all programme activities have been implemented.
- to count the number of complicated and uncomplicated guinea worm cases.
- so that the Guinea Worm Coordinator can identify appropriate solution options to a community's guinea worm problems.

9. A 30-year-old woman with three children has four guinea worms: two in her right leg, one in her right breast, and one in her left arm. This is a complicated case and should be referred to a medical facility because she...

- has more than three guinea worms.
- is over 25 years of age.
- has a guinea worm located in her breast.
- has more than two children.

10. In the Community Assessment process, information is gained by...

- reading literature written by authorities on guinea worm.
- meeting with the community leaders.
- conducting a house-to-house survey of all families with guinea worm.
- trying out a prevention programme in a community to see how the villagers respond.

11. A guinea worm community project should have one or more of these qualities. It...

- is something the community wants to do.
- makes use of local resources.
- is funded by the government.
- is directed by local community leaders.

12. When talking to villagers about how guinea worm comes from the drinking water...

- give a detailed scientific explanation of the guinea worm life cycle.
- an important message to communicate is that persons with guinea worm blisters or ulcers must stay out of the drinking water.
- use visual aids, if possible.
- combine traditional beliefs with modern explanations, if applicable.

13. Guinea worm disease has a bad effect on...

- productivity of villages.
- family-income.
- attendance at schools.
- adult males only.

14. Brainstorming is a good method to use for getting community members involved in guinea worm projects because...

- uneducated and inexperienced people can participate.
- the leader chooses the ideas he thinks are best.
- unusual ideas are rejected.
- it encourages everyone to submit ideas.

15. A community implementation plan for a village should...

- list the dates for completing each project task.
- indicate persons responsible for each task.
- consist of specific tasks.
- be developed solely by a district level health worker.

16. When giving health education talks to villagers, you should...

- use local names when telling stories.
- demand that the villagers change their practices to more sensible behaviors.
- ask villagers questions to determine if they understand the messages.
- be aware of the objective(s) of each talk.

17. Villagers can make unsafe drinking water safe by...

- filtering water through a cloth.
- using water treated with temephos.
- putting water out in the fresh air to settle.
- boiling water.

18. In preparing for a case search, it is important to...
- get permission and cooperation of the village chief.
 - plan eradication activities for the village.
 - learn how to administer and fill out the case search forms correctly.
 - find out the local term for guinea worm disease.
19. Using temephos as a guinea worm intervention is appropriate for...
- villages where previous attempts to change villagers' behavior have consistently failed.
 - areas where there is very little transmission remaining and rapid elimination is desired (such as in the final stages of the eradication programme).
 - small ponds (less than 500 cubic meters).
 - villages with no feasible alternative safe water sources.
20. The main point(s) to discuss with village leaders when trying to gain their support for temephos application include(s)...
- temephos is a substance which can be added to the water to kill guinea worm babies and help rid the village of guinea worm.
 - it is very safe and will not harm humans or animals.
 - no other prevention measures will be needed.
 - it is worth the risk, because the illnesses caused by temephos are not as serious as guinea worm disease.
21. Important health education messages that should be communicated to villagers include...
- Persons with guinea worm ulcers or blisters must stay out of the drinking water sources.
 - Drink water which is safe from guinea worm contamination.
 - Work with your community to protect your water sources from guinea worm contamination.
 - It is safe to drink guinea worm contaminated water, if you do not drink it more than once a week.
22. Safe storage and use of temephos requires that it be kept...
- in the open where it can be quickly and easily reached.
 - away from skin and eyes.
 - in a secure place.
 - away from food.

23. A villager with a guinea worm blister and mild swelling can be classified as...

- a pre-emergent case.
- an emergent case.
- a complicated case.
- someone who requires medical attention immediately.

24. Treatment for an emergent guinea worm case includes...

- applying animal dung or root remedies to the wound.
- eating raw vegetables.
- giving patient education messages.
- giving analgesics (medicine for pain) and/or antibiotics, if necessary.

25. When conducting a community meeting, you should...

- discourage discussion so the meeting will end on time.
- invite community leaders to attend.
- make sure that you are in charge so you can make the major decisions.
- prepare an agenda for the meeting.

26. Patient education messages for guinea worm patients includes explaining that...

- it is safe to enter the drinking water only if the wound is bandaged.
- the wound should be kept clean and dry.
- the patient should seek medical attention if he or she gets a high fever or the wound becomes very swollen.
- they must wind the worm around a stick every day.

27. The purpose(s) of filtering drinking water is to...

- remove adult guinea worms from the water.
- make the water clear.
- clarify the chemical, temephos.
- remove cyclops from the water so that the water cannot spread guinea to persons who drink it.

For questions 28 - 32, circle your response indicating whether the statement is true or false.

28. True or False Empty temephos containers make good wash tubs to use when cleaning guinea worm wounds.
29. True or False Every application of temephos should be accurately recorded including details on the type of water body, measurements, water volume, amount of chemical applied, date of application, and person applying the temephos.
30. True or False Health education and the promotion of community action are two guinea worm intervention activities which may or may not be necessary.
31. True or False A man has an extremely swollen guinea worm wound and limited movement of his knee. The proper treatment response is to offer him analgesics, antibiotics, and tetanus toxoid, if available; deliver patient education messages; and refer him to a clinic or physician.
32. True or False The main events in the life cycle of the guinea worm occur in this order:
- A person drinks water containing cyclops which have eaten guinea worm larvae.
 - The guinea worm causes a painful blister to appear on the person's skin.
 - The guinea worm matures and mates within the person's body.
 - When coming into contact with the water, the blister breaks and thousands of tiny guinea worm larvae are expelled into the water where they can be transmitted to someone else.
-

Course Evaluation

Directions: Answer the following questions. Please provide as much detail as possible.

1. What were the strengths of the course?
2. What were the weaknesses of the course?
3. Was the length of the course appropriate?
4. How would you judge the course site?
5. How would you rate the quality of the facilitators?
6. How would you judge the quality of the handouts and the Health Education Visual Aids?
7. What other comments do you have about the course?

Reference Section

ADDITIONAL MATERIALS

The following materials may be helpful for use in training Guinea Worm Coordinators.

BOOKS AND BOOKLETS

Abate Larvicide. A 35 page promotional booklet that contains information and photographs on the various aspects about temephos. Cynamid, Agricultural Research Division, American Cyanamid Company, Princeton, New Jersey, 08540.

Elimionons Le Ver De Guinee, Guide Pour L'Agent De Sante Communautaire. Guiguemde, Docteur Robert Tinga. A 32 page booklet which explains and illustrates basic health education information for use at the village level. Available in French. Organisation de Coordination et de Cooperation pour la Lutte contre les Grandes Endemies, B.P. 153 Bobo-Dioulasso, Haute-Volta, Africa. 1984.

Guinea Worm Control as a Major Contributor to Self-Sufficiency in Rice Production in Nigeria. de Rooy, Carel. A 23 page booklet containing technical and statistical information for use in planning eradication programs. Water and Sanitation Section, Unicef, Nigeria. 1987.

Guinesworm Eradication Programme in India. Revised Edition, Operational Manual, Division of Helminthology, National Institute of Communicable Disease, Delhi: Government of India. 1985.

Guinea Worm in Africa. Richardson, Dean and Joyce. A 12 page booklet that explains and illustrates basic health education information for use at the village level. German Adult Education Association, Africa Bureau Accra, P.O. Box 9298, Ghana, Africa.

Opportunities for Control of Dracunculiasis. Report of a Workshop, June 16-19, 1982, National Academy Press, Washington, D.C. 1983.

Rain Catchment and Water Supply in Rural Africa. Nissen-Petersen, Erik. An 83 page book that explains various methods for constructing water catchments and storage facilities. Hodder and Stoughton, London, England.

FLIPCHARTS/POSTERS

Guinea Worm. 26 illustrations of basic health education information for use at the village level. Available in English and French. World Neighbors, International Headquarters, 5116 North Portland Avenue, Oklahoma City, Oklahoma, 73112, USA.

Posters. Seven illustrations showing basic health education information for use at the village level. Water and Sanitation Sections, UNICEF, Nigeria.

SLIDES

TALC Slide Set: Dracunculiasis (Guinea Worm). 24 slides with explanatory notes. Not for use with villagers. Foundation for Teaching Aids at Low Cost, Institute of Child Health, 30 Guilford Street, London, WC1N 1EH, England.

WHO Slide Set Series: The Guinea Worm. 61 slides with explanatory notes. Not for use with villagers. Cost is US \$60. Division of Vector Biology and Control, WHO, CH-1211, Geneva, 27, Switzerland. 1986.

FILMSTRIPS

"Where Does the Guinea Worm Come From?" A 53 frame filmstrip with explanatory notes. For use at the village level. Available in English and French. World Neighbors Development Communications, 5116 North Portland Avenue, Oklahoma City, Oklahoma, 73112.

FILMS

Guinea Worm--The Fiery Serpent. An 18 minute film providing information on the impact and control of guinea worm in Nigeria. Filmed in Anambra State of Nigeria. Available at cost, in English or French. Also available on video cassette or 16 mm film. Co-sponsored by the Centers for Disease Control, UNICEF, UNDP, and Global 2000, Inc. Information Office, United Nations Development Programme, One UN Plaza, New York, New York, 10017. 1988.

Water of Ayole. Approximately 20 minutes. The story of one village and how they mobilized to solve their water supply problems. Cost is US \$15. Information Office, United Nations Development Programme, One UN Plaza, New York, New York, 10017.

Avicenna's Thread. Describes the life cycle of the guinea worm and introduces intervention methods. Available in English. J.P.R. Productions, 5 Rue Broussais, Paris, France, 75014.

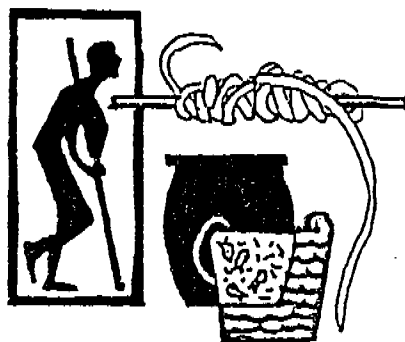
WORKSHOPS

Teaching About Guinea Worm Prevention: A Manual for Secondary School Teachers. Smith, Jason, and Yacoob, Dr. May. A 93 page manual that includes sample lesson plans, resource materials, and an outline for a training workshop for secondary school teachers who will use the guide. Available in English and French. WASH Field Report No. 223, February 1988 (draft). WASH Project, 1611 North Kent Street, Room 1002, Arlington, Virginia 22209-2111, USA.

Workshop on Guinea Worm Control at the Community Level, a Training Guide. Brieger, William R., and Rosensweig, Fred. An 83 page training guide developed for trainers to conduct a 2 1/2 day workshop to help participants improve skills to plan and carry out guinea worm control projects. It emphasizes the improvement of water supply as the preferred intervention. The workshop is intended for persons who work in rural community settings and who have responsibility for controlling guinea worm (e.g., health assistants, nurses, health inspectors and other district-level health workers, not village level health care workers). Available in English and French. WASH Technical Report No. 50, January, 1988. WASH Project, 1611 North Kent Street, Room 1002 Arlington, Virginia 22209-2111, USA.

WORKING DOCUMENT

GUIDELINES FOR SURVEILLANCE
IN
GUINEA WORM DISEASE ERADICATION PROGRAMS



WHO COLLABORATING CENTER
for RESEARCH, TRAINING, AND CONTROL OF DRACUNCULIASIS
at the
Centers for Disease Control
Atlanta, Georgia 30333

14 February 1988

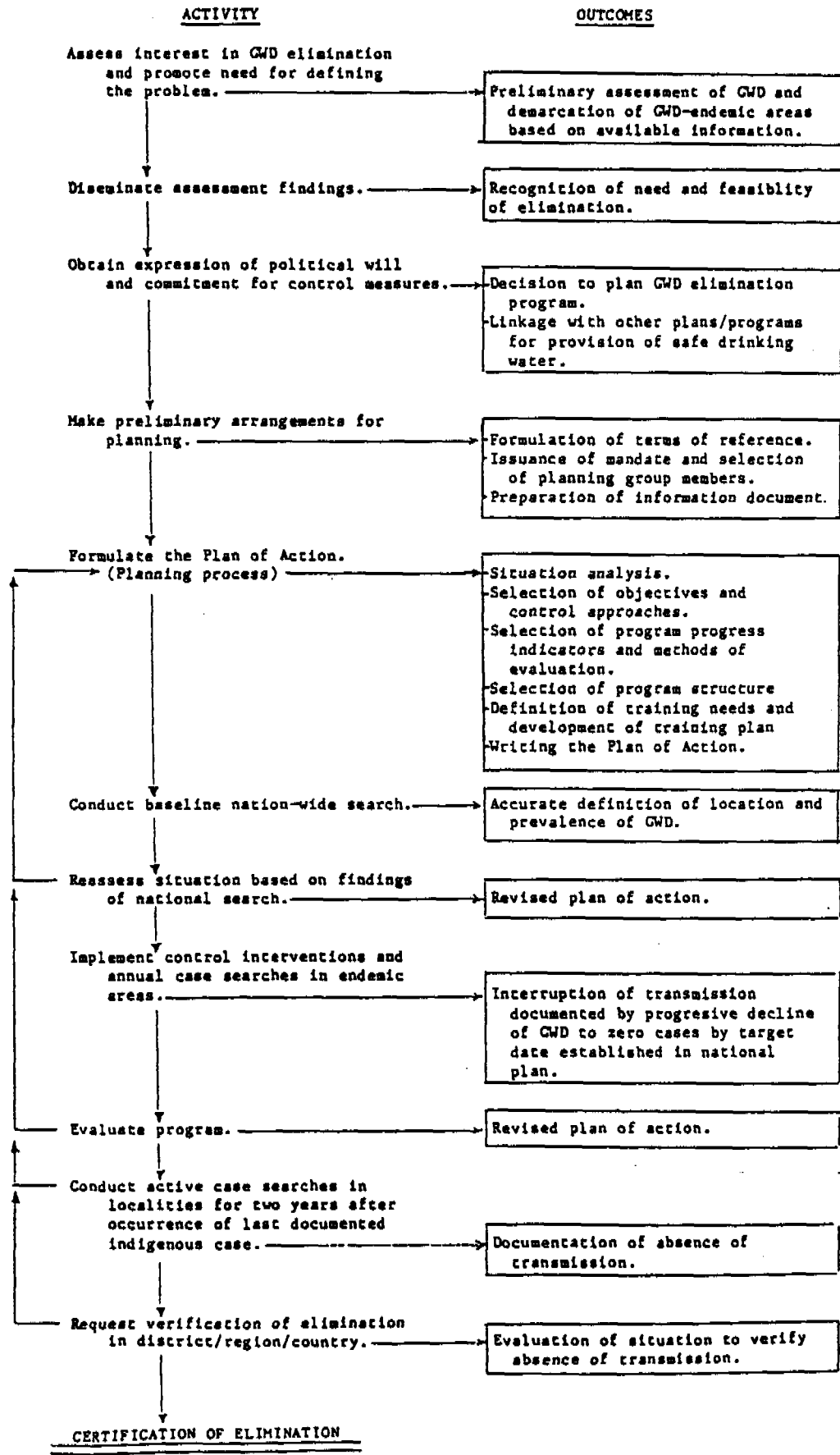
These guidelines are intended to assist persons involved with dracunculiasis eradication programs in making decisions about the design or modification of a surveillance program to eliminate Guinea worm disease (GWD). To improve the usefulness of these guidelines we urge users to send their comments and suggestions to the address below.

WHO Collaborating Center for Research,
Training, and Control of Dracunculiasis
Centers for Disease Control
Division of Parasitic Diseases (F/22)
Atlanta, Georgia 30333

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SECTION I. STEPS IN THE PLANNING, IMPLEMENTATION AND EVALUATION OF PROGRAMS TO ELIMINATE GUINEA WORM DISEASE



SECTION II. OVERVIEW.

Guinea worm disease is endemic in 19 countries located in a broad band across sub-Saharan Africa. It also exists in India and Pakistan and may occur in Saudi Arabia and Yemen. In most countries, reporting of GWD remains poor. The limited surveillance data currently available reflects passive disease reporting and greatly underestimate the magnitude of the problem in most countries where GWD is prevalent (See Appendix 1). In contrast, in countries where GWD is rare or has disappeared, unverified passive disease reports may suggest that cases are occurring when there is little or no transmission. For these reasons one of the highest priorities of the global eradication initiative is the improvement of surveillance and reporting of GWD nationally and internationally.

Implementation of effective surveillance in endemic countries will help achieve the following objectives in the conduct of a GWD eradication program.

- a. Define the location and extent of the disease.
- b. Mobilize political and financial support.
- c. Plan and implement control efforts.

- d. Evaluate the impact of control efforts.
- e. Confirm eradication.

The goal of GWD surveillance is the collection, analysis, interpretation, and dissemination of information that will assist in its elimination. The core data are quite simple--enumeration of GWD cases by place, time, and person. A guinea worm case is defined as an individual exhibiting or having a history of a skin lesion with emergence of a guinea worm. In each country, the highest priority is to determine the geographic extent of disease and the annual number of cases. The design of surveillance activities needs to be tailored to the epidemiological characteristics of GWD and the eradication effort at a given time. These guidelines are intended to facilitate surveillance by providing a logical framework for planning.

To use surveillance as a working tool, programs should observe the following guiding principles:

1. Activities are always planned and conducted with the objective of supporting control or elimination of GWD.
2. Information must be available on a timely basis to guide program decisions.
3. Design should be tailored to the specific situation, especially the extent and intensity of transmission and the program activity.

4. Planning and implementation should include an element of independent monitoring of field activities, and validation of data collection and accuracy at every level.

To design effective surveillance one should plan to take advantage of the epidemiologic and clinical factors that are favorable and to counter potential obstacles. For example, a recognition card (see Appendix 2) makes it easy for the searcher to obtain accurate information from interviews. Characteristics that greatly facilitate surveillance for patent GWD are its unique presentation, easy recognition by persons without special training, occurrence in both sexes over a wide age range, accessibility of most lesions to quick visual inspection, and the motivation associated with a time-limited effort to eradicate the disease.

Other characteristics that could impede GWD surveillance are just as important. These include: Focality - GWD is focal in time of occurrence and especially in location; Disability - infected persons are often immobilized during the acute stage of infection; Distance - health care facilities are usually distant from endemic villages; Lack of cure - infected persons who know that medical treatment does not cure the disease are less likely to seek medical assistance.

These characteristics explain why routine passive surveillance identifies only a small percentage of GWD cases. However, these obstacles can all be overcome by the design of active surveillance. In fact, after careful searching has located the endemic villages, focality, for example, permits concentration of program resources precisely to endemic villages at the optimal time for control.

Another element that should be incorporated into the design of a surveillance program is validation. Validation of the collection procedures and data is essential. This is illustrated by the experience of the smallpox eradication campaign in many endemic countries. Routine passive surveillance identified only 1-2% of the cases of smallpox that actually occurred. Active surveillance increased the number of reported cases more than 20 times. Then, when monitoring and independent validation of case reporting was also carried out, the percentage of cases that were detected exceeded 90%. Thus, active surveillance techniques and validation together were keys to the success of smallpox eradication.

In a national program to eliminate GWD, the tasks for surveillance at any time will depend on a number of factors, including the actual extent and incidence of GWD, the availability of information about that extent and incidence, and the organization, progress, and resources of the elimination program. To help organize the surveillance guidelines in the following sections, the tasks of surveillance are considered according to the prevalence and distribution of the disease and status of the elimination program.

SECTION III. DESIGN AND IMPLEMENTATION OF SURVEILLANCE ACTIVITIES

The distribution and intensity of GWD transmission in endemic countries determines which surveillance activities are appropriate. In Appendix 3 these characteristics are categorized and the thrust of surveillance activities in endemic countries in each category identified.

The major functions of surveillance activities during eradication of GWD are listed and discussed in sequence below:

1. Assessment of passive reporting, and collection and use of available information.
2. Identification of affected areas and extent of GWD - the search.
3. Direction and evaluation of intervention efforts through monitoring.
4. Confirmation of elimination of GWD.

1. Assessment of Passive Reporting, and Collection and Use of Available Information

Surveillance information can be collected from existing medical records or elicited from health officials through interviews and questionnaires. This information is highly useful for the preliminary assessment of GWD, for mobilizing political support, and for planning the eradication effort. At this stage authorities should be encouraged to declare reporting of GWD to be mandatory, if it is not already. The accuracy of information from existing disease report forms should be checked and occurrence of GWD in endemic areas confirmed. The information gathered should be analyzed, discussed and disseminated. This information is also necessary for developing a national plan of action for eradication.

The main objective is to determine where GWD has been reported. Considerations and procedures include:

1. Review incoming passive data and other existing records for evidence of GWD to ascertain location of known endemic areas and which areas have the highest reported incidence.
 - a. Possible sources of information are:
 - 1) Ministry of Health records of routinely reported cases (especially communicable disease surveillance records for the preceding 5-10 years).

- 2) Medical and scientific literature.
- 3) Information from other pertinent Ministries (e.g., Public works, etc.) and other UN or donor agencies which support water supply programs (e.g., UNICEF, USAID/WASH, etc.).
- 4) District or provincial health authorities.
- 5) Government and missionary dispensaries and hospitals.
- 6) Newspaper and popular magazine reports.
- 7) Unpublished documents (e.g., university theses, technical reports, etc.).
- 8) Communicable disease specialists.
- 9) Other international agencies (e.g., OCEAC, OCCGE, WHO/AFRO/EMRO/SEARO, UNDP).

NOTE: Data from passive sources usually reflect less than 10 percent of actual cases in countries where GWD is prevalent but reporting of spurious cases may result in over-reporting in regions where GWD is absent or uncommon.

2. If existing records are scanty, consider a short questionnaire for rapid, economical collection of information on recent or future cases. The essential question for the survey is name and location of villages with cases of GWD within preceding 12-36 month period.

a. Use a questionnaire to survey one or more of the following:

1) Regional and district health officials and health workers.

2) School teachers.

3) Private physicians, nurses, midwives, and other health workers outside the government system.

b. Consider including a GWD recognition card with questionnaire material.

NOTE: Sending a questionnaire may not be practical, depending on availability of postal or telegraph systems or history of poor response rates.

3. If not already done, make a formal recommendation to authorities that reporting of GWD be mandatory.

4. Recommend that routine disease report forms include a specific category for GWD. Alert all regional and divisional health personnel

and statistical staff to the GWD category and to the importance of reporting.

5. When available information is gathered, the responsible officials should summarize the findings and disseminate them to appropriate national authorities, as well as to the persons who reported the data. Consideration should be given to preparing an article based on the data collected for publication in the WHO Weekly Epidemiological Record. This information will also be used to help develop the national plan of action for eradication (See Appendix 4). The consultant may be requested to help prepare article and/or national plan of action.

2. Identification of Affected Areas and Extent of GWD - The Search

The implementation of an intensive search for GWD in regions of the country aims to define more precisely where GWD occurs and to enumerate current cases, as well as those which have occurred during the past year. Seasonality of transmission may be defined. During these searches other data important for developing control plans may be collected such as the number, location and types of drinking water sources in villages. However, care must be taken to only collect the minimum amount of data that is required to guide the expected follow-up actions. The search results, along with the plan of action, should facilitate the development of specific intervention projects. Consultants may need to assist with formulation of specific proposals and encourage their counterparts to submit these projects to donor agencies and pursue their support. The sequence of activities needed to achieve the objectives are:

1. Design and implement active searches.
2. Interpret results and make recommendations.
3. Modify or develop national plan of action, including specific proposals for interventions.
4. Disseminate results nationally and internationally.

The main objectives, in order of priority, are to:

1. Identify affected villages.
 - a. Confirm infection in villages identified through assessment of passive reports or other information.
 - b. Identify all additional villages with GWD.
2. Ascertain number of GWD cases.
3. Ascertain population of affected villages.
4. Characterize drinking water sources according to type and location.

Considerations for implementing the national search are:

- I. Design and implementation of active search or survey.
 - A. Decide whether to conduct a complete search or a sample survey.
 1. The complete search.
 - a. Provides information on all endemic villages.

- b. Is necessary before interventions are implemented.
- c. Requires mobilization of numerous workers for a brief period, rigorous supervision to ensure reliable results, and relatively significant investments of money and other resources.
- d. Is preferred over sample surveys.

2. The sample survey.

- a. Is possibly indicated if the percentage of villages affected is high (e.g., greater than 40%).

- b. Is conducted only in selected villages.

1) Select villages to include a stratified sample with those of different size, language, geography, and climate.

2) Choose the number of villages according to resources available, prevalence of disease, and the precision required.

- c. Provides adequate estimates of total number of cases occurring, but will not determine location of all infected villages.

B. Establish geographic regions to be searched.

- 1. If feasible search all regions where GWD might be transmitted.

B. (continued)

2. If unable to conduct a search of the whole country at once, decide which regions to search first. Selection criteria include the estimated incidence of GWD, health infrastructure and resources, absence of migration from other endemic regions.

C. Decide what data to gather.

Note: Only the most necessary information, which can be obtained with least amount of time and effort, should be requested. The main goal is to confirm the presence of disease by village, and the number of cases.

1. Gather basic epidemiologic indicator data. Types of indices are listed below in priority order of importance:
 - a. Number and location of affected villages.
 - b. Number of cases per village (either quantitative or semi-quantitative e.g., less than .. versus more than ..).
 - c. Number of people at risk (people living in villages where there is at least one case). Use census figures if available and accurate (check a sample if uncertain).

2. If resources allow, gather information on the location and type of drinking water sources in use and availability of protected drinking water sources. This data can help in establishing priorities for needed interventions, but information on the location and numbers of cases of disease is more important.

3. Useful complementary data are:
 - a. Month of case occurrence.

 - b. Presence of seasonal migrants.

 - c. Gender and age of those infected.

 - d. Traditional use of filters for drinking water.

 - e. Health beliefs, knowledge, and practices regarding GWD for each identifiable ethnic or cultural group affected.

 - f. Number of worms per case emerging in year of search.

NOTE: These data may be collected by a sample survey in the endemic areas rather than by the survey of all villages.

D. Develop search questionnaire.

1. Design form for ease and clarity in recording case interview.
2. Arrange form for rapid tabulation of data.
3. Design questionnaire so that it takes only a few minutes to administer (See Appendix 5).
4. Include specific instructions on how to complete questionnaire.
5. Consider the possibility that this form may be used routinely during intervention.

E. Field test interview form before actual search.

1. Perform trial of form in a representative sample of villages.
2. Evaluate the results of the trial.
3. Modify the form if indicated.

F. Arrange for personnel, money and material needed in search.

1. Gather needed materials including vehicles, forms, etc.

2. Identify and recruit personnel including enough supervisors, interviewers, interpreters, etc. to complete search within desired time (consider using personnel from existing organizations such as EPI workers if available).
3. Develop and publish instructions for field search teams.
4. Plan and conduct training of personnel in search procedures (include monitoring and validation procedures so that they will be expected and viewed as routine).
5. Arrange personnel into working groups.
6. Establish priorities for localities to be searched.

G. Conduct search.

1. Follow procedures specified in instructions for field searches.
2. Monitor field teams with senior personnel.

II. Analyze and interpret results.

A. Consolidate and review search results.

A. (Continued)

1. Use summary forms that display data at local, regional and national levels.
2. Review data for completeness and consistency.

B. Validate results of search.

1. Preview data to select a sample of localities representative of variety in search.
2. Include localities with questionable results.
3. Conduct validation surveys using supervisors and personnel who were not involved in prior searches of sample localities to be visited.

C. Analyze results.

1. Compile and tabulate data.
2. Compare search and validation survey results - if level of agreement is not acceptable repeat search operations for areas in question.

3. Prepare maps of endemic regions. (It may be useful to categorize local areas with: no affected villages; 1-10 affected villages; 11-49 affected villages; 50+ affected villages, for example).

4. Analyze and interpret results.

D. Prepare written report to include findings, interpretations, and recommendations. Target completion soon after (4 weeks?) completion of field operations.

III. Use results of national search to modify or develop national plan of action and to develop plans for implementation.

A. Advise health officials to update national plan of action to reflect recommendations in preliminary report on national search.

B. Include specific, dated objectives for control of GWD in national plan of action.

C. Organize intervention activities as a series of specific project proposals suitable for funding by donor agencies, if necessary. Specify what activities to be funded by local or national agencies.

IV. Disseminate results.

A. Distribute report with findings of national search and recommendations to appropriate national agencies, to WHO and to other international organizations. Consider submitting brief report to WHO for publication in the Weekly Epidemiological Record.

B. Convene national meeting to review results of national search and to discuss and approve plans for intervention.

3. Direction and Evaluation of Intervention Efforts Through Monitoring

Surveillance efforts should be integrated with and guide the intervention activities underway. To accomplish this, regularly scheduled reporting of cases and other information should be channeled through the structure of the organization implementing the intervention program. The details vary in each program and should be included in the manual of operations written specifically to meet the requirements for each program. The guidelines in this document suggest a general outline for these activities. The ideal approach is to integrate ongoing surveillance with interventions at the smallest operating level, usually the village. Data received periodically from the villages will provide timely information for guiding interventions against GWD. Careful arrangement of who reports which information to whom and when is critical.

Periodically, independent surveys for GWD should be conducted to give a measure comparable to the original search baseline data. These annual or semiannual village surveys should yield information on the degree of control being achieved and on localities having operational difficulties which need to be corrected. Alternatively, other methods such as market surveys may supplement or substitute for the village surveys.

Most of the operational points listed previously continue to be important; monitoring and validating of surveillance results is always required. The key difference here is that continuing surveillance activities are closely integrated with intervention efforts. Some of the considerations involved in

guiding control through monitoring changes in incidence of GWD are listed below.

I. Collect information essential to ongoing GWD intervention activities.

A. Establish and maintain village register of case information, by date of occurrence.

1. Periodically report new cases occurring in villages.

B. Report supplemental information needed to guide or evaluate interventions; e.g., changes occurring to water sources or migration into villages, or introduction of other interventions.

II. Integrate reporting and transmittal of continuing surveillance information into the intervention program.

A. Base the system on reports from the village level.

B. Request village chief to nominate a village resident to serve as reporter of GWD activities.

1. Choose a village health worker if available and acceptable to village chief.

2. Alternatively, suggest to village chief selection of a school teacher or other responsible person with adequate education.

C. Appoint and prepare a GWD coordinating officer at the regional level to carry out the following functions:

1. Provide the necessary instruction for receiving and reviewing reports for completeness.
2. Help or train appropriate regional officials to process reports and requests as rapidly as possible and to forward them to the national office.
3. Train appropriate regional officials who will then train program personnel.
4. Monitor and supervise village reporters.
5. Provide updated training for village reporters as required.
6. Establish schedule for the submission of village reports.

D. Provide the necessary training, supervision and support for village reporters.

1. Train the reporter to complete the case report form (and other forms) with the necessary information.
2. Instruct the reporter on the need to forward reports promptly to the regional office, according to the established reporting schedule and mechanism.

3. Provide supervision of the reporter.

4. Provide administrative support.

E. Establish a functional system for reporting GWD from the village to the regional level (build on existing systems wherever possible).

1. Design feedback into the reporting system.

(For example, the receipt of a monthly report might be acknowledged by a simple form.)

2. Check the accuracy of data at each step of the reporting system.

3. Arrange procedures to avoid slowing the dissemination of information; e.g., rather than delay sending information considered of questionable accuracy, the information should be forwarded with an explanatory note.

4. Verify the accuracy of village reporting by visits (quarterly or more frequent, if possible) with the village reporter.

5. Correct problems (late reports, missing reports, etc.) at the village level.

F. Analyze and respond to reports of GWD prior to forwarding to the national level (Ministry of Health).

1. Check village reports first for completeness and accuracy.
2. Tabulate, analyze and interpret data from case reports.
3. Prepare summary reports for national office monthly.
4. Monitor localities reported to be free of GWD closely and expeditiously follow up reports of new cases in villages thought to be free of GWD.
5. Respond to reports which indicate a need for new intervention activities or a modification of an intervention activity.

G. Report more detailed case information as incidence of GWD declines.

1. Determine if cases are imported. (Specify length of residence and travel history.)
2. Determine source of infection for indigenous cases.

NOTE: Stress the need for accuracy, completeness and timeliness of reports.

III. Conduct independent surveillance activities periodically.

A. Repeat independent case searches annually or semiannually, near the anniversary of the previous year's search.

1. Conduct with personnel who were not involved in program activities in the localities to be surveyed.
2. Repeat questions that were asked in national search with same format to the extent possible.
3. Review the content of the search questionnaire form and add questions that may be needed to determine status of control measures; e.g., knowledge regarding GWD, frequency of visits from village GWD implementor.

B. Consider other surveillance activities that provide validation for regional status or may be substituted when independent surveys cannot be conducted:

1. Market surveys may be useful in gathering information about GWD in localities that were free of GWD at the time of the national search. The main advantage of this method is that it facilitates inquiry of persons from a wide area quickly.

- a. Best if conducted during transmission season to track occurrence of disease in new localities.
 - b. Select markets that are near known endemic villages for survey.
2. Questionnaire surveys may be useful in detecting new cases of GWD.
- a. In localities free of GWD at the time of the national search.
 - b. In endemic villages during periods when conducting a special search is not feasible.
3. Rewards may be an effective tool for detecting cases when little or no transmission is believed to occur.
- a. Consider offering rewards in late stages of control effort and when absence of transmission has been achieved.
 - b. Begin with rewards with limits in geographic location, cash and time (e.g., for 1 day at market) and as cases diminish increase scope (e.g., large standing reward for any case in district).
 - c. Pay on presentation unless proof of indigenous transmission is required, then pay after documentation.

C. Follow up each new case found in areas believed to be free of transmission; i.e., conduct special surveillance for any contamination of water sources, conduct case surveillance in affected localities through next two seasons.

4. Confirmation of Elimination of GWD

A function of surveillance is to confirm that GWD has been eliminated. The principles for effective design are similar to those described earlier. The results need to be accurate and independently confirmed. There must be certainty that GWD is eliminated, yet certification of elimination must be prompt so that control resources can be concentrated on remaining infested regions. Continued effective surveillance with follow up of all suspected or reported cases provides the assurance that GWD has been eliminated and remains eliminated.

Criteria by which countries will be certified as free of GWD have not yet been agreed upon, but will likely include evidence of active surveillance in formerly endemic areas with no confirmed cases for at least three years.

- I. Continue case search procedures for at least 2 years after the last indigenous case in a region. Consider the following:
 - A. Major changes in living conditions resulting from events such as civil unrest, drought etc. may increase the risk of transmission.
 - B. Localities where the primary intervention was chemical control of Cyclops sp. may be relatively susceptible to renewed transmission if such chemical control has been suspended.

C. The greater the extent of migration into a locality from a known endemic area, the higher the risk of imported cases and thus the risk of resumed indigenous transmission.

II. Investigate each new case found with respect (see VI, A. below) to source and to potential spread. Discovery of imported cases without spread helps document elimination of transmission.

III. Review specific national or regional status with competent public health officials from outside the national GWD eradication program to assure appropriateness for initiating the process to certify eradication. If the review confirms that certification is appropriate recommend that it is requested.

IV. Inspection or review for certification should be conducted at the request of the country by an independent commission appointed by WHO to include national and international representatives.

V. National authorities may wish to apply to WHO for international recognition of dracunculiasis elimination status (certification) when there is a low probability that imported cases may reintroduce transmission into a country.

A. An interval of two years with adequate surveillance for GWD cases but without evidence of transmission provides a working criterion.

B. Certification of localities or countries that are susceptible to reintroduction of transmission and have extensive migration from endemic localities should be considered with caution until the risk is reduced. Such countries may wish to declare themselves as having provisional eradication status pending official certification.

VI. Although routine control measures may be discontinued during the certification period, it is necessary that appropriate interventions be implemented where introduced or renewed transmission is discovered.

A. Track each case; i.e., conduct special surveillance for any contamination of water sources, follow up with case surveillance in affected localities through the next two transmission seasons.

B. Rapidly implement any measures necessary to stop transmission.

VII. Case searches for GWD may be discontinued after certification of elimination.

A. Continue routine passive reporting for GWD.

B. Investigate any detected cases of GWD, as in VI, A., above.

SECTION IV. APPENDIXES

APPENDIX 1.
Reported Cases of Dracunculiasis by Year, 1984 - 1987

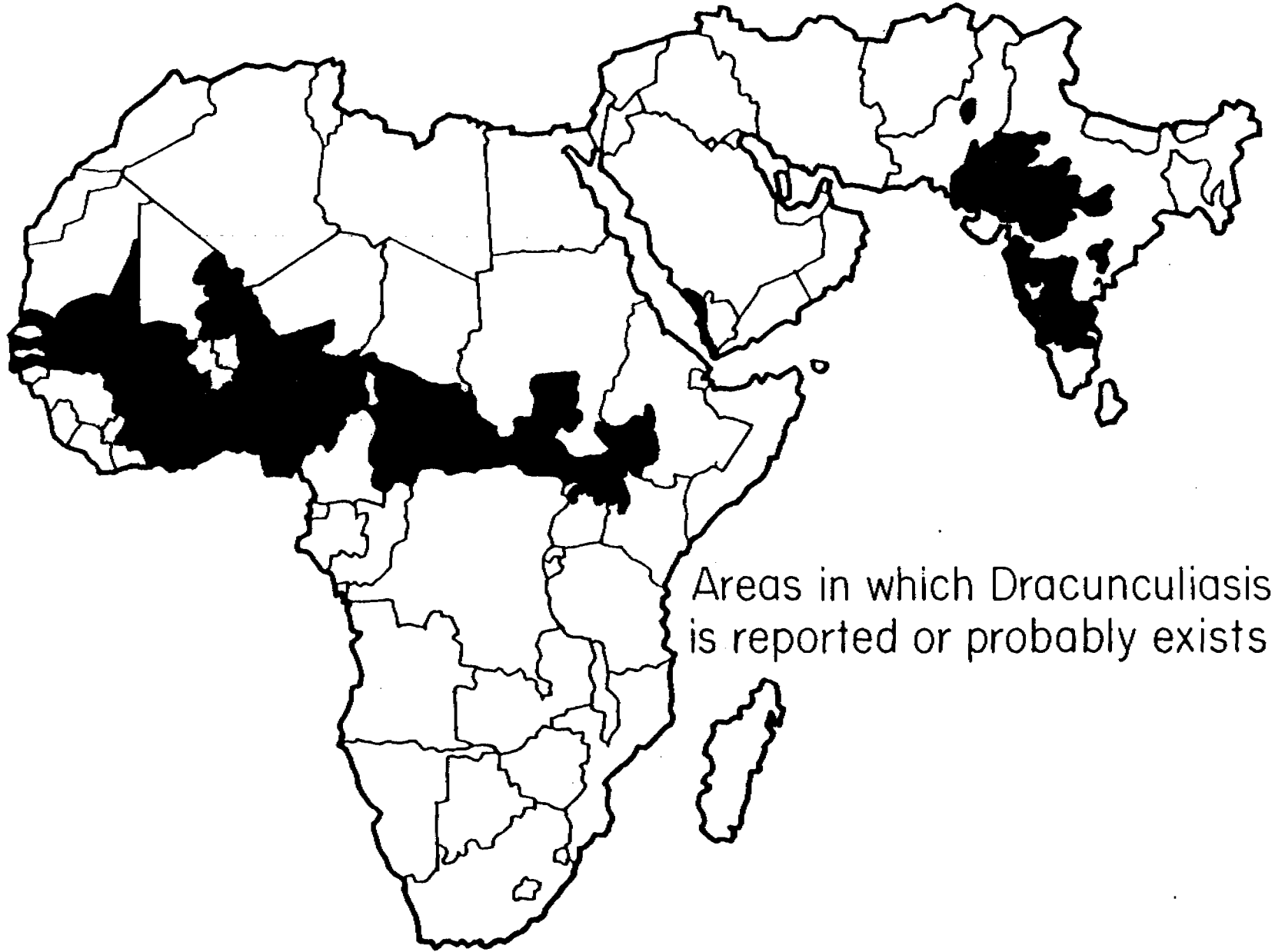
<u>COUNTRY</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>
BENIN	...	...	...	400
BURKINA FASO	1739	458	1837	1296 ^a
CAMEROON	--	168	86	...
CENTRAL AFRICAN REPUBLIC	...	31	--	1322
CHAD	1472	9	314	...
COTE D'IVOIRE	2573	1889	1177	483 ^a
ETHIOPIA	2882	1467	3385	...
GAMBIA	--	--	--	--
GHANA	4244	4501	4717	18398
GUINEA	--	--	--	--
INDIA	39792	30950	23070	17031
KENYA	...	...	...	...
MALI	5008	4072	5640	435
MAURITANIA	1241	1291	...	...
NIGER	...	1373 ^b	...	699
NIGERIA	8777	5234	2821	216484
PAKISTAN	...	...	...	866
SAUDI ARABIA	...	...	...	...
SENEGAL	...	...	...	...
SUDAN	...	...	822	...
TOGO	1839	1456	1325	...
UGANDA	6230	4070	...	...
YEMEN	...	...	...	...

^a Provisional

^b Includes other filariasis

... No data available

-- Zero cases reported



Areas in which Dracunculiasis
is reported or probably exists

APPENDIX 2.

Recognition Card



1. Patients with current Guinea Worm lesions should not enter drinking water sources. Lesions should be cleaned, treated, and bandaged.
2. Only drink water from safe sources such as borewells or draw wells, rainwater cisterns, or boil water before using it.
3. If safe drinking water is not available, filter available water through double folded cloth piece before drinking it.

APPENDIX 3.

GWD SURVEILLANCE ACTIVITIES BY COUNTRY

PROBABLE INCIDENCE AND DISTRIBUTION	COUNTRIES	MAJOR THRUST OF SURVEILLANCE
GWD prevalent in past. No cases, or very few cases occurring at present; possible imported cases	Chad Gambia Guinea Kenya Saudi Arabia Senegal Yemen	1. Assessment of passive reporting; demarcation of possible foci based on available information. 2. Active identification and follow-up of suspected cases. 3. Confirmation of absence of transmission.
Known endemic foci with relatively limited distribution	Cameroon Cote d'Ivoire Ethiopia Mali Mauritania Niger Pakistan Uganda	1. Assessment of passive reporting; demarcation of old and possible new foci. 2. Area-wide search in appropriate zones to establish baseline. 3. Case registry in villages and periodic searches in endemic areas to monitor changes. 4. Follow-up of cases in regions free of transmission.
GWD widespread in country	Benin Burkina Faso Ghana India Nigeria Sudan Togo	1. Baseline nation-wide search. 2. Annual or semiannual searches of all areas or representative sample to monitor changes.
Unknown	Central African Republic	Assessment of GWD and demarcation of possible foci based on available information.

APPENDIX 4.

GUIDELINES FOR A NATIONAL PLAN OF ACTION
IN GUINEA WORM DISEASE (GWD) ELIMINATION

1. Assess interest in elimination of GWD and promote need for defining the problem.
2. Secure preliminary concurrence and support of appropriate national authorities for assessment of GWD.
3. Designate a person to be responsible for the national GWD program.
4. Gather all currently available data about GWD in the country: reports to the Ministry of Health, published reports, doctoral theses, etc. Note especially any in-country evidence of reduction in GWD following intervention measures.
5. Consider sending questionnaires to all public (government-employed) and private physicians and health posts (via state, district, or provincial medical administrators) in the country asking (a) whether GWD has occurred in their area during the last 2 or 3 years, and (b) if so, in which years and in which areas. If not already required, recommend GWD reporting be mandatory.

6. National authorities need to be provided with convincing evidence that (a) GWD is a serious problem in the country; (b) there are effective and practical ways to prevent it, and (c) specific program activities and financial support are needed.

7. An overall plan of national activities should be prepared, including a description of the current epidemiological status of GWD in the country; the tentative or recommended strategies to be used; specific measurable objectives and indices for monitoring progress; how this program relates to the country's plan for the International Drinking Water Supply and Sanitation Decade and what special resources, if any, will be required and where they can be obtained.

8. Convene a meeting of appropriate national representatives of the Ministry of Health, Ministry of Public Works, Ministry of Engineering, United Nations Development Program, UNICEF, WHO, and other relevant groups to achieve consensus on the overall national goal of eliminating GWD and to suggest broad outlines of strategy and objectives. Set target dates for interventions and elimination of GWD.

9. Consider mobilizing health and other personnel to conduct an active search (national baseline survey) for GWD, the main purposes of which would be to (a) detect all villages in the country or area concerned in which GWD has occurred in the last 2 or 3 years, and (b) classify endemic villages according to whether they have only unsafe drinking water, safe drinking water, or both. List all known GWD endemic villages by administrative subdivision.

10. Gather all available data about drinking water sources scheduled to be provided in 1988-1995: reports from local UNDP representative, WHO, World Bank, UNICEF, Ministries of Public Works and Water, Ministry of Agriculture, bilateral agencies such as USAID, etc. List all endemic villages already scheduled to receive safe drinking water between 1988 and 1995. Obtain highest priority for all known GWD-endemic villages in the national schedule for providing safe drinking water.

11. Seek funding for implementing program to eliminate GWD from endemic villages not scheduled to receive safe drinking water sources before 1995.

12. Decide on specific protocols for provision of health education, vector control (cyclospicidides), and handling of cases in endemic areas. Treatment of unsafe water sources with a cyclospicide such as temephos (Abate) just before and during the transmission season can help to rapidly reduce transmission. Topical treatment and dressing of wounds caused by the worm may reduce suffering, encourage reporting of cases and reduce the chance of larvae being released in sources of drinking water. Health education is indicated for all villagers in affected areas to convince them to prevent patients from contaminating drinking water, promote the use of filters to remove Cyclops, and use safe sources of drinking water when they are provided. Involve school teachers in affected areas with teaching of children about the disease and how to prevent it.

13. Train appropriate persons to carry out interventions and implement strategies chosen in step 12.

14. Monitor implementation effort to ensure that indicated activities occur at rate planned, and with the desired effect on incidence of the disease. Conduct periodic evaluation of overall program and modify national plan of action as necessary. Investigate causes of any departure from planned implementation or impact and take corrective action(s) as necessary. Report to WHO yearly (by end of March) the number of endemic villages and number of GWD cases occurring in each major administrative division; i.e., region/districts.

15. Continue active case searches in localities for two years after occurrence of last documented indigenous case.

16. Request evaluation to verify elimination of GWD in district/region/country.

Revised by DPD Guinea Worm Task Force,
WHO Collaborating Center for Research,
Training, and Control of Dracunculiasis
Centers for Disease Control
18 May 1988

APPENDIX 5
(PROTOTYPE FORM 1)
GUINEA WORM ERADICATION PROGRAM
VILLAGE SUMMARY

STATE/PROVINCE: _____ VILLAGE POPULATION: _____

DISTRICT: _____ SUBDISTRICT: _____

NAME OF VILLAGE CHIEF: _____ SIGNATURE: _____
(IF SOMEONE ELSE PROVIDES INFORMATION, SPECIFY WHOM _____)

VILLAGE NAME/NO.: _____ DATE: _____

HEALTH WORKER'S NAME _____

SOURCE: INTERVIEW GENSUS HOUSEHOLD SURVEY

TOTAL NO. OF CASES* IN VILLAGE (1987) _____ NONE (4/1/87-3/31/88)
TOTAL NO. OF CASES* IN VILLAGE (1988) _____ NONE (4/1/88-3/31/89)

DRINKING WATER SOURCE(S) FOR THIS VILLAGE (Check all sources used during year):

- POND (TANK)/POOLS IN RIVERBED
- RIVER/STREAM/CANAL
- BOREHOLE WELL/HANDPUMP WELL/TUBE WELL/PIPED WATER
- DRAW WELL/HAND DUG WELL
- OTHER (SPECIFY): _____
(INCLUDING RAINWATER COLLECTION)

*An individual exhibiting or having a recent (one year) history of a skin lesion with emergence of a guinea worm.

////////////////////////////////////
/ (NOTE: USEFUL ONLY IN LOCALITIES WHERE CONTROL HAS BEGUN) /
/
/INTERVENTIONS IN THIS VILLAGE IN LAST YEAR/TRANSMISSION SEASON: /
/
/ HEALTH EDUCATION BY WHOM? _____ /
/ (SPECIFIC GW MESSAGES TO ENTIRE COMMUNITY) /
/
/ FILTER (COTTON OR NYLON CLOTH) /
/ (USED BY MORE THAN HALF OF HOUSEHOLDS) /
/
/ TEMEPHOS (ABATE) /
/
/ SAFE WATER SUPPLY BY WHOM? _____ /
/
/ OTHER (SPECIFY) /
/
/ NONE /
////////////////////////////////////

APPENDIX 5.
 (PROTOTYPE FORM 1A)
 GUINEA WORM ERADICATION PROGRAM
HOUSEHOLD SUMMARY ATTACHMENT

STATE: _____ SUBDISTRICT NAME/NO.: _____
 DISTRICT: _____ DATE OF VISIT: _____
 VILLAGE NAME/NO.: _____ HEALTH WORKER'S NAME _____
 HEAD OF HOUSEHOLD (NAME): _____
 HOUSEHOLD SERIAL NO.: _____

TOTAL CASES* IN HOUSEHOLD THIS YEAR (4/1/88-3/31/89) |__|

TOTAL NUMBER OF PERSONS WHO LIVE IN HOUSEHOLD |__|

LIST PERSONS IN HOUSEHOLD WITH GUINEA WORM THIS YEAR:

NAME/INITIALS	AGE	SEX	DATE FIRST WORM EMERGED

* An individual exhibiting or having a recent (one year) history of a skin lesion with emergence of a guinea worm.

APPENDIX 6.

GLOSSARY OF TERMS

Case.

"An individual exhibiting or having a history of a skin lesion with emergence of a Guinea Worm." A recent (within one year), "history of a skin lesion with emergence of a Guinea worm", is the proposed time frame for use in surveillance programs. A longer time frame may be used in special surveys to assess historical occurrence of GWD.

Case detection (Active).

Searches for cases by questioning persons at risk; accomplished by house-to-house, village-to-village visits, or through a sample of the population. This method usually reveals more cases than passive reporting.

Case detection (Passive).

Identification of GWD cases through routine reporting mechanisms or means other than active case detection.

Certification.

The formal confirmation that GWD has been eliminated from a region, state or country.

Elimination.

Absence of new indigenous cases of GWD in a previously defined endemic region.

Endemic.

Continued presence of a disease in a given geographic area.

Eradication.

Elimination of GWD worldwide.

Imported case.

An individual with GWD whose infection was acquired somewhere other than the region where patency occurred.

Indigenous case.

An individual with GWD whose infection was acquired within the same region where the case is recognized.

Intervention.

Activity intended to prevent transmission of infection; i.e., control activity.

Protected water source.

Source of drinking water which is free from risk of GWD.

APPENDIX 7.
BIBLIOGRAPHY

Note: The WHO Collaborating Center for Research, Training and Control of Dracunculiasis will assist individual consultants involved in GWD eradication activities in identifying relevant scientific literature.

Anonymous, 1985. Operational manual, revised edition. Guinea worm eradication program in India. National Institutes of Communicable Disease, New Delhi.

Centers for Disease Control, 1983. Dracunculiasis surveillance--India. Morbidity and Mortality Weekly Report. 32:208-210.

Henderson, D.A., 1976. Surveillance of smallpox; International Journal of Epidemiology, 5:19-28.

Henderson, P.L., R.E. Fontaine and G. Kyeyune. 1988. Guinea worm disease in northern Uganda: a major public health problem controllable through an effective water program. International Journal of Epidemiology, 17: No. 2 (in press).

Henderson, R.H. and T. Sundaresan. 1982. Cluster sampling to assess immunization coverage: a review of experience with a simplified sampling method; Bulletin WHO, Vol. 60:253-260.

Hopkins, D.R., 1984. Eradication of dracunculiasis, in Water and Sanitation: Economic and Sociological Perspectives, Academic Press, pp. 93-114.

Hopkins, D.R., 1987. Dracunculiasis eradication: a mid-decade status report; American Journal of Tropical Medicine and Hygiene, 37:115-118.

Muller, R., 1971. Dracunculus and dracunculiasis; Advances in Parasitology, 9:73-151.

Richards, F.O. and D.R. Hopkins, 1986. Surveillance: the foundation for control and eradication of dracunculiasis; Submitted to International Journal of Epidemiology for publication.

Watts, S.J., 1987. Dracunculiasis in Africa in 1986: its geographic extent, incidence, and at-risk population; American Journal of Tropical Medicine and Hygiene, 37:119-125.

WHO, 1980. The global eradication of smallpox. Final report of the global commission for the certification of smallpox eradication, Geneva, 122 pp.

WHO, 1987. Weekly Epidemiological Record No. 45. Dracunculiasis global surveillance summary, 1986. Geneva. 62: 337-339.

WHO, 1988. Weekly Epidemiological Record. Dracunculiasis--Pakistan. Geneva. 63: 177-184.

WHO, 1988. Weekly Epidemiological Record No. 45. Dracunculiasis global surveillance summary, 1988. Geneva. 63 (49): 375-378.

COMMUNITY INVOLVEMENT IN SOCIAL MARKETING:

THE EXPERIENCE OF GUINEAWORM CONTROL

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Presented at the Mid-Year Scientific Conference of the Society for Public
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Work presented in this paper was sponsored by a grant from the UNDP/World
Bank/WHO Special Programme of Research and Training in Tropical
Diseases, Social and Economic Scientific Working Group.

COMMUNITY INVOLVEMENT IN SOCIAL MARKETING:

THE EXPERIENCE OF GUINEAWORM CONTROL

Social marketing has been heralded as the new strategy that will enable health education to make impact on a mass level [1]. Like new ideas in general, this application of commercial marketing concepts to the promotion of socially desirable goals is met with skepticism of both the ethical and programmatic varieties. The staff of the African Regional Health Education Centre (ARHEC) in Ibadan, Nigeria, were aware of these drawbacks when the idea of using social marketing in the control of guineaworm disease arose. Yet they felt that social marketing could be adapted to the principles and practice of community health education if proper attention was given to the need for consumer involvement.

ETHICAL CONCERNS

Two major ethical problems make the health educator reluctant to give full consideration to social marketing strategies. The most obvious concern is the link between social marketing and its commercial counterpart which is perceived as persuasive, if not coercive, and therefore many steps away from the desired notion of voluntary behavior change [2]. Marketing appears to be a process planned by professionals with little room for active and meaningful consumer involvement.

A second and sometimes less articulated issue is the focus of social marketing which is more towards individuals than institutions or society. This opens up the problem of victim blaming [3]: sell a product, service or idea that will help the individual cope, while leaving the unhealthy social and economic system unchanged. One senses this problem even at the methodological level. Marketing has relied traditionally on media or information strategies aimed at individual consumers. Such strategies can not redress structural faults and often fail even to influence the complex etiology

of the individual behaviors which they have targeted [4]. The lesson must be learned time and time again that awareness is not enough to bring about change [5,6].

TECHNOLOGICAL LIMITS

Although social marketing, it is said, does not rely exclusively on selling a tangible product [1], ultimately some artifact, tool or substance is involved. An agency may promote behaviors like jogging or home-based oral rehydration therapy. The consumer, to achieve these behaviors, may find herself buying new shoes or salt, sugar and a special sized teaspoon. Therefore even though an agency may not be selling a social or health product, it can not afford to ignore the technologies which the consumer must acquire and master before she can perfect the desired behavior. This is quite true in the prevention of guineaworm, a water-borne helminthic disease.

While not using modern marketing techniques, health workers have been spreading simple preventive messages for decades throughout the rural areas of Africa and India where guineaworm is endemic. When this painful subcutaneous parasite is ready to expell its larvae, it forms an ulcer on the host's skin to gain access to pond water where the host might wade. The larvae, once liberated in the pond, are swallowed by a minute crustacean of the cyclops species. When water containing infected cyclops is drunk, the larvae are freed in the stomach of the host, pass through the stomach wall and begin the approximately year long process of growth and migration. The worm having grown to nearly a meter in length usually aims for the lower limbs to increase the likelihood of its larvae finding a water source.

Consequent to this information health workers suggest that people boil their drinking water if possible or in the alternative, filter it through a clean piece of cloth. The need for sanitary wells is also emphasized or at least a protected source of water into which infected persons can not wade.

The suggested behaviors sound simple, but existing technologies in poor rural areas for achieving prevention are limited. Fuel for boiling water is often scarce, expensive and time-consuming to gather. Boiling or "cooking" water is also culturally suspect. A square of clean cloth may not be too expensive, but it is awkward to use for filtering, especially when a woman is already tired from walking many miles to fetch the water. Also common cotton cloth becomes dirty quickly from pond water, thereby clogging. Neither does the common cloth have a guaranteed mesh size in its weaving, so some infected cyclops may slip through. Until these problems can be overcome, there is little which is technologically appropriate and feasible that social marketing can promote in terms of individual action.

The idea of a sanitary well, because of the extent of human and material resources required in its construction, is more a community endeavor. This requires community development and organization strategies. Improved water supply has been the main approach to guineaworm control in the past, but because of logistical and economic problems in reaching and serving rural areas, water supply has become a long term goal for many communities. This leaves farmers suffering the debilitating pains of guineaworm with little hope for immediate protection.

Fortunately experiments studying cyclops have led to the discovery of a durable and reliable filtering material, monofilament nylon gauze [7,8]. The nylon fibers are one continuous strand, not the twisted fibers of traditional cloth which so easily capture dirt. When woven, these single fiber strands form a uniform mesh size like a grid. A guaranteed grid size can be obtained which will block cyclops large enough to have swallowed a guineaworm larva, - while at the same time allowing water to flow through smoothly.

The monofilament cloth offers a basic product, which if designed properly could provide the basis for social marketing. This would offer a temporary solution to the guineaworm problem while long term efforts proceed to provide

a reliable community water supply, in other words a multi-strategy approach to guineaworm control [9]. This approach will address the problem on both the individual and societal levels.

MARKETING STRATEGY

In simple terms there are four major components to a marketing strategy - product, price, distribution and promotion [10]. The educational input to marketing has traditionally been limited to the promotional end. In order to adapt marketing to health education (as opposed to the other way around), one must consider the issue of consumer participation. The marketing process will become educational only if the community is involved in all four aspects of marketing strategy.

The social marketing project for guineaworm control took place in Idere, Nigeria. Guineaworm has plagued the town and its surrounding farm hamlets since time immemorial, but prevalence rose to new heights when a short lived piped water system collapsed. Residents of the farm hamlets who account for 20% of Idere's 10,000 population, never enjoyed the tap water and served as a reservoir of infection.

Efforts to control the disease began with a pilot programme to train community-selected volunteer primary health workers (PHWs) in 1978, by staff and students of ARHEC [11]. This was later expanded with assistance from the UNDP/World Bank/WHO Special Programme of Research and Training in Tropical Diseases (TDR). Both guineaworm control and adequate water supply were found among the top four felt needs of the community [12]. The ensuing efforts by Idere PHWs and ARHEC staff resulted in wells in some hamlets and sections of town, but pockets of disease remained due to economic and geological problems [9]. The prospect of personal protection through filters appeared to be a desirable addition to the guineaworm control armory. (See summary of marketing strategy in Figure 1.)

Product Design

Often a consumer's relationship with a product does not begin formally until after she makes an acquisition. There may have been market research to determine consumer preferences in color, style, size or other attributes, but there is usually very little consumer involvement in directly shaping the design of the product. This lack of interaction between producer and consumer can lead to rejection of the product and wasting of resources that went into marketing the product. This problem had to be avoided if the filters designed to prevent guineaworm were to achieve their objective.

A forum was needed in Idere where meaningful community input in filter design could occur. In October 1983, the PHWs had formed an association which was geared to helping them acquire basic resources to do their job, provide them with continuing education and give them a basis for joint action to solve community health problems. With over 30 active members from all sections of the town and hamlets, the association seemed the likely vehicle for fostering community involvement in this aspect of guineaworm control.

At its first formal meeting the PHW Association began to tackle the issue of guineaworm control. The options of both wells and filters were discussed. The former became the focus of long term fundraising. The latter was slated for immediate action. With guidance from the health education team from ARHEC, the PHWs began to consider ways to design and produce a filter. One idea proposed was the insertion of white cloth into the wooden frames used locally to sieve flour. If the idea was found feasible, the association could sponsor production and sale.

Investigations eventually revealed that the filter idea could not be implemented easily. Wooden framed sieves were found to be uncommon locally as metal and plastic ones, made commercially in the city had now flooded the market. Because these were welded or molded in one piece, they could not be

adapted for use as filters. The few remaining people who said they could make the old style sieve estimated the cost with cloth at around \$3.00 each. This was found to be a minimum price because drinking water pots come in a variety of sizes. Although the PHWs agreed that the design would certainly be convenient to use, the cost factor caused them to shelve the idea for the meantime. Still a few PHWs went ahead and had wooden framed filters constructed for their personal use.

The TDR Program was aware of the concerns and aims of the Idere PHWs since it had sponsored the bulk of their training to learn more about the potentials for guineaworm control in the context of primary health care. The studies on cyclops mentioned earlier were also sponsored by TDR, which fostered a link between the two projects. In April 1984, TDR sent a consultant microbiologist with his monofilament nylon gauze to Idere. Together with the health education team he examined local drinking pots, visited local tailors, toured the local market and studied samples of local pond water to determine cyclops species. At the conclusion of his visit a prototype design for a monofilament filter was developed [7].

The key element in the design was a rubber band, actually strips of old inner tubes commonly sold in the local market for sling shots. These sold for about 50¢ each, but could be purchased more cheaply in bulk. Cloth was cut in circles and the rubber band was sewn into the edge/hem. This was not only cheaper than using a wooden frame, but also fit more securely on the pot so that unfiltered water could not spill in by mistake. The PHWs were impressed with the design modification. TDR then decided to supply a small quantity of the monofilament cloth for experimental production, marketing and use in Idere.-

Prior to the arrival of the cloth, the health education team, aided by locally recruited field assistants, surveyed Idere's main town and farm hamlets to determine the acceptability of the new filter. Interviews focused

on women whose traditional domestic duties include water collection and possible treatment. Of the 371 interviewed, 56% had heard of filtering as a means of preventing guineaworm, but only 10% said that they practice it. When shown a prototype of the new filter, all but three women said they would be willing to buy one. A specific price was mentioned by 63% of women which ranged from 50¢ to \$10.00 per filter. An average price was \$3.10 and the median was \$2.00. Of those who mentioned a price, 75% said they would pay at least \$2.00.

Price was not the only survey consideration. As noted pots come in different sizes. The largest had a mouth of 24 inches while the smallest was only six inches. The most common sizes of the 564 pots measured were 14 inches (12.6%), 15 inches (31.7%), 16 inches (28.0%) and 17 inches (14.0%). Smaller pots accounted for 7.2% while 6.5% were larger. With this information it was decided to make filters in three sizes - small (Less than 13 inches diameter), medium (13-16 inches) and large (above 16 inches in diameter).

When the cloth arrived in Idere in August 1985, the PHWs were immediately involved in the production process. One PHW was also chairman of the Idere Young Tailors Association. The PHWs naturally requested that he be responsible for arranging a group of tailors to commence local production. Besides himself, who served as supervisor, he selected three other tailors, two men and a woman. They all agreed to pool their efforts and brought the work to the woman tailor's shop which became the filter factory for the next month. The tailors advised the ARHEC staff to buy the rubber bands in bulk in Ibadan, the state capitol, after which production began.

The tailors used their initiative to develop production methods. First they tried sewing the hem of the circles of cloth, then inserting the rubber bands, much as they do when making local trousers or skirts which have rope belts. Pulling the rubber against the nylon was found to be quite

troublesome, so they began sewing the band directly into the filter. They also discovered that by setting their machines on zig-zag stitch the product would be stronger than if straight stitch were used. The health educators and PHW leaders came to observe production regularly and check for quality.

Production also had to take into consideration factors which would aid correct use. A research assistant working with the project was able to document that cyclops could survive in a damp filter overnight. If the user inadvertently reversed the filter when pouring water the next morning, these surviving cyclops would be washed into the drinking pot. To alleviate this problem it was decided that the tailors would sew with a black thread on top and a white one on the bottom, thereby making a visible distinction.

A series of ten steps for safe and correct filter use were developed. First the side with the black thread would always be placed upwards on the pot. The middle of the filter should sag so that water would not splash out. Water should be poured slowly for the same reason. All water should be allowed to drain through the filter to avoid contamination during removal. The filter should be removed carefully so that all debris and cyclops on the top side will not be flipped into the water pot.

Users were advised to wash the filter after use, shake it out thoroughly and dry it outside in the sun. To protect the filter it should be stored away from sharp objects. Ideally the dried filter could be kept in a small nylon bag. Finally users were encouraged to inspect the filter for tears or holes before each use.

Price Setting

In the commercial sense marketing is said to contribute 50% to the value of a product [10]. Social marketing also adds value to the good, service or idea by increasing its accessibility to consumers, but to achieve social goals, the amount of marketing cost passed on to consumers must be carefully considered.

For the guineaworm filters the basic input costs were as follows. Rubber bands bought in bulk cost 18¢, which included a small wastage factor as not all bands were cut uniformly. Thin ones had to be discarded. The tailors agreed on a per filter sewing cost of 40¢ which included supply of thread. Adding price of cloth and estimated transportation costs, base prices were set at \$1.25 for small, \$1.50 for medium and \$2.50 for large.

TDR, the funding source, had stressed the need to set a reasonable price that would test people's willingness to acquire filters but not inhibit acquisition. Based on this, additional cost issues such as staff time and transport for promotion and supervision of distribution and sales were not included. In the spirit of social marketing, the sponsoring agency was assumed to be bearing the brunt of marketing costs.

Plans were made for community members to serve as individual salespeople. As incentive, a small amount would be added to the basic cost of filters and retained by the salesperson. It was envisioned that PHWs would be highly involved in sales because of their past experience and knowledge in guineaworm control. Other salespeople could include local market women. Since PHWs in their Association function much as a health committee to the community, the issue of a fair return for salespeople was brought to them for deliberation.

The PHWs were very keen that the project not turn into a moneymaking exercise so that the majority of townspeople could benefit. The health educators suggested that a reasonable profit range be proposed to sellers,

but the PHWs felt that price differences (for the same size filter) would generate ill feelings in the community and sabotage the program. Therefore they unanimously agreed that profit should be fixed at 20¢ per filter.

Distribution Arrangements

The Idere community consists of distinct sectors. As noted there is the main town and the 50 farm hamlets. The hamlets themselves are grouped in two main clusters. One group, located northeast of town has easy access to Idere either by foot or vehicle as the farthest hamlet is only 12 kilometers away. The other cluster is west of town across the Ofiki River. This sector is nearly cut off from town when the river runs full from approximately May through December. The only access is a bridge located 25 kilometers north of Idere. The need to extend coverage to all three areas was considered.

PHWs have been found effective in social marketing for nutrition [13] and family planning [14]. They are members of the community and have a dedication to improve the welfare of their co-villagers. In Idere, PHWs have been actively involved in guineaworm control for many years [11], so that distribution and sale of filters would fit naturally into their usual work. Most of the active PHWs were found in the main town and the northeast cluster of villages. Therefore it was expected that PHWs would form the core of salespeople in these areas.

Considering the relative size of the main town and the underserved nature of the western sector of villages, efforts were made to recruit other sellers. This would add another dimension to the marketing process as it would be possible to compare the work of local business people with the volunteer PHWs.

The final salesforce consisted of 35 individuals of whom 27 were PHWs. Seven other townspeople agreed to sell including four women who sell provisions in the local markets, a tailor, a shoemaker and a farmer/preacher. The 35th salesman was actually the project's field

assistant. His original task was to monitor purchase and use, but when it was found that several of the villages had no easy access to a salesperson, it was decided to equip the field assistant with a supply of filters for direct sales.

All salespeople received training before being given their initial stock of 12 filters. The purpose and correct use of the filter were explained and demonstrated. Salespeople were reminded that health education was their major task, for if people did not use the filters regularly and correctly, the disease would not be prevented and people would be dissatisfied with the product. In particular salespeople were told that due to the long period the worm takes to develop (an average of 12 months), some customers may already be infected with the disease. These should be told that full benefits may not be seen for a year or more and only if constant use is made of safe, filtered drinking water.

Arrangements were made so that salespeople could receive additional stock easily. One of the PHWs volunteered to keep extra supplies in her home. Also the health education team brought filters with them to the fortnightly PHW meetings for those who needed more. It was also during this meeting that PHWs submitted their receipts. The field assistant was responsible for collections from non-PHW salespeople and from those PHWs who lived far from town and did not attend regularly.

Sales Promotion

The duty for promoting community awareness and encouraging sales was placed with the PHW Association. They called village and compound meetings where the filters were demonstrated. They also made house to house visits to explain and show the product. At the Association meeting members were designated to make announcements at the local churches and mosques. The PHW leaders visited the King of Idere to explain the project. He agreed to have his town criers make announcements about the filters.

The field assistant made monthly visits to villages and compounds to document sales and monitor use. He used these visits not only to promote sales but also to reinforce education about regular and correct use of the filters. He also checked with the PHWs to learn of their problems in promoting sales and offer solutions.

MARKETING OUTCOME

Sales began in October 1985, at the beginning of the dry season just before guineaworm transmission would start. During the next six months 407 filters were sold, 74% by the PHWs, 5.4% by the other salespeople and 20.6% by the field assistant.

A sample of 779 households were monitored in both town and hamlets. Among these 32.6% had purchased a filter. This compares favorably to another product-oriented program, contraceptive social marketing, where activities in ten countries ranged from 0.4% to 15.3% of married women of reproductive age served or from 1.1% to 40.5% of current contraceptive users served [15].

The value of PHW and community involvement was demonstrated. Table 1 shows that in both villages and town where the resident PHW had obtained filters to sell, coverage was highest. Even in locations where the resident PHW did not have filters, sales were higher than in other villages/compounds. As can be seenⁱⁿ/locations with no PHW or with other resident salespeople, coverage was lowest.

The salespeople did perform their educational duties as 95% of sampled buyers reported that the seller both explained and demonstrated the proper use of the filters before sale. Of the ten points required for correct and safe use, buyers remembered an average of 7.6 items. Even among the 525 households that did not buy filters, 93% were aware of the product and all but four of these knew it was designed to prevent guineaworm.

Total sales surpassed \$700. In the context of a multi-strategy approach to guineaworm control, this money was donated by the project to the PHW Association's well fund. This provided nearly a fourth of the money used to dig two community wells which were completed in April 1986. This act also linked social marketing to the broader social issue of adequate and reliable water supply.

CONCLUSIONS

Not only is it possible to involve a community in all aspects of social marketing, but involvement pays dividends in terms of product usefulness and acceptability. This emphasizes the importance of meaningful interaction between producer and consumer of social products, an interaction which health educators have a duty to foster.

Concerning product design, the fact that the PHWs had given thoughtful consideration to the issue of filters made them receptive when a better technology came along. Their involvement in the production process gave them a deeper understanding of the product, making them better promoters and salespeople. The filter also heightened the PHWs' commitment to and feeling of competence in their overall health care duties by providing them a tangible contribution which they could make to community health. The PHWs' strong sense in involvement and ownership of the project even went as far as to override the researchers' interest in the possible effects of variable pricing.

Local involvement in actual production is a key element in developing an appropriate technology [16]. This has the benefits of reducing costs by using local resources and abilities, increasing local problem solving capabilities and product acceptance, and even holds the possibility of providing local people with additional revenue. The Idere tailors in short, were in the best position to produce a filter that was most suited to their own environment.

The PHWs as community volunteers proved their value as salespeople, by selling on average over three times as many filters apiece than did the seven "commercial" salespeople. The sales by the field assistant were concentrated primarily in areas where no PHWs were present and were facilitated by his having regular motorcycle transportation. In future consideration could be given on how to facilitate PHW mobility beyond their own hamlets to provide health services to a wider area.

The PHWs had a clear motivation to sell, and some did not even collect the extra 20¢ to which they were entitled. In contrast the commercial sellers stocked filters among many other items which competed for their attention, items which would be open to the market forces of bargaining and thereby more likely to bring a greater profit. One might suppose that involvement by the PHWs not only gave greater access for consumers to the product but also guaranteed it would be available at a reasonable price because of the PHWs' basic value orientation toward community service.

Overall sales for a first time effort were impressive. The positive community response could be linked to the fact that guineaworm control efforts had been underway for some years in Idere and that these efforts themselves were organized in response to a community felt need. The current ^{social} approach to/marketing is generating a demand for a product or service [17], but from the health education point of view, the practical and ethical concern of responding to the client's self-perceived needs still holds much value, as can be seen in Idere.

Aside from generating sales, the project also increased community awareness, but awareness does not necessarily lead to acquisition. The diffusion process may continue if filters are placed on sale for another guineaworm season, but resistance will naturally continue. There are indications of cultural, economic and social variables that inhibit

sales (and will be explored in a future paper). The presence of such variables again reinforces the need for multiple strategies in community health education programs.

In conclusion, social marketing is a neutral tool for social change as are many others. Advocacy can be educational if the client is encouraged to speak out for himself. Behavior modification can be educational if the patient helps develop her own treatment plan. Social marketing becomes educational when the community is involved in all stages of the marketing process, including determination of what are the basic health needs which marketing should address.

REFERENCES

1. R.C. Israel, Recent Developments in Social Marketing and Their Implications for International Public Health, Hygie (International Journal of Health Education), 3(4) pp. 50-53, 1984.
2. R.R. Faden and A.I. Faden, The Ethics of Health Education as Public Health Policy, Health Education Monographs, 6(2) pp. 180-197, 1978.
3. J. Ratcliffe and L. Wallach, Primary Prevention in Public Health: An Analysis of Basic Assumptions, International Quarterly of Community Health Education, 6(3) pp. 215-239, 1985-86.
4. L.W. Green, M.W. Kreuter, S.G. Deeds and K.B. Partridge, Health Education Planning: A Diagnostic Approach, Mayfield Publishing Company, Palo Alto, California, 1979.
5. L.M. Wallach, Mass Media Campaigns: The Odds Against Finding Behavior Change, Health Education Quarterly, 8(3) pp. 209-260, 1981.
6. J. Rowley, Awareness Is Not Enough, People (IPPF Review of Population and Development), 13(2) pp. 8-10, 1986.
7. K. Steib, Effectiveness and Applicability of Monofilament Filters for Guinea worm Control in Idere, Oyo State, Nigeria, UNDP/World Bank/WHO Special Programme of Research and Training in Tropical Diseases, Geneva, TDR/T16/181/SER/8/A, 1984.
8. B.O.L. Duke, Filtering Out the Guinea worm, World Health, March, p. 29, 1984.
9. W.R. Brieger, J. Ramakrishna, S.U. Akpovi and J.D. Adeniyi, Selecting Alternative Strategies for Community Health Education in Guinea worm Control, International Quarterly of Community Health Education, 5(4) pp. 313-320, 1984-85.
10. N. G. Nwokoye, Modern Marketing for Nigeria, MacMillan Publishers, London, 1981.

11. S.U. Akpovi, D.C. Johnson and W.R. Briege, Guineaworm Control: Testing the Efficacy of Health Education in Primary Health Care, International Journal of Health Education, 24(4) pp. 229-237, 1981.
12. W.R. Briege, J.D. Adeniyi, O. Oladepo. J. Ramakrishna and D.C. Johnson, Impact of Community Need Differentials of Health Education Planning, Hygie (International Journal of Health Education), 3(3) pp. 42-48, 1984.
13. R. K. Manoff, Social Marketing and Nutrition Education - a Pilot Project in Indonesia, Assignment Children, 65/68 pp. 95-113, 1984.
14. G. Williams, Kader Commitment in Kadiwulyo, People (IPPF Review of Population and Development) 13(2) pp. 15-17, 1986.
15. J.D. Sherris, B.B. Ravenholt and R. Blackburn, Contraceptive Social Marketing: Lessons from Experience, Population Reports, 13 (3) pp. J773-812, 1985.
16. D. Werner and B. Bower, Helping Health Workers Learn, The Hesperian Foundation, Palo Alto, California, chapter 15, 1982.
17. V.T. Vittachi, The Demand Approach for the Child Survival and Development Revolution, Assignment Children, 65/68 pp. 13-20, 1984.

TABLE 1

PRESENCE OF PHW AND FILTER SALES IN IDERE TOWN & HAMLETS

Households Possessing Filters	Hamlets & Extended Family Compounds				Total
	PHW has filter	PHW has no filter	Other Seller	No PHW	
Yes	149 (42.2%)	54 (33.3%)	15 (18.5%)	36 (19.6%)	254
No	204	108	66	147	525
Total	353	162	81	183	779

$\chi^2 = 36.101, \text{ d.f.} = 3, \text{ p less than } 0.0005$

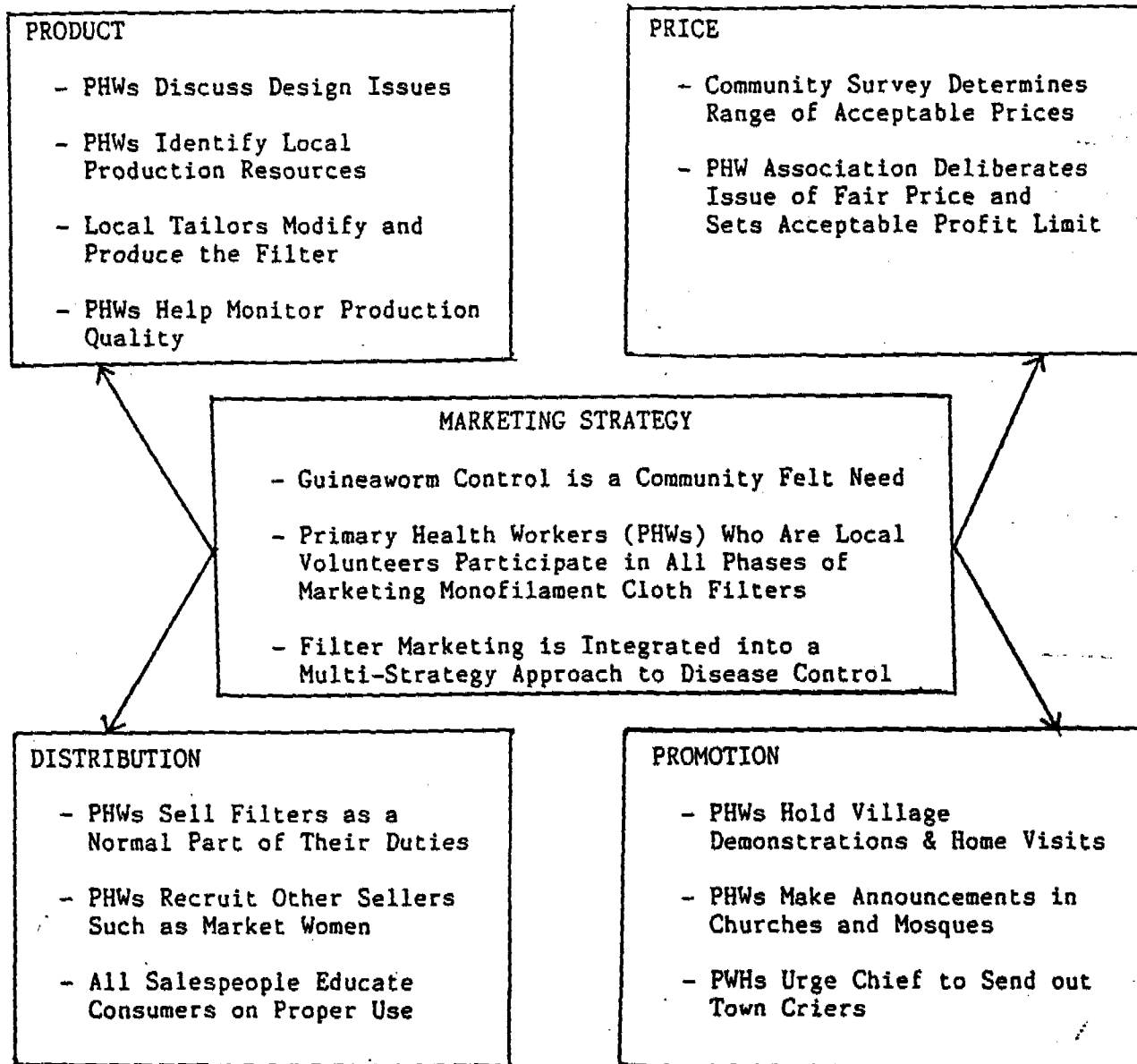
FIGURE 1

COMMUNITY INVOLVEMENT IN

SOCIAL MARKETING OF MONOFILAMENT NYLON CLOTH

WATER FILTERS FOR GUINEAWORM CONTROL

IN IDERE, NIGERIA



FROM: International Journal of Health Education
VOL XXIV 1981/4



Guinea worm control: testing the efficacy of health education in primary care

by Samuel U. Akpovi, Donald C. Johnson
and William R. Brieger

Not only is health education listed first among the essential services of a primary health care programme (WHO and Unicef 1978). It is also viewed as underpinning the basic approach to primary health care (WHO/EMRO 1978). This demonstrates a high level of faith in health education. Still, effort is needed to prove its worth.

An experimental health education and primary health care programme in several small farm villages in western Nigeria is the subject of this article. Programme development is described along with outcome issues presented at three levels: (1) short-term effects on health knowledge and attitudes; (2) intermediate behavioural results; and (3) long-term impact on health status. The implications of organizational and technological limitations are also considered.

Although the programme dealt with many health and related issues, guinea worm (dracontiasis) is highlighted in this paper as a means of facilitating the measurement of results. It should be noted that guinea worm and the related problem of reliable water supply were both among the priority concerns raised by citizens of the project communities.

Nature and control of guinea worm

Guinea worm is a water borne helminthic infection found in parts of Africa, the Middle East, South Asia and South America. The threadlike mature female worm

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measures up to one meter in length and causes formation of skin ulcers, which on contact with water, open to allow discharge of embryos. The larvae once in the water are swallowed by a species of *cyclops* and develop into an infective form within three weeks. When people drink water containing infected *cyclops*, gastric fluids digest the *cyclops*, freeing the larvae which penetrate the gastric tract walls and migrate to subcutaneous tissues. In approximately one year a mature worm will be ready to discharge larvae again (Lucas and Gilles 1973).

In Nigeria the time of maximum larvae release corresponds to the dry season (November-March) when streams have evaporated leaving only shallow ponds with high concentrations of *cyclops*. Ulcers are commonly on the lower legs of victims, where contact with water is most likely, but lesions do occur on other parts of the body. The disease is debilitating, resulting in loss of economic productivity when sufferers are laid up for weeks or months from the painful ulcers. Serious secondary infections such as tetanus can result.

Control can focus on two behaviours—the drinking of water containing infected *cyclops* and the exposing of ulcers to drinking water sources. An answer to the former is provision of potable water in the form of a pipe-borne system or sanitary wells. Temporary measures include filtration with a clean cloth and/or boiling of water, or chemical attacks on the *cyclops*.

Existing water sources could theoretically be protected if infected individuals refrained from contact with water and received treatment for the condition. Drug treatment can speed up expulsion of the worm from the skin, but additional ulcers may form as other worms mature (Becher *et al.* 1975) and reinfection is also likely. Traditional treatments include application of palm oil (of no obvious therapeutic value) or certain leaves (called "ewe imin" in the local language) on the ulcer. Also when the worm protrudes, it can be caught on cotton wool and slowly wound out around a match stick over a period of days. Clearly the best long-term solution is a clean and reliable water supply so people will not get the infection in the first place.

Previous interventions in the target area

The Ibarapa District in western Nigeria has a population of nearly 200,000 divided among seven large towns and hundreds of small farming hamlets. Guinea worm is endemic to the district with prevalence recorded at 12.3% in 1971 (Oluwande 1971) and 13.5% in 1977 (Kale 1977). A modern pipe borne water system was installed in the two largest towns, Igbo-Ora and Eruwa, a dozen years ago resulting in the apparent elimination of the disease in both places.

Later, the water system was extended to two other towns, Idere and Lanlate. Idere, the target area for this study, enjoyed the benefits of tap water for only a short time. By 1975 prevalence was up to 34% (Ezekwen 1975). Low pumping capacity combined with frequent electric power cuts to the treatment plant and broken pipes due to road construction have produced unpredictable problems and inadequate water supply in parts of Idere, no supply in others and the re-emergence of guinea worm throughout the town.

Total control needs not only a workable technology but also consideration of local human geography. The major occupation in the district is farming. While some farmers live in the towns and walk daily to their farms, many live in outlying hamlets (averaging 50 people). Hamlets are attached to particular towns where residents

return for weekends and festivals. Villages lack modern amenities and health services and are often inaccessible by road during the rainy season.

Idere has its own constellation of about 50 satellite farm villages arrayed in a 20 kilometer radius about the town. Pipe water was never extended to these villages. Consequently guinea worm is still rampant there. It is most likely that when the pipes failed in Idere town, people returning from the villages re-introduced the disease to nearby streams and ponds.

The plight of the villagers did not go completely unnoticed. A team of health personnel and environmental engineers did construct a sanitary well in one Idere hamlet. That well today remains unused and weed-covered. The residents did not participate in the design and location of the well. The engineers' inadvertent choice of a politically unpopular site doomed that effort to failure.

Treatment of guinea worm has always been provided at the health centre in Igbo-Ora (8 kilometers distant) for those Idere residents with the time, transport money, strength and interest to seek modern cure. Occasional teams of health workers and medical students have gone to survey, give health information and provide some on-the-spot treatment. In addition to the problem of reinfestation, such efforts have met little success because local attitudes have evolved around an expectation that government agencies will do all the work needed to solve such problems.

Since engineering and medical approaches have not produced lasting benefit to the people of Idere, the challenge became obvious to try a health education approach. Hopefully better results would come from emphasizing citizen participation, self-help and careful attention to the social and behavioural aspects of the problem.

Health education methodology

During June through September, 1978, three health education students from the African Regional Health Education Centre, University of Ibadan, were posted under faculty supervision to Ibarapa District as interns. By the end of September, one of the students (and co-author of this article) decided to stay in Idere to continue the project as the basis for his MPH dissertation.

Follow-up of one guinea worm case to an Idere farm hamlet brought the interns into direct realization of the extent and severity of the problem. Discussion with local leaders revealed the problem to be a felt need. The Oba (king) and chiefs of Idere accepted in principle the students' suggestion of using a primary health care and self-help approach to tackle the problem of guinea worm and other identified needs.

The Oba then called a meeting of leaders from all sections of Idere and each of the farm villages. Commitments and responsibilities were carefully explained by the students. The students, not representing a government agency, could not promise to solve any problems directly themselves. They could coordinate a training programme for village health workers (selected by the communities) that would be based on health and related needs expressed by the villagers themselves. They could also provide limited follow-up supervision, encouragement and links with outside resources. The villagers themselves would have to give both moral and resource support to the efforts of their village health workers. Leaders of ten villages accepted the idea.

The self-selected Idere villages with a population of 979 people thus became the experimental group which would be involved in the health education intervention.

Eight villages with 904 people surrounding Tapa, another town in the district, were chosen as a control group that would not benefit from an intervention. Both groups had similar characteristics: their predominant occupation was farming, they shared guinea worm problems and had the same age structure (mainly adults of productive age and children, since aged people live in the central towns). At closest point experimental and control villages were 20 kilometers apart.

The next step of programme development used community organization and participation techniques. A four-person health committee was chosen for each village by its residents. These committees in turn were responsible for overseeing the selection and supervision of a volunteer to serve as primary health worker, known locally as *olutoju ilera* (health caretaker), for each village. Community-developed criteria for selection of the health caretakers included residence in the village, ability to read and write in the local language (Yoruba), trustworthiness and acceptability. These people would not be salaried, but the villagers agreed to exempt them from certain communal work responsibilities in recognition of their health care activities.

Baseline data gathering took two forms. First each target village identified its own needs and interests through the medium of the health committees with assistance from their village health worker. This method yielded general concerns such as the prevention and treatment of common conditions plus issues on community improvement.

The second method, formal questionnaire, produced information on local knowledge, beliefs, attitudes, values and practices with particular emphasis on guinea worm. The questionnaire was administered to heads of all households in both experimental and control villages with the help of local school teachers.

This data guided the formulation of a three-month training programme for the health caretakers beginning November, 1978. The trainees chose time and venue for their own convenience. Afternoon sessions each Saturday and Sunday were held at a primary school in Idere town where all would normally be for weekend. The local government midwife and dispenser assisted as trainers. Training methods included stories, practical demonstrations, songs, riddles, humour and proverbs. The emphasis on traditional communication methods would both enable trainees to comprehend health issues within the context of their own culture and provide them exemplary approaches for health education activities in their own villages.

Intended results of the training were for the caretakers not only to provide preventive, simple curative and referral health services but also to spread personal health knowledge and skills to individuals, plus give stimulus and guidance for community development for the whole village.

As the training progressed and during four months afterwards, the health educator took on the role of consultant to the health caretakers thereby emphasizing that major health responsibility for the villages had evolved on them. On a fortnightly visit to each village, the health educator observed the health caretakers in action, provided feedback and encouragement and served as resource person.

Regular community meetings were a basic educational method for the caretakers. Here they would share what they had learned during training as well as identify community problems and examine potential solutions. One activity consisted in raising funds among residents for stocking village medicine kits. Discussion at meetings naturally included community water supply. Several villages began

collecting money in small affordable installments so that wells could be built by engaging the services of local contractors. Alternative measures such as filtering water with a clean cloth and the importance of infected individuals keeping away from water holes were considered in villages with few financial resources.

First phase results

Considering the twelve-month life cycle of guinea worm, one could only measure short-term and intermediate results in the few months following training. These though, were encouraging. A follow-up questionnaire, based on the initial diagnostic survey did reveal changes in knowledge among heads of household in the experimental villages.

Prior to intervention, only 3.8% of the 160 heads of household in the experimental villages knew a correct measure for preventing guinea worm (filtering and boiling water, using wells and avoiding ulcer contact with water). Ineffective measures (putting alum, which only settles particulates, or chalk in the water or saying prayers and incantations over the water) were mentioned by 26.8%, while 69.4% did nothing. This contrasts significantly to post-intervention figures where 75.0% named effective measures ($X^2 = 172.131$, 2 d.f., $P < 0.001$). None of the 140 interviewees in the control villages mentioned a correct preventive measure either at the first or second questioning.

Village visits showed observable changes in behaviour. The following short-term measures were in effect: using a clean white cloth to filter water before drinking, carrying clean water along during work out on the farms and active discouragement by villagers of all obviously infected individuals from entering water sources. Villagers placed stones or logs at the edge of water supplies, so that by standing on these water contact would be avoided. Caretakers were also referring cases of guinea worm to the health centre. No such activities were seen in the control villages.

Efforts at long-term prevention were also evident. Four experimental villages completed sanitary wells. An additional four had begun well construction, and two others were considering plans for wells. The control villages had no similar project in mind.

In the first months after the communities agreed to embark on this self-help oriented primary health care programme, a major inflow of new health knowledge could be witnessed as well as an awakening of self-reliance potential which had not been experienced in the area before. The question that loomed on the horizon was how such momentum would be maintained by the villagers after the health education student would graduate in June 1979, and return to his home state.

Efforts at programme maintenance

Nearly a year passed before personnel were available to conduct active follow-up work in Idere. It is a positive note that the stimulus for renewed effort came from the Idere villagers themselves. They sent word to the University's Health Education Centre that more training was desired, not only for the existing health caretakers, but also for persons from newly interested villages.

Two new health education interns were posted to the district in March, 1980, with the training programme in Idere being one of their major assignments. They promptly held a meeting with existing and potential health caretakers to assess needs and interests. Verbal reports of lower guinea worm prevalence were given at this

meeting. Existing caretakers requested up-dating on such topics as child growth and nutrition. All wanted more skills in first line management of common conditions like cuts and diarrhoea.

Transport was a serious limitation by this time. The interns were able to make only one exploratory pre-training visit to the villages to encourage participation in the new round of training which ran from April through June, 1980. Eighteen people attended the weekend sessions, four of whom were from the original group of trainees. These experienced caretakers served as valuable resources and role models for the new trainees.

As the second training programme drew to a close, trainees expressed their wish for continuous input. Since there were no resident staff who could or would take up this responsibility, University staff commuted to Idere in an attempt to provide training one day a week. Beginning October 1980, fifteen caretakers reassembled and continued training until August 1981.

During this last training series, a variety of people participated as trainers, including health education students, medical students, medical, nursing and other staff from the health centre and students training to become community health officers (a new cadre similar to physician assistants, but with a strong community health orientation). Not only did the caretakers benefit from the variety of knowledge and experience brought by the trainers, the trainers themselves learned first hand about the potentials of a community self-help approach to health care.

Attempt was made to involve the local government dispenser in the training again. The caretakers themselves expressed the need to have a closer relationship with him. Unfortunately he could not be encouraged to attend the sessions.

By 1981 visits to the villages were renewed on a sporadic basis by University lecturers and students. As will be seen shortly, these visits yielded valuable insight into how the caretakers were applying their skills. Visits also served to reinforce the importance of the caretaker's role in the community.

For example, in one village the chief related that while the caretaker said guinea worm was spread through water, he personally believed the god of smallpox was at fault. By neither challenging traditional belief and alienating the chief nor undercutting the role of the caretaker, the lecturer suggested that possibly the god of smallpox might trick people into contaminating and drinking the water, thereby spreading guinea worm. This explanation was acceptable to all.

Health and other programme outcomes

Follow up visits during 1981 revealed that nine of the ten original experimental villages had adopted some form of guinea worm control practice with positive health results. Prevalence of the disease in the five villages that had successfully completed wells was less than 5%. Of the remainder, where filtering and boiling of water was a reported practice, prevalence was less than 10%, while villages claiming avoidance of water sources by infected individuals as their control method experienced less than 20% infestation. This is in contrast to an average rate of 35% in the main town and a range of 30-70% prevalence in neighbouring villages.

Discussion in the villages gave evidence of other benefits. Not only did the health caretakers remember basic skills, but the villagers themselves were able to describe treatment for malaria, first aid for convulsion and oral rehydration procedures for

diarrhoea. They also reported that the caretakers were using arm circumference bands to assess nutritional status of preschool children and promoted the use of guinea corn porridge and other local foods to correct deficiencies. Such testimonies give substance to the generally expressed opinion that villagers believed they were in better health because of their health caretakers.

The villages were not without their problems. While it was theoretically good to make use of local contractors to dig wells, their constructions did not stand up to the strains the earth experiences during the rainy season. As of the last rainy season, all five wells had collapsed. Fortunately residents of these villages still remembered other preventive methods. Two villages attempted to build wells and hit rock. One village met up with an unscrupulous contractor who stole their money, while plans in another community were abandoned when a murder left them socially disorganized.

One village experienced complete dissatisfaction with its caretaker. Community meetings were never held, so development efforts like wells were never started. In fact the prevalence of guinea worm there was 50%. That caretaker never shared his knowledge, but preferred to concentrate on curative work in a seemingly secretive way.

In contrast was another village where clean and correctly applied bandages were seen on all persons with small cuts and wounds. When questioned, the villagers knew themselves where to obtain the bandages and how to apply them hygienically. Although the well in this community collapsed in the rainy season of 1979, villagers still took precautionary measures in the next dry season. When the local government built a well at a nearby school, villagers knew its value and began using it. Even though the water supply in this new well is rather low, villagers make an effort to see that any available clean water is shared equally among the households.

Organizational and technical consideration

Although the health education input was not consistent over the three-year period, it is encouraging to see that the initial intervention did produce some lasting positive results. The implication is that much more could have been achieved if certain organizational and technical problems could have been solved.

Ideally a primary health care programme such as this should be integrated into the local health care system. Local staff could then continue training efforts, facilitate the expansion of the programme into more underserved areas, link the health caretakers with other health and community improvement resources in the district and beyond, through supervision, notice and help solve quickly such problems as poor caretaker-community relations, dishonest contractors and faulty constructions.

Attempts at gaining ongoing participation of the local government midwife and dispenser in Idere failed for the following reasons:

- community outreach activities by staff are not encouraged by local health policy in which (a) staff are restricted to their centres during a regular eight-hour working day with the rationale that they might avoid their duties if they were allowed to roam about, and (b) consequently no provision is made for transport for these staff; this creates a feeling that health workers are civil servants, who on completing an eight hour stint in the office are unlikely to expend their time and money to do more work than the government has required;

— the basic education and follow-up supervision received by these health staff trains and socializes them into mainly a curative, medical approach to health problems; with the doctor as role model, little enthusiasm exists for participation in community self-help programmes.

Consultative intervention with heavy input from the villagers who have benefitted from the experimental programme is needed at the policy making level so that health staff are encouraged and enabled to foster community participation activities. In terms of education, a new programme does exist nationally to train community health aides, assistants and officers with the necessary skills for outreach and emphasizing related values. Ironically, local governments have rarely adopted establishment categories to accommodate these new staff. Several now work in Ibarapa district, but are slotted into midwife or dispenser positions and restricted in movement like existing staff. Again local policies are the target, along with encouragement of local people to attend these new training programmes.

The technological problems in this case concern wells, but could easily have involved other resources from tractors to latrines. Local people with the interest, skills and experience in well construction will become a more valuable resource if they can be linked to persons with the expertise to design affordable, acceptable and workable technologies appropriate to the local environment. This implies that the value and skill of seeking out interdisciplinary cooperation for community health projects needs to be inserted in the training of front line health workers.

Future plans

The positive results of the Idere programme have stimulated the staff and students of the African Regional Health Education Centre to seek solutions to the problems uncovered. One staff-student team has begun work in another part of the district to integrate modern staff (community health assistant, aide and dispenser), traditional medicine practitioners and trained village health workers into a primary health care scheme with more permanence.

Work will continue in Idere with the assistance from the Social and Economic Research Group of the Tropical Disease Research Programme of WHO. The first phase of this work is nearing completion; it is aimed at developing greater understanding of the human factors which contribute to the guinea worm and other problems or, on the contrary, to their prevention and solution. The health education approach to primary health care will guide the second phase of the intervention. The goal is to strengthen ongoing locally-generated approaches to improving and preserving the health of the Idere people.

This experimental programme has shown, and follow-up research hopes to reinforce, the fact that health education and community participation—both at the heart of the primary health care approach—can produce benefits for the people. Total success awaits moves by governments beyond lipservice to full policy, training and resource support of local initiative to improve health.

BIBLIOGRAPHY

Belcher, D.W., Warupa, F.K. & Ward, W.B. (1975). Failure of Thiabendazole and Metronidazole in the Treatment and Suppression of Guinea Worm Disease. *American Journal of Tropical Medicine and Hygiene*, 24:3:444-6.

- Ezekwen, G.I.K. (1975). Guinea Worm Infection in Two Rural Communities (Idere and Tapa/Aiyete): a Prospective Study. *Ibarapa Project Bulletin*, University of Ibadan, 61:31-6.
- Kale, O.O. (1977). The Clinico-Epidemiological Profile of Guinea Worm in the Ibadan District of Nigeria. *American Journal of Tropical Medicine and Hygiene*, 26:2:208-14.
- Lucas, A.O. & Gilles, H.M. (1973). *A Short Textbook of Preventive Medicine in the Tropics*. London: Hodder & Stroughton, pp. 76-7.
- Oluwande, P.A. (1971). Environmental Survey of Ibarapa Division 1964-71. *Ibarapa Project Bulletin*, University of Ibadan, 6:14-24.
- World Health Organization & United Nations Children's Fund (1978). *Alma-Ata 1978: Primary Health Care*. Geneva: World Health Organization, p. 4.
- World Health Organization, Regional Office for the Eastern Mediterranean (1978). Health Education with Special Reference to the Primary Health Care Approach. *International Journal of Health Education*, 21:2:supplement.



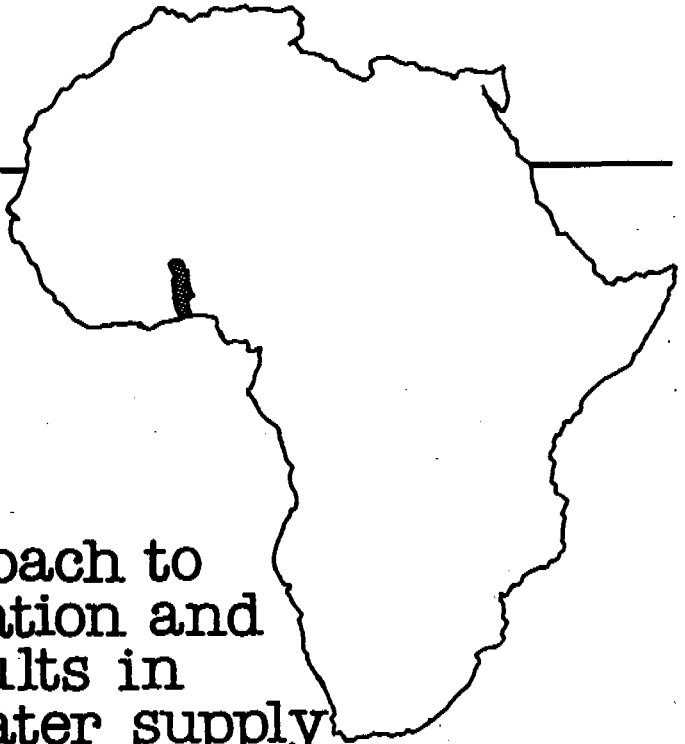
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case study:

GUINEA WORM



a successful approach to community education and participation results in safe drinking water supply and guinea worm eradication



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by
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foreword

Guinea worm disease, or dracunculiasis, is a water-associated disease transmitted only through contaminated drinking water. It is endured by an estimated 10 to 48 million people in Africa, the Middle East and Asia each year. It is 100% preventable and can be eradicated throughout the world.

Midway through the International Drinking Water Supply and Sanitation Decade (IDWSSD), World Neighbors offers in this case study the experiences of a community in West Africa which totally eradicated guinea worm from their lives.

An estimated five to 10 million people in 19 African nations suffer from this painful parasite. The impact on village life is debilitating. Though seldom fatal, the disease is painful and makes walking and working nearly impossible. Families subsist on less food and income and are unable to work in their fields, plant, and harvest their crops. It is a significant threat to health and a

barrier to development. There is no known cure for guinea worm and no vaccine for immunization. Prevention and provision of clean safe drinking water are the solutions.

Yet in the village of Kati, Togo, most of the people believed that the guinea worm came from jou-jou or witchcraft and did not link their water sources with the disease.

Through a highly participative communication and education effort, the Kati villagers slowly became aware of the true cause and source of guinea worm. And they then took on the task of eradicating guinea worm from their community themselves!

This case study shows that it is possible to eradicate guinea worm over a five-year period of time. The challenge before the international community is to effectively assist people in their efforts to acquire clean and safe drinking water by 1990. We hope the ideas presented here will help others to find the success attained by the people of Kati, Togo.

background

Since 1980, World Neighbors has had the privilege of working with the village of Kati in the southern part of the Republic of Togo, West Africa. An important factor in the success of that working relationship has been the encouragement and the training of local leaders to plan, implement and manage their own community-based health program and thus improve the quality of their lives. The community members became empowered as they:

- a. participated fully in the process of problem identification;
- b. discussed problems and possible solutions together and were closely supported in each step of the process by the funding agency staff;
- c. discovered that the participatory process used by World Neighbors gave the desired successful result;
- d. began to use this same approach in tackling other community health problems.

The original focus in the program was to establish a dialogue between Bethesda Hospital and World Neighbors. In the course of the daily work at the Bethesda Hospital, the medical team leaders noticed that sick people from the area came in too late for treatment. Many diseases which needed treatment could have

been prevented by simple practices of good hygiene and sanitation, a clean drinking water supply, proper maternal and child health care and birth spacing. The hospital was ready to begin a community outreach effort.

The first step was to identify and hire a Togolese health educator to live in a chosen pilot village and share responsibility for the program with the hospital's social work assistant. Therefore, in April 1981 Atsu Melowovo was hired and he established his residence in the village of Kati.

It was then necessary to work out a plan of action based on needs assessment and problem analysis. Following extensive meetings with the community leaders, a baseline survey was conducted to determine the health status of the community. Lack of clean drinking water appeared as one of the most serious problems with one out of five people suffering from guinea worm disease (dracunculiasis).

General belief in the community attributed the cause of the disease to witchcraft rather than to contaminated sources of drinking water. The community relied upon few sources of drinking water: the Zio River (three kilometers from Kati), one well located near the government dispensary (often out of service) and several shallow, rainfed ponds. A sense of resignation toward this as well as other common diseases affecting the community was prevalent, resulting in low agricultural productivity, high malnutrition and mortality in the under-five years of age group.

the disease



1. After an incubation or growing period of up to 12 months, the adult female worm moves to a position under the skin of the person suffering. A painful blister appears, usually on the lower leg or foot.

2. When the person puts the affected part of the body in water, the blister breaks and hundreds of thousands of tiny first-stage larvae are released into the water. The adult female worm then comes out slowly through the sore made by the broken blister. This worm is very thin but may be as long as one meter.

3. Some of the larvae in the water are eaten by the "cyclops," or water fleas, where they live and develop into third-stage larvae. These third-stage larvae, living inside the water flea, pass on guinea worm infection to people. The moving water fleas are barely visible if water containing them is held up to a light.

4. When people drink water containing the cyclops which carry the infective third-stage larvae, gastric juices in the stomach kill the cyclops and free the larvae. These larvae dig through the digestive tract and live in the abdomen. Male and female worms mate at three months and then the males die. The female continues to grow into an adult worm and moves toward the skin surface.

The worms do not survive in people for more than one year — they either come through the skin or die inside the body. Worms that die are absorbed and usually cause no symptoms.

People usually experience no symptoms of sickness or infection during the months-long incubation or growing period. When the worm begins to come out, it usually takes several weeks to completely leave the body.

During this time the person is disabled and in pain, often from infection of the sore from which the worm is leaving the body or from an abscess or arthritis. Tetanus can develop, as well as frozen joints and permanent crippling.

No matter how often people are infected or how many worms appear at the same time, people do not become immune to the parasite of guinea worm.

methodology

Because the program utilized a participatory approach and was designed to help people meet their own perceived needs, the whole community gathered together to tackle their problem of guinea worm.

The key steps in the methodology used in Kati, and which experience has proven can be employed to bring about success in programs in most of the Third World, are those described in some detail below.

1. Awareness Raising

The first contact with the village was made by the Bethesda Hospital social worker and the World Neighbors Family Health Advisor through village leaders, the chiefs and interested individuals. All forms of giving things away or doing things for people were avoided.

As outsiders, the World Neighbors and hospital team had made it clear to the people that they were interested in learning something about the community concerns and difficulties, but they needed to work with the village leaders or representatives of each section of the village.

Once rapport was established between the World Neighbors team and the local leaders, sharing of information took place about history, customs, problems, resources and solutions already found by villagers to a variety of problems encountered in the past.

Such awareness raising sessions generated high motivation from the leaders to take action, create an atmosphere of good communication and a willingness to work together.

Using a series of flannelgraph pictures on guinea worm, the team asked the leaders if they could give them their perceptions and ideas because World Neighbors was trying to test those visual aids.

The drawings, originally developed in Ghana, portrayed the problems of guinea worm, the causes, the consequences, and the possible solutions. Those pictures alone were already enough to motivate at least these first representatives of Kati to accept the idea to host the health worker in the village, to organize their own village meeting and decide to undertake action to first tackle guinea worm as part of a comprehensive community-based health activities program.





2. Determining the Community's Felt Needs

The key to gaining community participation is to identify a health problem which is most likely to generate the necessary interest, motivation and enthusiasm to create general acceptance of the program within the community.

Initially, the view of Bethesda Hospital, the local sponsoring agency, was that a health worker in the village would refer sick people to the hospital, mobilize the community to dig latrines and identify needs to be met by the social worker.

However, Kati community members had their own set of priorities. During different awareness raising sessions, the villagers, especially women, voiced interest in learning how to prepare

oral rehydration for diarrhea, prepare nutritious food for their babies, and get rid of guinea worm by filtering and boiling contaminated drinking water. But they did not choose what project they would like to tackle first.

The dialogue was continued to help the community assess their priorities in terms of improving and increasing their water source with consideration of their resources, time and local constraints.

From World Neighbors point of view, the program needed to start slowly and small, so that people in Kati could meaningfully participate in needs assessment, planning, execution and evaluation from the very beginning.

In fact, two years passed during this period of awareness-raising.



3. Respect for Local Knowledge, Attitudes and Beliefs

A prerequisite for the successful establishment of a community-based health effort is sincere and deep respect by the outside facilitators for the local people's knowledge, attitudes and beliefs. In Kati, World Neighbors found that some people already knew that the cause of guinea worm was contaminated drinking water. Before the program started a few families had constructed rain catchment tanks near their homes. However, the majority of the community believed that the guinea worm came from jou-jou, the gods, witchcraft.

The World Neighbors team never contradicted this belief but built on it and helped the people look deeper into the idea through reflection, dialogue and learning experiences.

For example, in a discussion the facilitator would ask "How do you think that the witchcraft can give you guinea worm?" If the answer includes mention of water, the next question would be, "Can we visit the place where you fetch your drinking water?" The group would go there together and continue the discussion. A sample of the water could be collected and then prepared for inspection through a microscope. The village people could then look through a microscope and discover for themselves that something alive was moving in the drop of water. More discussion could be based on their realization. This kind of approach stimulated the people to think and wonder about what was happening in the world around them.

A related essential attitude on the part of the outside facilitators is

patience. A community project must move at a pace comfortable for the community. If the outside agency imposes time restrictions incompatible with the community "clock", the project may find some success but the risk is that the success will be that of the agency rather than the community.

These attitudes of respect and patience can lead to an atmosphere of confidence, trust and mutual understanding in which meaningful learning can take place.

4. Selecting Volunteer Health Promoters

One important step of the process was to help the community select a health committee and village health workers to lead community analysis and solve the problem of guinea worm.

Through monthly visits, "slowly, slowly" the World Neighbors Family Health Advisory Service introduced a new approach so as to involve the villagers more in the program. Instead of injecting an outside structure and establishing a new health committee, the existing community well-being committee was identified as the appropriate local group with which to work.

Various roles, responsibilities and prioritized needs were discussed and analyzed. A plan for expansion of the existing committee was decided upon.

Then a process for selection of volunteer health workers was developed. Contact people from each section of the community were identified — usually those already involved in group activities or other

influential people (the women's chief, her vice-chief, and chief's secretary, community treasurer, for example). They then took the responsibility to identify possible volunteers from their section of the community.

The committee also established criteria for the volunteers: A person from the village, living in the village; willing to work without compensation; eager and proud to work with the people in efforts to improve the community.

The community as a whole then met to decide who they wanted to represent them as volunteer health workers. The Family Health Advisor and the Bethesda Hospital team were not involved in the selection.

5. Training of Volunteer Health Workers

Fourteen volunteers were selected by the community to be trained — seven men and seven women, all residents of Kati.

The first training workshop took place in November, 1983. The method of training was highly evocative, participative and practical. Facilitators included World Neighbors Family Health Advisor, Communications Associate, and Bethesda Hospital staff. Key factors of this training workshop include:

- the site of the workshop was in the village of Kati, not an outside training facility;

- the workshop took place over five days, with a daily schedule set by the volunteers (approximately 9:00 a.m. - 2:00 p.m. thus allowing the participants time to do their family duties at home or in the fields);

- the facilitators lived in the village

for 12 consecutive days before, during and after the workshop rather than driving in and out each day;

• the method of training was equally important as the content of the training.

An overview of some of the learning experiences during the workshop may provide insight to the method of training.

Sitting casually in a circle, the facilitators and participants mixed together, the workshop began with song, introductions of each by another and then, in pairs, a discussion of expectations.

This was followed by informal small group discussion of some prepared questions, such as: In the village what are the different beliefs about the cause of guinea worm? Which one has guinea worm: rain water, dam water, pump water, river water? And why?

A humorous role play was

presented by a facilitator depicting a health worker making a home visit more in the manner of a "gendarme," police officer, than a friend and neighbor. The volunteers discussed what they saw in the role play and what they thought about the attitude and behavior of the health worker. Then they discussed better ways to visit and work with people.

The volunteers split into pairs and made home visits the same day in their own community. During these visits, they tried to find out what the people in the village knew about health, especially guinea worm, using the same questions they discussed themselves earlier during the training session, a practical way to learn by doing.

Some of the information gathered included: Many people think guinea worm comes from jou-jou (witchcraft), germinated corn, ancestors, gods. Some believe guinea worm





comes from dam water because after rains they can see worms in the water. Some market women visiting the village declared that the guinea worm comes from water because they have been eating "fu fu" (some local food prepared with unboiled water) in the market and they never had the guinea worm before in the village of Kati.

The next day the volunteers discussed and evaluated their experiences in the community. In brief, they decided it had been an excellent opportunity to communicate with people and expressed the need for more practice.

During the rest of the workshop, they concentrated on learning how to prevent guinea worm by practicing how to boil and filter water and then by returning in pairs each day to the

community to find interested people with whom to do a demonstration.

Very early in the morning of the third day, the volunteers took advantage of an opportunity to address the entire community about the problem of guinea worm. Each Wednesday in the village of Kati, the chiefs convene a community meeting. The volunteers with some guidance from the facilitators presented a problem-posing drama during the meeting. Rather than lecturing the people, they enacted a story and followed it with a question and answer session, asking "what did you see?" "what are the root causes of the problems?" and "what can we do about them?"

In this way, the volunteers helped the community discuss among themselves what they saw in the play,

helping them learn and discover and share information through their own active participation. The people remember much better what they have said and discovered for themselves than what they've been told by a "teacher".

6. Volunteers at Work in the Community

Following the training workshop, the volunteers set for themselves a schedule for work within the community. Their objectives were to help the people understand and discuss the cause of guinea worm, the socio-economic consequences and the possible solutions, including: filtering water through a cloth, boiling and filtering muddy water, improving old wells, preventing people from putting their feet in the water sources, building cisterns and digging new wells.

The methods they used were ones which had been experienced during the training workshop, such as:

- role plays
- small group discussion
- individual contacts
- chiefs' meetings
- home visits
- field trips
- flipcharts
- filmstrips
- demonstrations
- water screening with microscope
- 16mm movies
- guinea worm case assessment

The community realized significant results from work of the volunteers. More and more people became convinced that the water was the source of the guinea worm. The number of cases illustrate the

acceptance of the new idea — by the end of 1983 there were 263 cases of guinea worm compared with 534 in 1982 and 928 in 1981.



A pivotal contribution to the effort occurred when one of the chiefs, who still regularly made visits to the jou-jou priest to offer sacrifices to rid the village of guinea worm, addressed the full community during one of the Wednesday morning meetings. He told the people, "From today, even though the witchcraft continues to plague Kati with guinea worm, I have decided that we shall work out a plan to have a well and use clean water in this village."

7. Community Fundraising Campaign

The momentum was growing now within the community to take action to have a source of clean drinking water in the village. However, a previous attempt to dig a well by hand had failed due to the granite rock table close to ground surface. And access to drilling services was limited. A government/USAID project which used heavy and expensive technology was scheduled according to national priorities. A private well drilling project sponsored by the Evangelical Church of Togo, and headquartered in nearby Atakpame, was a possibility as its equipment was less complicated and its schedule less restricted. Powered

by a small generator and using a simple rotary rig with diamond bit, the unit could easily be brought into the rural village on a four-wheel drive vehicle.

Another limiting factor was money. Both the Bethesda Hospital and World Neighbors budgets did not allow for funds to drill wells.

Yet the health committee and volunteers were not defeated by these problems. First, they met with the entire community to formulate a plan. Then representatives from each of four sections in the village took responsibility to collect contributions from each household to cover the costs of the well-drilling.

In the meantime the World Neighbors Family Health Advisor





contacted the Evangelical Church of Togo well drilling project with a request to meet with the representatives of Kati to negotiate a contract to drill their well. The first response was that the number of requests far outnumbered their ability to respond and that there was a long waiting list. However, when they learned of the efforts in Kati by the community people themselves to organize the fundraising campaign and pay for the services totally with their own money, the well-drillers agreed to meet with them.

The conditions of the well drillers were these:

- the fee is 120,000 CFA per well or approximately \$300 and the money must be paid before work starts;
- if the effort is unsuccessful, 50 per cent of the money is refunded;
- the community must host the well drilling team, providing housing and food, and contribute labor as required;

- the community is responsible for the maintenance of the well.

Also of note, the depth of the well cannot exceed 200 feet because the motor is not strong enough to further turn the drill. The real cost of the drilling is subsidized by the Evangelical Church of Togo.

The delegates of Kati accepted these conditions, a contract was signed and the first well was drilled.

Encouraged by the success of the first well, the fundraising campaign was repeated in other sections of the community. By the end of 1983, four wells had been drilled in Kati. In 1984, another four were sunk and in 1985 the total of working wells in Kati grew to 10.

Approximately \$3,000 was contributed by the people themselves to pay for clean drinking water.

As a result the incidence of guinea worm drastically dropped to 125 cases in 1984, seven cases in 1985 and two cases in 1986.

evaluation

Continuing evaluation was carried out with the village health committee, volunteer health workers, community members, chiefs and leaders.

It was done by measurement of the number of :

- annual cases of guinea worm;
- number of wells before and after the program;
- the number of people using clean water (observation);

- the number of village meetings about guinea worm leading to decisions to do something about it;

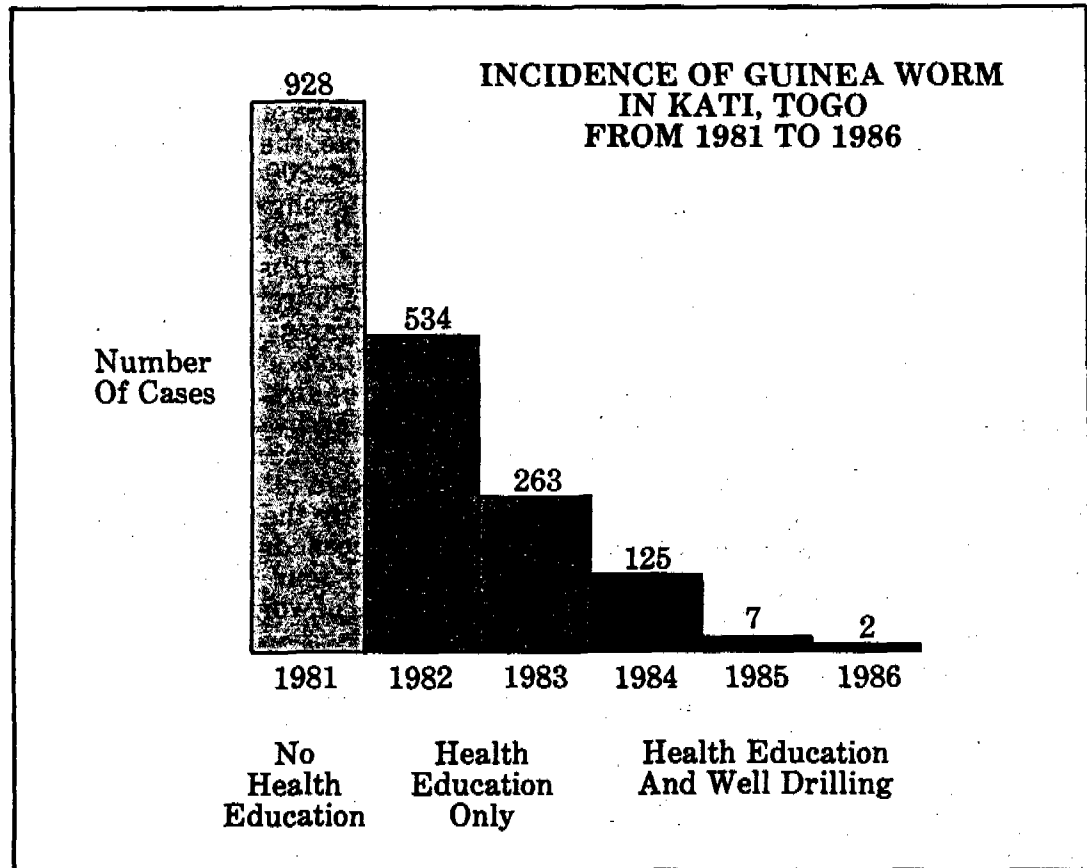
- the importance of home visits made by volunteers and committee members;

- the change of attitude toward the causes of guinea worm;

- the importance of village fund raising campaigns;

- the number of wells paid for by the community;

- the amount of money collected by the villagers themselves.



results

In Togo, where the Kati community has reduced the incidence of the guinea worm nearly 100% in five years, there can be no better indicator of the impact and cost benefits of participative communication in health education and water supply programs.

The benefits as perceived by the whole community are:

- increased supply of clean water source;
- regular family use of drinking water source;
- eradication of guinea worm;
- decrease in burden on women — no more long distances to walk and carry heavy water loads on their heads;
- more time to devote to other health activities such as food production, child care, marketing, other community activities.

- a sense of accomplishment and pride in their ability to do something so significant to improve the life of the community.

From World Neighbors' perspective, the additional benefits are:

- the whole community was unified, interested and participated in solving the problem;
- strong collaboration established between the local health center, the local program agency (Bethesda Hospital) and the community to eradicate guinea worm;
- women participated more fully in community decision making and use of money for productive and preventive health purpose;
- volunteer health workers (women and men selected by the community) were trained and became health educators, and are continuing in that role today;
- discovery once again, that this slow, patient, participative process does yield successful results.

FUNDING HISTORY

World Neighbors began providing financial assistance to Bethesda Hospital in 1981 for the community health project in Kati:

FISCAL YEAR	WN CONTRIBUTION	TOTAL KATI BUDGET
1981-82	\$2,700	\$3,300
1982-83	\$7,957	\$10,000
1983-84	\$6,253	\$6,253
1984-85	\$7,391	\$8,628
1985-86	\$2,240	\$6,490
	<u>\$26,541</u>	<u>\$34,671</u>

In addition to these project support funds, World Neighbors invested \$5,000 in the production of the guinea worm flipchart and filmstrip. Total investment over five years by World Neighbors and Bethesda Hospital in Kati equals approximately \$40,000 — or \$1.60 per person in the community.

future

Many international agencies and governments are spending millions of dollars during the International Drinking Water Supply and Sanitation Decade (1981-1990) of the United Nations. A mid-decade assessment of progress toward the goal of safe drinking water for all by the year 1990 indicates much more must be done.

Elimination of guinea worm disease, country by country, in association with the IDWSSD is a goal of the World Health Organization's global program.

We hope that the experience we share in this case study will be of use to others as the international community strives to both eliminate guinea worm and provide safe drinking water for all.

Eradication of guinea worm is not only a technological problem, but also a socio-cultural and economic problem. This requires from the funding agency and the health worker:

- a lot of patience;
- intensive personal involvement;

- good attitude regarding the cultural values of the people;
- a commitment to self-reliance and/or empowering people to do for themselves.

The need is to implement programs which respond to priorities identified by communities and which will involve effective community participation. For example:

- at the program level, shift the focus from big infrastructure to personal level by training local leaders to train others;
- generate innovative programs at the local level to address the issue of local management;
- carefully adapt programs to the local conditions, time, money and efforts.

World Neighbors believes that only providing clean drinking water in communities with guinea worm cases will have little or no effect on the incidence of guinea worm disease. Only a combination of improved water quality, increased clean water availability and a dynamic, sustained community with members empowered through educational programs will be effective in changing the health status at the family, community and national levels.

training aids



A 26-page flipchart examines the Guinea Worm (Ver de Guinée). It views the guinea worm's cycle and the social and economic consequences of infestation, and also illustrates ways to control its occurrence.

Developed with community health workers in Ghana and Togo, West Africa, this 8½" x 11" set of black and white drawings is designed to be used with village audiences.

Both English and French texts are on the reverse side of each drawing. Not only does this commentary stimulate discussion; it encourages participation in the problem-solving process as well. One copy of the flipchart is priced at U.S. \$4.00.



Where Does The Guinea Worm Come From? is a 53-frame filmstrip which examines the problem of guinea worm. Following introductory pictures showing people suffering

from guinea worm, the superstitious and scientific causes are portrayed. The many consequences of the disease, as well as traditional means of treatment, can be seen. The filmstrip ends with a long section on methods for prevention which are available to rural people.

The filmstrip was photographed in the village of Kati in Togo, West Africa, and was scripted and fieldtested in collaboration with the village health committee. The horizontal-format color filmstrip is available with an English or French script: U.S. \$10.00.

acknowledgements

World Neighbors wishes to acknowledge with sincere appreciation the significant participation of:

- the health committee and volunteer health workers in Kati;

- the staff of Bethesda Hospital, Agou-Gare, Togo, especially F.K. Tsogbe M.D.;

- the Village Well-Drilling Project (Forage Villageois pour l'Eau Potable) of the Projet Techniques et Sociaux, Evangelical Church of Togo; and

- the staff of the government dispensary in Kati.

WORLD NEIGHBORS



World Neighbors is an international development organization working hand-in-hand with people in Asia, Africa and Latin America to promote effective development, human dignity and self-reliance. Founded in 1951, World Neighbors is a humanitarian, nonsectarian, nongovernmental organization supported entirely by private funds.

World Neighbors assists people to produce more food, improve their health, plan their families and enhance the quality of their lives in order to achieve a standard of justice and equity which will allow opportunity for the fulfillment of human potential: physical, social, intellectual and spiritual.

This case study, along with other World Neighbors educational materials, reflects this focus on encouraging self-sufficiency of persons in rural communities throughout the world. Communications staff and program personnel work together in developing ideas, writing texts and producing photographs and drawings. Each filmstrip, flipchart and publication is prepared in the country and locality for which it is designed, and is based on actual program experience. Before being produced in final form, it is field-tested among the villagers for whom it was developed.

For more information about World Neighbors and to request a free catalogue of all World Neighbors teaching materials, write to:

World Neighbors Development Communications
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SANTÉ PUBLIQUE

LA DRACUNCULOSE, UN FLÉAU ÉRADIQUÉ DANS TROIS VILLAGES DU BURKINA FASO PAR L'ÉDUCATION SANITAIRE (*)

Par A. R. GHARY (1), T. R. GURGEMDE (2) & J. B. OUEBRAOGO (3) (4)

RÉSUMÉ

Nous avons mené une étude de lutte contre la dracunculose par l'éducation sanitaire dans trois villages du sud-ouest du Burkina Faso hyperendémiques pour cette affection. Pour ce faire, les villages ont été organisés dans l'optique des Soins de Santé Primaires. Deux ans après la mise en place des activités d'éducation pour la santé, la maladie a été éradiquée.

La faisabilité, le coût peu élevé et l'acceptabilité par les populations font de l'éducation sanitaire une des composantes essentielles de toute stratégie de lutte contre la dracunculose.

Mots-clés : DRACUNCULOSE, ÉDUCATION SANITAIRE, SOINS DE SANTÉ PRIMAIRES, ÉRADICATION, BURKINA FASO.

SUMMARY

Dracunculiasis, a scourge eradicated through health education in three villages of Burkina Faso.

We carried out a dracunculiasis control study through health education in three south-western hyperendemic villages of Burkina Faso. The villages were organized in the framework of Primary Health Care.

Two years after the beginning of health education the sickness was eradicated.

Feasibility, low cost and acceptability by populations of health education make it a main part of any dracunculiasis control strategy.

Key-words: DRACUNCULIASIS, HEALTH EDUCATION, PRIMARY HEALTH CARE, ERADICATION, BURKINA FASO.

(*) Cette étude bénéficie d'un soutien financier du projet SHDS/OMS.

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(4) Séance du 13 mai 1987.

INTRODUCTION

On peut dire maintenant que la dracunculose, cette affection qui frappe surtout les populations rurales, est en train de prendre la place qui lui revient parmi les endémies majeures en santé publique. Ainsi lors du séminaire organisé en juillet 1986 au Niger par l'Organisation Mondiale de la Santé, région Afrique, tous les pays africains concernés ont inclus dans leur plan d'action la mise en œuvre de programmes nationaux de lutte contre cette endémie. Dans cette optique nous rapportons ici notre expérience dans le contrôle de cette maladie au Burkina Faso.

MÉTHODOLOGIE

1. *Le cadre d'étude.*1.1. *Villages étudiés.*

Il s'agit de 3 villages situés dans la région de Banfora (sud-ouest du Burkina Faso) en zone soudano-sahélienne.

— Village 1 (Nofesso) : population 407 habitants en 1982 ; pas d'infrastructure sanitaire.

— Village 2 (Mitieredougou) : population 1 242 habitants en 1982 ; pas d'infrastructure sanitaire.

— Village 3 (Panga) : population 1 727 habitants en 1982 ; un dispensaire non fonctionnel jusqu'en 1982.

Les populations de ces 3 villages sont de même ethnie (Gouin) et la religion prédominante est l'animisme ; l'agriculture est la principale activité.

Dans ces villages le problème d'approvisionnement en eau potable est crucial ; seuls les villages 2 et 3 disposaient d'un puits foré qui en saison sèche tarissait plus ou moins. Durant la saison pluvieuse (mai-octobre) et la première partie de la saison sèche (novembre-janvier) les principales sources d'eau de boisson sont les mares.

1.2. *Situation de la dracunculose.*

Depuis une enquête menée en 1967 ces villages étaient connus comme des foyers de dracunculose. Nous avons déjà décrit l'état de l'endémie dans ces 3 villages (5, 6) ainsi que leurs modalités épidémiologiques (8). Le pic de la prévalence de la maladie se situe aux mois de juin-août c'est-à-dire durant la saison pluvieuse, la contamination ayant lieu au même moment. Les prévalences respectives figurent dans le tableau 1.

Une des caractéristiques de cette maladie en milieu rural est l'ignorance totale de son mode de contamination par les paysans (4). Le traitement repose sur les médications traditionnelles (application de cataplasme à base de feuilles, décoctions de racines, etc.), la pharmacopée moderne ne disposant pas de médicaments efficaces.

TABLÉAU I
Évolution des cas de dracunculose après l'activité d'E. S.

	Année 0		Année 1		Année 2		Année 3	
Population : Nombre de malades visités	Nombre de malades	Taux de prévalence ajustée *	Nombre de malades	Taux de prévalence	Nombre de malades	Taux de prévalence	Nombre de malades	Taux de prévalence
Village 1	317	167	54 %	34	8,15 %	3	0,71 %	0
Village 2	665	160	24 %	43	3,46 %	15	1,20 %	0
Village 3	714	264	37 %	25	1,44 %	3	0,17 %	0

* Taux de prévalence ajustée à la population totale du village.

2. L'éducation pour la santé.

Elle avait pour objectif d'apprendre d'abord aux paysans le mode de contamination de la maladie et ensuite les moyens de prévention utilisables à leur niveau. Comme méthode d'éducation sanitaire, des séances de causerie-débat avec présentation de tableaux et de diapositives ainsi que la projection de film éducatif ont été utilisées.

Les moyens de prévention ont consisté en :

- prévention collective : tout malade ayant un ver au pied ne doit pas pénétrer dans les mares pour puiser l'eau ;
- prévention individuelle : l'eau puisée dans les mares doit être filtrée avec le tamis-filtre du Centre Muraz (9, 10).

Afin de faciliter l'impact de cette éducation sanitaire, chaque village a été organisé dans l'optique des Soins de Santé Primaires. Un agent de santé villageois (A. S. V.) choisi par le village est formé. Il est aidé dans sa tâche par un comité de santé villageois (C. S. V.) composé de 7 hommes et de 7 femmes désignés également par la communauté.

La première année, 3 séances d'éducation ont été dispensées dans l'intervalle des 4 semaines qui précèdent le début de la saison des pluies (mois de mai, lequel correspond au moment de l'apparition des premiers cas de dracunculose :

- Séance 1 : mode de contamination et cycle évolutif du ver de Guinée.
- Séance 2 : moyens de prévention au village.
- Séance 3 : révision générale, distribution des tamis-filtres.

La deuxième année une séance de révision générale a été faite deux semaines avant le début des cas.

3. Recensement des malades.

Une enquête exhaustive portant sur toute la population présente a permis de dénombrer les malades dans chaque village, avant les activités d'éducation sanitaire. Les recensements des années suivantes ont été faits par dépistage actif de case à case par les A. S. V. et les C. S. V.

RÉSULTATS

Ainsi que le montrent le tableau I et la figure 1, les résultats de la lutte contre la dracunculose ont été spectaculaires. Les taux de réduction des cas de maladie (nombre de cas pour l'ensemble de l'année 0 moins le nombre de cas de l'année considéré divisé par le nombre de cas de l'année 0 multiplié, par 100), par rapport à l'année 0 sont :

- 82,7 % pour l'année 1,
- 96,4 % pour l'année 2,
- 100 % pour l'année 3.

En l'espace de 2 ans la maladie a été totalement éradiquée dans tous les 3 villages.

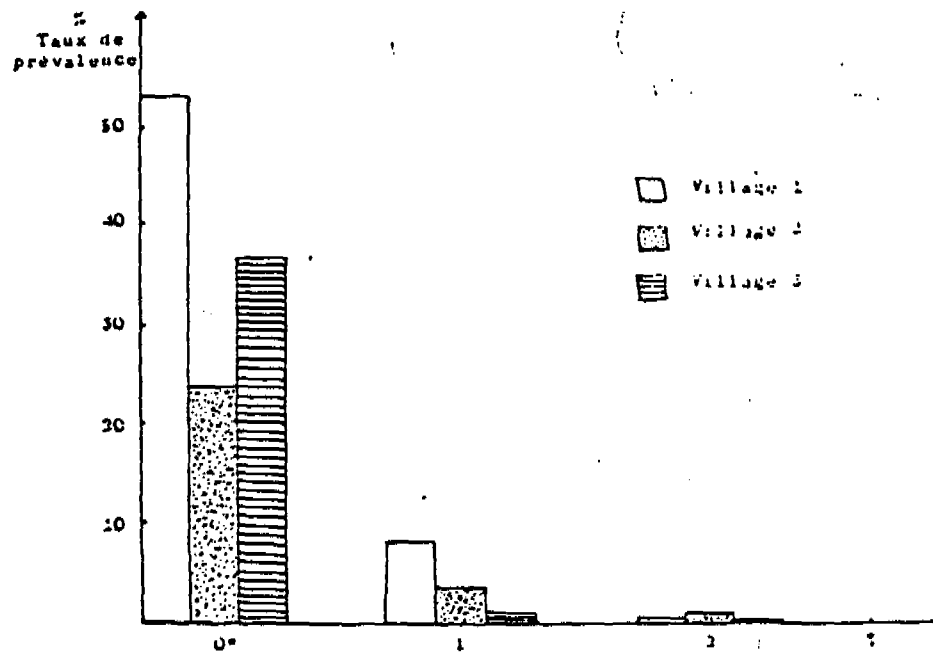


Fig. 1. — Évolution des taux de prévalence de dracunculose par village et par année après la mise en place d'activités d'éducation sanitaire.

* Début des activités d'éducation pour la santé.

INTERPRÉTATION DES RÉSULTATS. COMMENTAIRES

L'appréciation de toute action de lutte contre la dracunculose doit tenir compte de 2 facteurs :

- le cycle évolutif de *Dracunculus medinensis*,
- le cycle épidémiologique de la dracunculose.

1° Cycle évolutif de *D. medinensis* : il est de 12 mois et donc des sujets qui voient émerger leurs parasites au mois de mai 1987 par exemple ont été contaminés au mois de mai 1986. Ainsi lorsque des mesures de prévention sont appliquées à l'année X, il faut attendre l'année X + 1 pour vérifier les effets.

2° Cycle épidémiologique de la dracunculose : nous avons montré (8) qu'il y a des faciès épidémiologiques différents selon les zones bioclimatiques et que dans chaque zone il y a cycliquement chaque année une période de forte endémie dracunculienne. La date d'intervention des opérations de lutte doit se situer peu avant cette période de forte transmission (période de mars-mai dans le cas de notre zone soudano-sahélienne).

Les structures de S. S. P. mises en place ont été déterminantes pour l'action de l'éducation sanitaire. Pour une affection autour de laquelle les croyances sont fortement enracinées l'éradication de la maladie en l'espace de 2 ans peut être considérée comme très rapide. Cette stratégie utilisée nous semble peu coûteuse

par rapport aux moyens engagés et aux pertes économiques occasionnées par cette maladie (6, 7) et une évaluation comparée avec d'autres moyens de lutte est en cours qui nous le confirmera probablement.

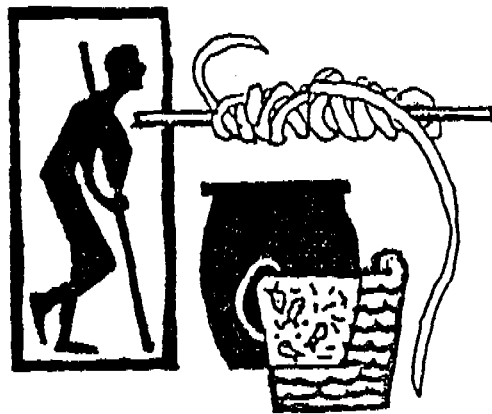
CONCLUSION

Notre étude a montré en cette Décennie Internationale de l'Eau Potable et de l'Assainissement (D. I. E. P. A.) la vulnérabilité de la dracunculose. Bien que nous ne disposions pas encore des résultats d'études comparatives avec d'autres méthodes de lutte contre cette endémie, nous pouvons d'ores et déjà proposer l'éducation sanitaire comme un moyen essentiel dans toute stratégie de lutte, eu égard à sa faisabilité et à son acceptabilité par les populations.

BIBLIOGRAPHIE

1. AKPOVI (S. U.), JOHNSON (D. C.) & BRIEGER (W. R.). — Guinea worm control: testing the efficacy of health education in primary care. *Int. J. Health. Edu.*, 1981, 24, 229-237.
2. BOURNE (P. G.). — Global eradication of guinea worm. *J. R. Soc. Med.*, 1982, 75, 1-3.
3. CENTERS FOR DISEASES CONTROL. — Guinea worm (dracunculiasis) and the International Water Supply and Sanitation Decade. *MMWR*, 1981, 30, 16, 194-195.
4. GBARY (A. R.), GUIGUEMDE (T. R.) & OUEDRAOGO (J. B.). — Dracunculose : étude des croyances et attitudes des populations en zone endémique (Burkina Faso). *Bull. Soc. Path. exot. (sous presse)*.
5. GUIGUEMDE (T. R.), SOKAL (C. D.) & ROUX (J.). — Dracunculose : études épidémiologiques en zone de savane (Haute-Volta). I. Conséquences cliniques. *Med. Afrique Noire*, 1985, 32, 9-14.
6. GUIGUEMDE (T. R.), SOKAL (C. D.) & ROUX (J.). — Dracunculose : études épidémiologiques en zone de savane (Haute-Volta). II. Conséquences socio-économiques. *Med. Afrique Noire*, 1985, 32, 17-20.
7. GUIGUEMDE (T. R.). — Comment chiffrer le coût économique des maladies tropicales dans une collectivité rurale. *Bull. Soc. Path. exot.*, 1986, 79, 108-113.
8. GUIGUEMDE (T. R.). — Caractéristiques climatiques des zones d'endémie et modalités épidémiologiques de la dracunculose en Afrique. *Bull. Soc. Path. exot.*, 1986, 79, 89-95.
9. GUIGUEMDE (T. R.), GBARY (A. R.) & OUEDRAOGO (J. B.). — Lutte contre la dracunculose en Afrique de l'Ouest. *Etudes médicales (sous presse)*.
10. GUIGUEMDE (T. R.). — Éliminons le ver de Guinée : guide pour l'agent de santé communautaire. Livret n° 1373, CDS/OCCGE Bobo-Dioulasso, Burkina Faso.
11. HOPKINS (D. R.). — Dracunculiasis: an eradicable scourge. *Epidemiologic Reviews*, 1983, 5, 208-219.
12. *The Lancet*. — After smallpox, guinea worm, Jan. 22, 1983, 161-162.
13. MULLER (R.). — Guinea worm disease: epidemiology, control and treatment. *Bull. WHO*, 1979, 57, 683-689.
14. NATIONAL ACADEMY PRESS. — Comment lutter contre la dracunculose : rapport d'un atelier. *Washington D. C.*, 1984, 16-19 juin 1982.

GUIDELINES FOR CHEMICAL CONTROL OF COPEPOD POPULATIONS
IN
DRACUNCULIASIS ERADICATION PROGRAMS



WHO COLLABORATING CENTER
for RESEARCH, TRAINING, AND CONTROL OF DRACUNCULIASIS
at the
Centers for Disease Control
Atlanta, Georgia 30333

8 February 1989

These guidelines are intended to assist persons involved with dracunculiasis eradication programs in making decisions about chemical control of copepod populations in sources of drinking water. To improve the usefulness of these guidelines we urge users to send their comments and suggestions to the address below.

WHO Collaborating Center for Research,
Training, and Control of Dracunculiasis
Centers for Disease Control
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INTRODUCTION

Dracunculiasis (Guinea worm disease) is a disabling infection caused by the parasite, Dracunculus medinensis. Infection is acquired by drinking water containing cyclopoid copepods, or more generically "water fleas", which have ingested parasite larvae. Infected persons remain free of symptoms until about a year post infection when adult female worms, in the connective tissue of the lower extremities (90% of cases), provoke the formation of a painful blister in the skin. The blister rapidly becomes an ulcer through which the worm protrudes to release larvae when stimulated by contact with water. The 70-100 cm long worm dies and must be extracted, usually by winding a few centimeters on a stick each day, a very painful process which may last many weeks. Duration of disability resulting from infection varies from weeks to months, according to the number of worms and the location of emergence. The annual incidence is estimated to be 5-10 million cases per year, and the population at risk is approximately 140 million. Incidence is highest in the 19-40 age group. Transmission usually occurs seasonally, during the dry or rainy season, depending on the local ecology, and the impact on agricultural productivity may be dramatic. Impact on school attendance is also substantial. Infected persons do not develop immunity. There is no known animal reservoir. Neither effective drugs nor vaccine exist. Dracunculiasis occurs in West Africa, extending across Sahelian countries into Eastern Africa (a total of 19 African countries), in parts of the Arabian peninsula (residual foci may exist in Saudi Arabia and Yemen), in Pakistan, and in Western India.

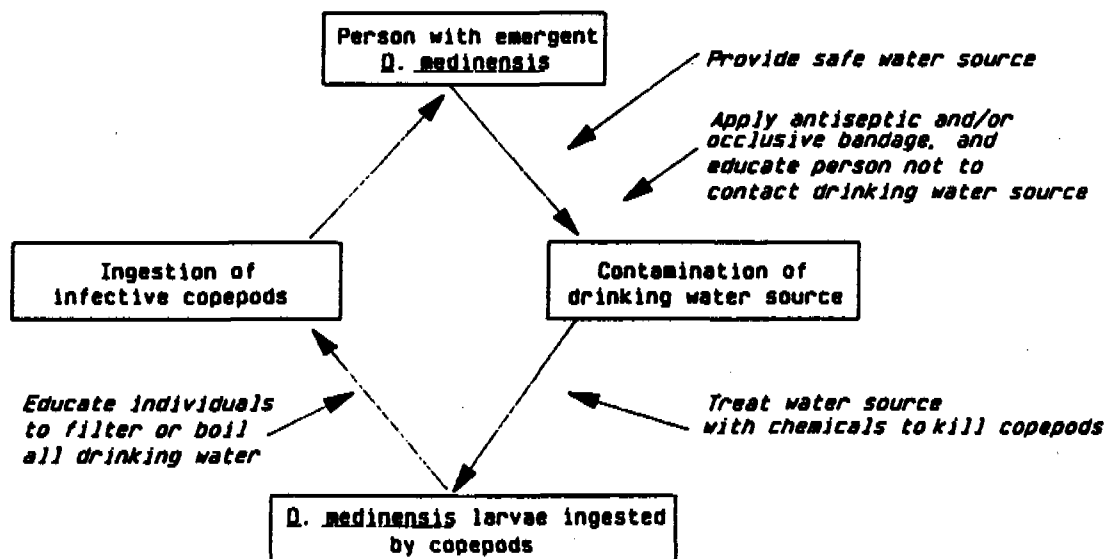
The disease was declared eliminated from southern USSR (Turkestan) in the 1930's, from Iran in the 1970's, and from Tamil Nadu State in India in 1984. Control of both the disease and its transmission and disease are accomplished through the provision of safe drinking water sources (free of infected copepods), health education to promote knowledge about the disease and filtration or boiling of drinking water, or copepod control.

The ultimate goal is global eradication of dracunculiasis. The intermediate goal is the elimination of dracunculiasis in each endemic country as targeted by WHO's Global Medium Term Program for Parasitic Diseases, covering the period 1984-1989 (PDP/MTP/83.3), by the Steering Committee of the International Drinking Water Supply and Sanitation Decade (April 1981 and November 1987), and by the World Health Assembly (Resolution WHA39.21: Elimination of Dracunculiasis).

I. Rationale for Selecting Chemical Control of Copepod Populations to Interrupt Transmission of Dracunculiasis.

- A. There are three recognized ways of interrupting transmission of D. medinensis to eliminate dracunculiasis from endemic villages:
1. Provision of safe (copepod-free) sources of drinking water.
 2. Health education to convince residents of endemic communities that this disease comes from their drinking water, and to promote the use of filters to remove copepods and/or boiling of drinking water.
 3. Chemical control of copepod populations in sources of drinking water.
- B. The points of intervention in the cycle of transmission are indicated in the figure below:

Figure 1.
D. medinensis Life Cycle: Points of Intervention Against Dracunculiasis



C. Comparative benefit-cost ratios for selected interventions.

Hypothetical benefit-cost ratios have been formulated for selected interventions in an inland West African country (Paul, et al., 1986). Benefit-cost ratios of 2.61 and 4.14, respectively (see (a) and (b) below) were estimated for a program based on epidemiological surveillance, health education/community participation, health care and a) provision of underground sources of drinking water, or b) chemical control of copepods with Abate^{TM*} (temephos).

D. Selection of interventions.

There is no single best intervention strategy. The important point is to deploy the most judicious mix of available interventions, especially when permanent sources of safe drinking water are not present and their provision may not soon be forthcoming. In such instances, if both resources and commitment permit, chemical control of copepods may be used to complement health education activities. In order to eradicate dracunculiasis these interventions must be implemented in ways such that interference with normal village activities is minimal.

* The use of trade names is for identification purposes only, and does not constitute endorsement by the Public Health Service, U.S. Department of Health and Human Services, or by the World Health Organization.

E. Circumstances in which chemical control of copepods should be considered as an intervention.

1. When unsafe sources of drinking water are few, small to moderate in volume (500 cubic meters of water, or less) and shared by many.
2. Where provision of permanent sources of safe drinking water is not feasible, either for geological reasons or because the community is too small or remote, and volume of water is not excessive (as indicated above).
3. Where health education compliance is poor.
4. During outbreaks of dracunculiasis to reduce incidence while villages wait for the provision of permanent sources of safe drinking water.
5. Where an additional security measure is needed to preclude transmission in areas where elimination is eminent or recently achieved.

II. Chemicals for Control of Copepods

- A. Several chemical disinfectants and pesticides have been shown to control copepod populations in sources of drinking water under field conditions. However, for reasons of safety of use, mammalian toxicity or relative efficacy, compounds such as chlorine, potassium permanganate, DDT, and zinc carbamate are not recommended for dracunculiasis control operations. Temephos (especially the 50% emulsifiable concentrate (EC) formulation) is presently the most appropriate chemical for this purpose.
- B. Temephos is an organophosphate insecticide (0,0,0',0'-tetramethyl-0,0'-thiodi-p-phenylene phosphorothioate) introduced in 1965 by American Cyanamid Company as a mosquito larvicide (Brooks et al., 1965; Schoof, 1967; Laws et al., 1968). As such, it has been evaluated extensively in potable water supplies. Its mammalian toxicity is very low (Laws et al., 1967). The World Health Organization Expert Committee on Pesticides declared temephos safe for use in actual or potential sources of drinking water at a target dose of one part per million; e.g., 1 mg/liter (WHO, 1973).
- C. Laboratory studies demonstrated temephos to be the most promising of a number of candidate pesticides evaluated for their toxicity to copepods (Muller, 1970). A concentration of 0.1 mg/liter killed 100% of Acanthocyclops vernalis (= Cyclops vernalis). The calculated lethal concentrations required for 50 and 90 per cent mortality were 0.002 and 0.006 mg/liter, respectively. More recent studies in India (Sharma et al., 1981) using Mesocyclops leuckarti yielded results

similar to those of Muller. These laboratory investigations, the demonstrated efficacy of temephos under field conditions in Africa and Asia, its low mammalian toxicity, and safety of use (accrued from experience in other vector-borne disease control programs) favor temephos as the compound of choice for use in the control of dracunculiasis.

- D. Temephos inhibits production of cholinesterase, an enzyme essential in synaptic transmission of nerve impulses in living organisms. Reduction of cholinesterase levels in copepods begins to occur within 12 hours of exposure to a 1 mg/l temephos concentration. Progressively, copepods become less able to swim and feed normally, and within 72 hours depletion of cholinesterase levels causes paralysis and settling of these organisms to the bottom, where they probably become food for others. Laboratory data suggests that the impact of temephos is greater among the naupliar and adult stages than among the intermediate copepodid stages.

III. Selection of Drinking Water Sources for Treatment

- A. Potentially, each unprotected source of drinking water in an endemic area may be a source of infection for the population. This circumstance is more likely where the availability of water is seasonal, the number of sources are few, small to moderate in size, and shared by many. In such settings the usefulness of temephos is obvious, and transmission of infection may be effectively interrupted at a reasonable cost. However, where the rainfall season is longer, sources of drinking water are many and less ephemeral, and/or very large, it is critical to determine:
1. Which sources have greater likelihood of supporting transmission
 2. If temephos can be a cost-effective means of interrupting transmission.
- B. Determinants of priority of sources of drinking water for the application of temephos are:
1. Presence of dracunculiasis in village.
 2. Frequency of use by villagers.
 3. Protection of the source from entry of persons into the water.
 4. Estimated volume of drinking water source.
- C. Determinants need to be clearly understood by treatment teams. The decision to treat an individual source will have to be made by the team leader and perhaps senior supervisors at the time of

inspection, guided by factors such as the priorities of the national program, the resources available and the status of transmission. For example, a single body of water containing a volume of 500 cubic meters will require one liter of temephos (about US \$20.00) per application. This cost does not include labor, transportation and attendant handling expenses, and must be carefully considered in relation to items such as the program budget, the expected efficacy of the treatment schedule, etc.

- D. It is also important for teams to be aware that drinking sources other than those located in the village might be very important transmission sites. In a study in northwest Burkina Faso, a dry savannah zone, over 90% of individuals with guinea worm disease indicated that their source of drinking water often was from small, man-made ponds located in or near agricultural fields, away from their village (Steib and Mayer, 1988). These ponds were most frequently incriminated as having significant copepod populations (Table 1, page 13). Hence, for control of dracunculiasis in such an area, emphasis would have to be placed on chemical treatment of these sources and health education to promote filtration of water obtained from these ponds.

Table 1.

**TYPES OF WATER SOURCES POSITIVE FOR COPEPODS
AND ASSOCIATION WITH TRANSMISSION OF DRACUNCULIASIS**
(After Steib & Mayer, 1988)

Type of Water Source	DIMENSIONS OF SOURCE		SAMPLING FOR COPEPODS			Percent of GWD Cases Using Source*
	Diameter (meters)	Maximum Depth (meters)	Number Sources Sampled	Number Samples Examined	Number Samples Positive	
Draw Well	2	5	3	30	0	-
Periodic Stream	10	2.5	1	5	0	-
Large Natural Pond	50-200	1-3	3	48	0	8.5
Small Natural Pond	7-15	0.3	3	41	0	4.7
Small Pond Manmade	4-9	0.3-0.6	5	63	7	84.9
Cattle Watering Source	17-45	0.5-0.8	3	43	1	1.9

- Considered unimportant in this study

* Calculated from 106 cases (of a total of 123) who worked in the field and obtained water from pond and cattle watering sources

IV. Interactions with the Community Regarding Application of Temephos

- A. Use of chemicals to control copepods in sources of drinking water in endemic villages requires approval by village leaders prior to intervention. Potential obstacles to a successful control effort are:
1. Attitudes and beliefs of the community regarding the use of chemicals in their drinking water.
 2. Lack of acceptance/tolerance by the community of perceived changes in color, odor, or taste of drinking water which might be attributed to the chemical.
 3. Lack of adherence by control teams to principles of safe and effective use of chemicals for control of cyclops.
- B. Observing proper protocol is necessary when temephos application is considered desirable for a village water source. Prior to application, clear and courteous communications should be established with the village authorities. Field teams must be very sensitive about applications of temephos since the introduction of a foreign substance to a village drinking water source will provoke community interest. The village chief or authorities must be contacted in advance for their consent to the application and scheduling preferences. This approval will facilitate local working conditions and most likely will aid in obtaining other information pertinent to the control program. The effects of temephos, particularly the taste and color of the water after treatment, must be thoroughly explained, as hostility, suspicion and even reluctance to use the water could

otherwise result. Villagers must be assured that the treated water will not harm them, their children or their livestock. The control program could be seriously undermined if villagers fail to accept temephos or if an accident could be blamed on a bad application.

- C. Timing the application is important. For example, if water fetching is heaviest during the morning, then treatment can be made in the afternoon. The time interval between application of temephos and use of water will allow the temporary coloration, odor or taste imparted by temephos to dissipate.

V. Timing and Evaluation of Applications

A. When to treat with temephos.

1. Transmission occurs when infected individuals manifesting skin lesions with protruding *D. medinensis* come in contact with sources of drinking water. *D. medinensis* larvae are released and copepods become infected. Since the object is to stop transmission, whether in areas where it is limited to a few (3-4) or most (6-8) months of the year, timing of the first temephos application at least one month before expected appearance of lesions in the community is critical.
2. Muller (1970), commenting on ponds as village water sources in dracunculiasis transmission, observed differences in disease prevalence related to rainy and dry seasons. In semi-arid regions having distinct wet and dry seasons and minimal rainfall within 3-4 consecutive months, incidence of dracunculiasis coincided with the rainy period. In contrast, in areas with longer and more intense rainfall, dracunculiasis was patent for as many as eight months of the year, with most cases of dracunculiasis occurring in the latter half of the dry season and continuing into the rainy season. The seasonal pattern of transmission, related to that of rainfall, has been described by many others, including McCullough (1982), Desfontaine and Prod'Hon (1986), Guiguemde (1986), WHO (1986), Chippaux (1988), and Steib and Mayer (1988). Thus, the timing of temephos applications must, as far as possible, be governed by the

presence or apparent absence of patent guinea worm infections in an endemic community.

B. How to evaluate impact of temephos on copepod populations.

1. Following the initial temephos application, cyclic treatments at fixed intervals during the transmission season are required. Retreatment is required approximately every 4-6 weeks following the initial application because residual effects of temephos have diminished by that time and both copepod populations and the potential for dracunculiasis transmission increase.
2. Within endemic areas designated for copepod control, a sample of surface sources of drinking water should be selected and copepod populations monitored before and after treatment with temephos. Comparison of pre- and post-treatment population levels of copepods, in at least a few sources, provides the only direct means of assessing the impact of temephos on copepod populations. (See page 10, paragraph D.)
3. The following procedures are suggested:
 - a. Collecting Copepods: A simple device for determining the number of copepods in a known volume of water is a wide-mouth vessel, e.g., a bottle or bucket of at least one liter capacity. Take 3-5 water samples at different points around the source by lowering the vessel just below the surface and allowing it to fill quickly (thus drawing in the rapidly-swimming copepods). Concentrate the organisms by pouring the water through a suitable fine mesh filter, such as would be used by the local populace to remove copepods from drinking water. Backwash filter into a smaller bottle and preserve organisms with 70% alcohol or 10% formalin.

Each sampling collection, at any particular site, should be made at the same time of day. Collections can be made by a properly trained village implementor or equivalent one week before, and at 2, 4, and 6 weeks post-treatment.

- b. Collection Analysis: (See Appendix 7 for information on copepods.) Live collections will contain a variety of different organisms in addition to copepods, which are easily distinguished by their characteristic swimming motion (jerky, sudden movements). With preserved samples, place little emphasis on nauplii since this stage can be found in other crustaceans; only copepodids (i.e., immature and adult stages shaped like the organism shown in Appendix 7) should be counted and staged (based on number of abdominal segments) if necessary (WHO slide set, 1986). Several species of copepods can be collected from the same site, and adults may differ greatly in size. Record the total number of copepods counted, volume of water filtered, village name or code for water source, and date of collection.

Specific identification of copepods requires detailed analysis of spine morphology and distribution, and is beyond the scope of this document.

VI. How to Apply Temephos

- A. Temephos (see Appendix 6) is commercially available in several formulations, but 50% emulsifiable concentrate (EC) is the most readily available and cost-effective formulation for copepod control. One liter of 50% EC costs approximately U.S. \$20.00 (1988 prices).
- B. Precautions on handling, storing, and applying temephos are shown in Appendix 6, which also includes the manufacturer's label. Pesticide usage is governed by the label and users should understand restrictions placed on the chemical by the manufacturer.
- C. Calculating the volume of water to be treated is a critical step in the safe and effective use of temephos for copepod control. To determine volume of water, the average length, width, and depth of the water body must be estimated. Fairly accurate estimates of volume can be obtained for sources of drinking water geometrical in shape (most often rectangular or cylindrical as is the case with cisterns, step wells, etc.). When the topography is irregular (ponds, pools, etc.), estimating volume is more difficult and less accurate.
- D. The most important point to remember is that estimates of volume of sources with irregular topography will be based on averages of length, width and depth. The accuracy of these estimates--the

assurance of adding safe, permissible amounts of temephos to sources of drinking water--will depend on the accuracy and number of measurements made.

- E. To make the required measurements simple, adequate field-made instruments can be prepared under most circumstances. For example, a convenient length of rope (30-50 meters) can be readily marked with knots, ribbons or other markers) at increments of one meter (or less if so desired) and used to measure length, width, and even depth (if a weight is attached to one end). Depth in shallow ponds can be measured with a stick calibrated in centimeters.
- F. Technically, the approach to estimating volume of water in irregularly shaped impoundments is derived from Simpson's rule for irregular areas (see Appendix 8).

The process described hereafter, however, is a layman's approach to estimating volume and essentially follows Simpson's rule. The surface area of a water source is divided by taking measurements along parallel transects of length and width. A measurement of depth is made at the intersection of each transect. The accuracy of this approximation of volume increases with an increase in the number of divisions. How many divisions are needed? Many divisions provide greater accuracy, but make the procedure tedious and extremely laborious. A few divisions or casual measurements, on the other hand, may result in gross over or under estimation of volume. In turn, this may lead to the addition of too much or too little

temephos--events which must be avoided. Practical procedures are described below.

- G. The first step is to obtain a rough estimate of width and length, e.g., pacing off the width and length of the source of water to be treated. Determine the number of divisions to be made by referring to the table below which applies equally to dimensions of length and width.

<u>If dimension of source is:</u>	<u>Interval between parallel transects across dimension is:</u>
<5 meters	0.5 meters
5-10 "	1 "
11-20 "	2 "
21-30 "	3 "
31-40 "	4 "
41-50 "	5 "

Transects of length and width, a constant distance apart, will create a grid of measurements over the surface area of the water source. The distance along each transect, and depth of water at each intersection is measured. The average length, width, and depth is determined, and volume calculated by multiplying these average values.

EXAMPLE A:

A "worker" estimates the dimensions of a pond by counting the number of paces along its length and width. The pond is found to be approximately 5 meters long and 3.5 meters wide. According to the preceding table, the pond, along its length, would be partitioned at one meter intervals and along its width at 0.5 meter intervals. Such partition results in a 3x9 grid. A sketch of this pond is shown below. Assume we have knowledge of the topography of this pond and the bottom contour is as depicted on the sketch.

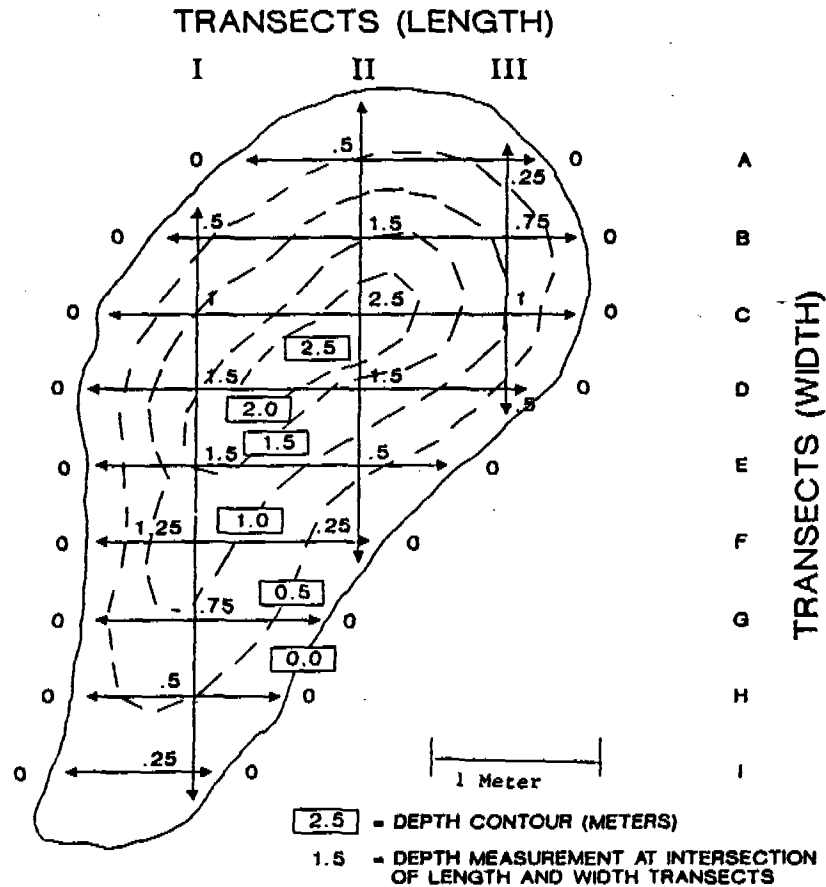


FIGURE 2.

Suppose that a calibrated rope is stretched across the pond, width measured at each of 9 transects, and depth measured, with another rope or stick, at intervals of 1/2 meters along the transect. The width measurements are:

<u>Transect</u>	<u>Width (meters)</u>
A	2.0
B	2.8
C	3.1
D	3.0
E	2.4
F	1.9
G	1.4
H	1.4
I	<u>1.1</u>
	Sum = 19.1 meters

$$\text{Average width} = \frac{19.1}{9} = 2.12 \text{ meters.}$$

The depth measurements are:

Depth (in meters) along width transects

	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>	<u>G</u>	<u>H</u>	<u>I</u>
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.25	0.75	1.00	0.50	0.50	0.25	0.75	0.50	0.25
	0.50	1.50	2.50	1.50	1.50	1.25	0.00	0.00	0.00
	0.00	0.50	1.00	1.50	0.00	0.00	-----	-----	-----
	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>
Totals	0.75	2.75	4.50	3.50	2.00	1.50	0.75	0.50	0.25

$$\text{Sum of all transects} = 16.5$$

$$\text{Average depth} = \frac{16.5}{36} = 0.46 \text{ meters}$$

Of critical importance in the computation of depth is the inclusion of zero values, i.e., the depth of water at the edge of the impoundment, the beginning and end of each transect along which depth measurements are made. Omission of these zero values results in an estimate of average depth of:

$$16.5/18 = 0.92 \text{ meters---a } \underline{200\% \text{ overestimate.}}$$

Measurements of length with the calibrated rope yield the following values:

<u>Transect</u>	<u>Length (meters)</u>
I	4.1
II	3.2
<u>III</u>	<u>1.9</u>
Sum =	9.2 meters

$$\text{Average length} = \frac{9.2}{3} = 3.1 \text{ meters}$$

Hence, the volume estimate for this pond is:

$$V = \text{average length} \times \text{average width} \times \text{average depth}$$

$$V = 3.1 \times 2.12 \times 0.46 = 3.0 \text{ cubic meters (m}^3\text{)}$$

Alternately, once the impoundment's average dimensions have been estimated, reference can be made to the nomograms found in Appendix 1.

Since cost determines whether an impoundment is to be considered for treatment, note that in Appendices 1 and 2 values of volume have been purposefully truncated at 500 m³. A single application to 500 cubic meters of water would require 1 liter of temephos 50% EC.

Sources larger than this should probably not be treated with temephos.

To determine the area, refer to page 1, Appendix 1. Firstly, locate the value for average width (2.12 meters) on the corresponding scale. Secondly, locate the value for average length (3.1 meters) on the corresponding scale. Thirdly, with a straight edge, draw a line between the points on the width and length scales. The point at which this line intersects the area scale indicates the surface area (6.6 square meters) of the impoundment. See example on page 26.

To calculate volume, refer to page 2, Appendix 1. Firstly, locate 6.6 square meters on the area scale. Secondly, locate the value for average depth (0.46 meters) on the corresponding scale. Thirdly, with a straight edge, draw a line between the points on the area and depth scales. The point at which this line intersects the volume scale is the estimate of volume for this pond (3 cubic meters). See example on page 27.

How much temephos 50% EC should be added to 3.0 m^3 of water to attain a nominal temephos concentration of 1 mg/liter?

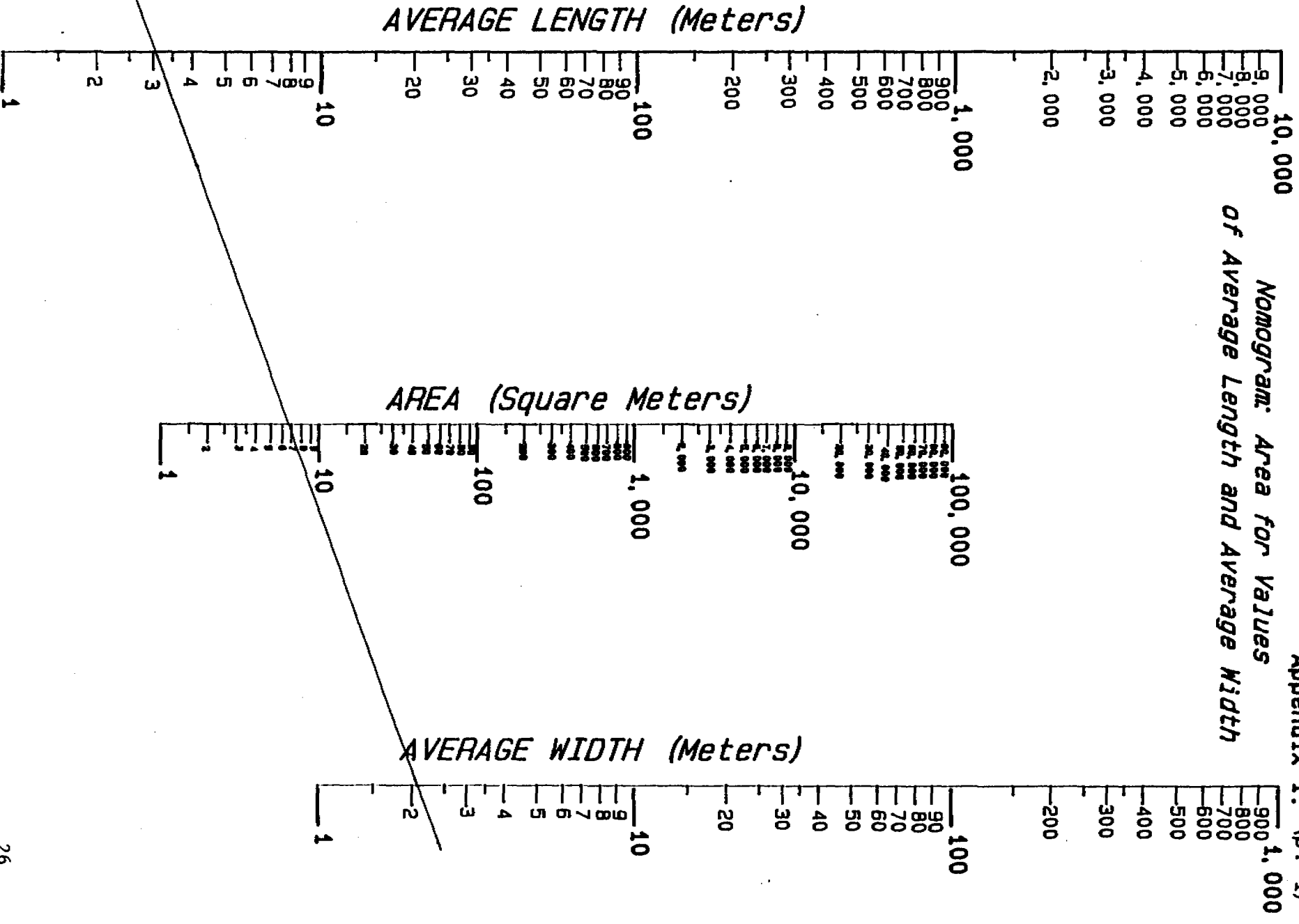
The norm is:

Two milliliters (ml) of temephos 50% EC are required per m^3 of water to obtain a 1 mg/liter concentration.

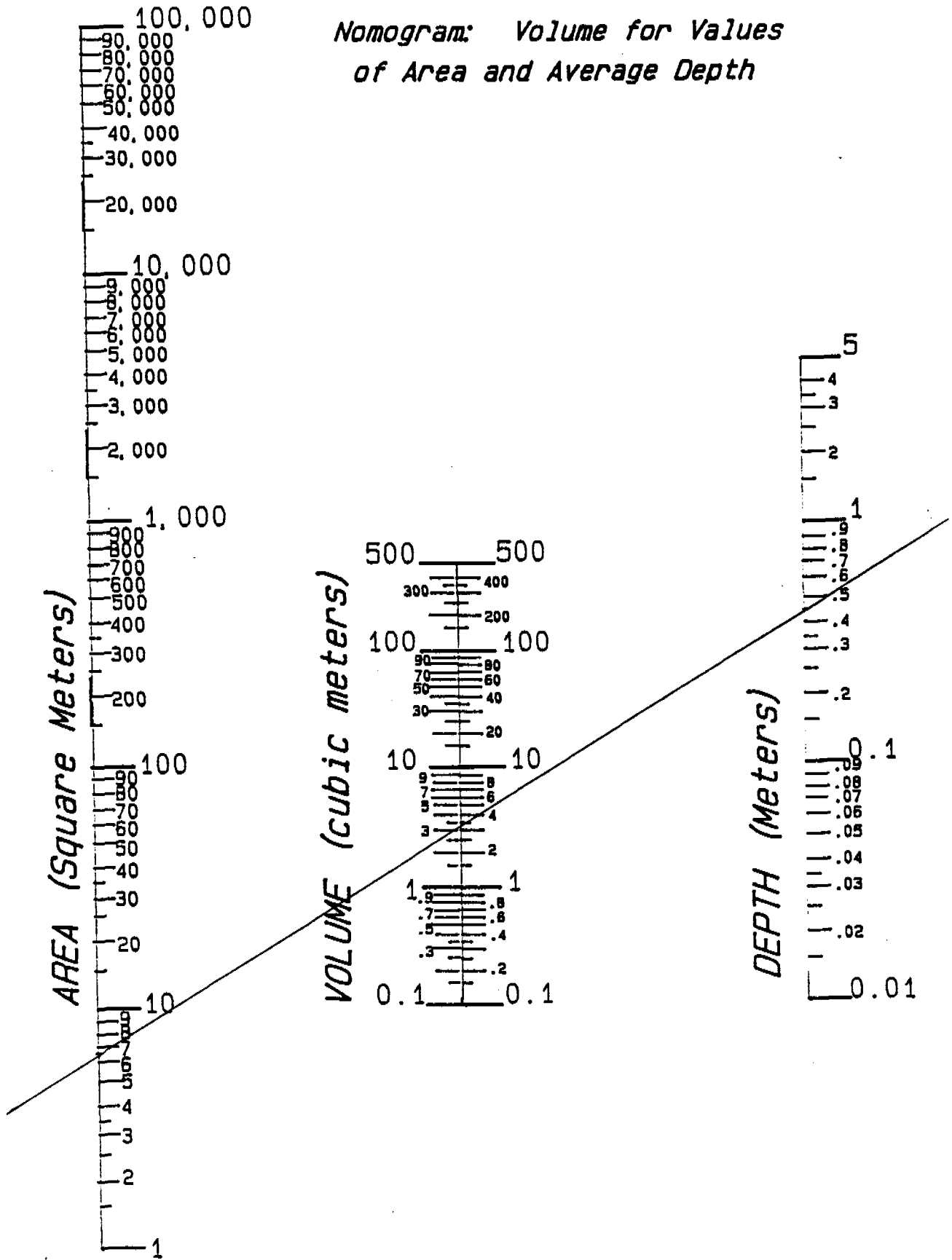
Hence, $2 \text{ ml per m}^3 \times 3.0 \text{ m}^3 = 6 \text{ ml of temephos 50\% EC.}$

Alternately, one can use Appendix 3, a listing which gives the amount of temephos required for known volumes of water. The required 6 ml would be mixed with sufficient water in a vessel or sprayer, and this emulsion distributed as uniformly as possible over the entire surface area of the impoundment.

Nomogram: Area for Values
of Average Length and Average Width



Nomogram: Volume for Values of Area and Average Depth



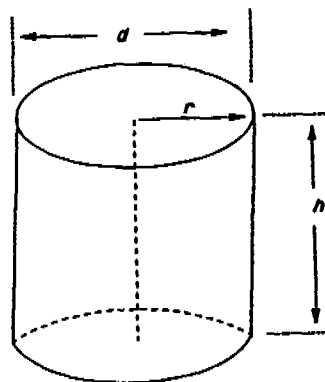
EXAMPLE B:

For cylindrically-shaped reservoirs of water, such as a round hand-dug well, it is necessary to determine the width, diameter and depth before the volume of water can be calculated. (Appendices 2 and 4 contains useful information).

We want to calculate the quantity of temephos 50% EC required for a concentration of 1 mg/liter in a cylindrical hand-dug well. Assume a diameter of 2 m and a water depth of 5 m. The formula is:

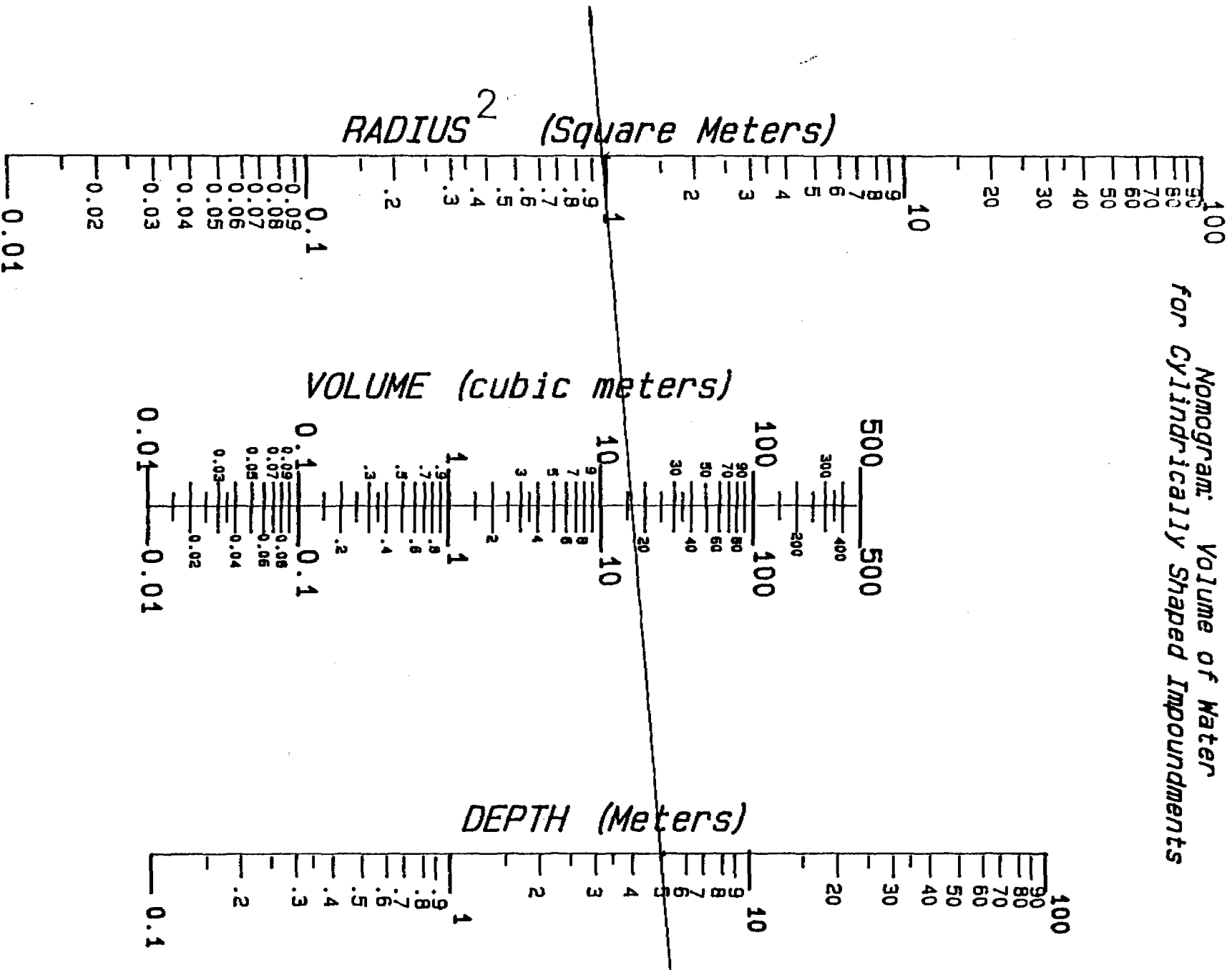
$V = \text{Pi } r^2 h$, where $\text{Pi} = 3.1$, $r = (\text{radius or } 1/2 \text{ the diameter}) = 1 \text{ m}$, and $h (\text{depth}) = 5 \text{ m}$. Hence,

$$\begin{aligned} \text{Volume} &= \text{Pi } r^2 h \\ &= 3.1 \times 1 \times 1 \times 5 \\ &= \underline{15.5 \text{ m}^3} \end{aligned}$$



To determine the surface area, square the radius and refer to Appendix 2. Firstly, locate the value for depth (5 meters) on the corresponding scale. Secondly, locate the value for radius squared (1 meter) on the corresponding scale. Thirdly, with a straight edge, draw a line between the points on the radius² and depth scales. The point at which this line intersects the volume scale indicates the volume (15.5 square meters) of the impoundment. See example on page 29.

Nomogram: Volume of Water
for Cylindrically Shaped Impoundments



How many ml of temephos 50% EC are required for 1 mg/liter concentration?

Two ml of temephos 50% EC per m^3 of water are required to obtain a 1 mg/liter concentration

Hence, $15.5 m^3 \times 2 ml/m^3 = \underline{31 ml}$ of temephos 50% EC.

An alternate way of measuring surface area of ponds with near circular configuration is by pacing off the distance around the reservoir. The inspector must know the length of his/her stride in meters, which can be ascertained by checking it with a meter stick. If, for example, there are 35 paces around a reservoir, and the pace of the inspector is 0.6 meters, then the circumference (c) is 21 meters (35 paces X 0.6 m/pace). With this figure, the area can be derived using the relationship $A = c^2/4 \text{ Pi}$.

To estimate volume, however, average depth must be estimated as in Example A, and the relationship $V = \text{area} \times \text{average depth}$.

- H. In endemic areas, the availability and quantity of drinking water will fluctuate significantly during the transmission season. As the level of water rises or falls, the surface area and depth changes, and so will the volume of water. Depending on the configuration of the particular source, a small fluctuation in water level may cause significant change in volume of water. To apply the correct amount of temephos will require that control personnel determine the dimensions of the drinking source before each treatment during the transmission period.

However, if the topography of the impoundment is roughly determined (as in example A) during the first visit to the impoundment (time 1 or t_1) and a permanent bench mark (preferably on a non-movable landmark) established, and the distance of this reference point to the water level recorded, then the depth of water at t_2 , t_3 , etc., can be quickly re-estimated without having to measure depth again. In example A, at t_1 the average depth was 0.46 meters. Suppose that at t_1 a line was painted on a rock as a bench mark, and that relative to it the water level at t_2 had receded 10 cm (0.10 meters). Then the average depth at t_2 is approximately:

$$-0.10 \times 0.460 = -0.046 + 0.460 = 0.414 \text{ or } 0.41 \text{ meters.}$$

With this permanent bench mark established, recalculation of average depth by the laborious process in Example A may be avoided unless, of course, the permanent reference point disappears. However, average length and width (surface area) may dramatically increase/decrease with changes in water level and need to be estimated each time as in Example A.

- I. Inaccurate measurements of water volume will result in over or under dosing a source with temephos. Overdosing must be avoided because the villagers would be unnecessarily exposed to levels of temephos exceeding the maximum recommended dose (1 mg/liter concentration), and the excess chemical would be wasted. Underdosing must also be avoided because copepod control could be ineffective, and the cost of the chemical and labor involved wasted.

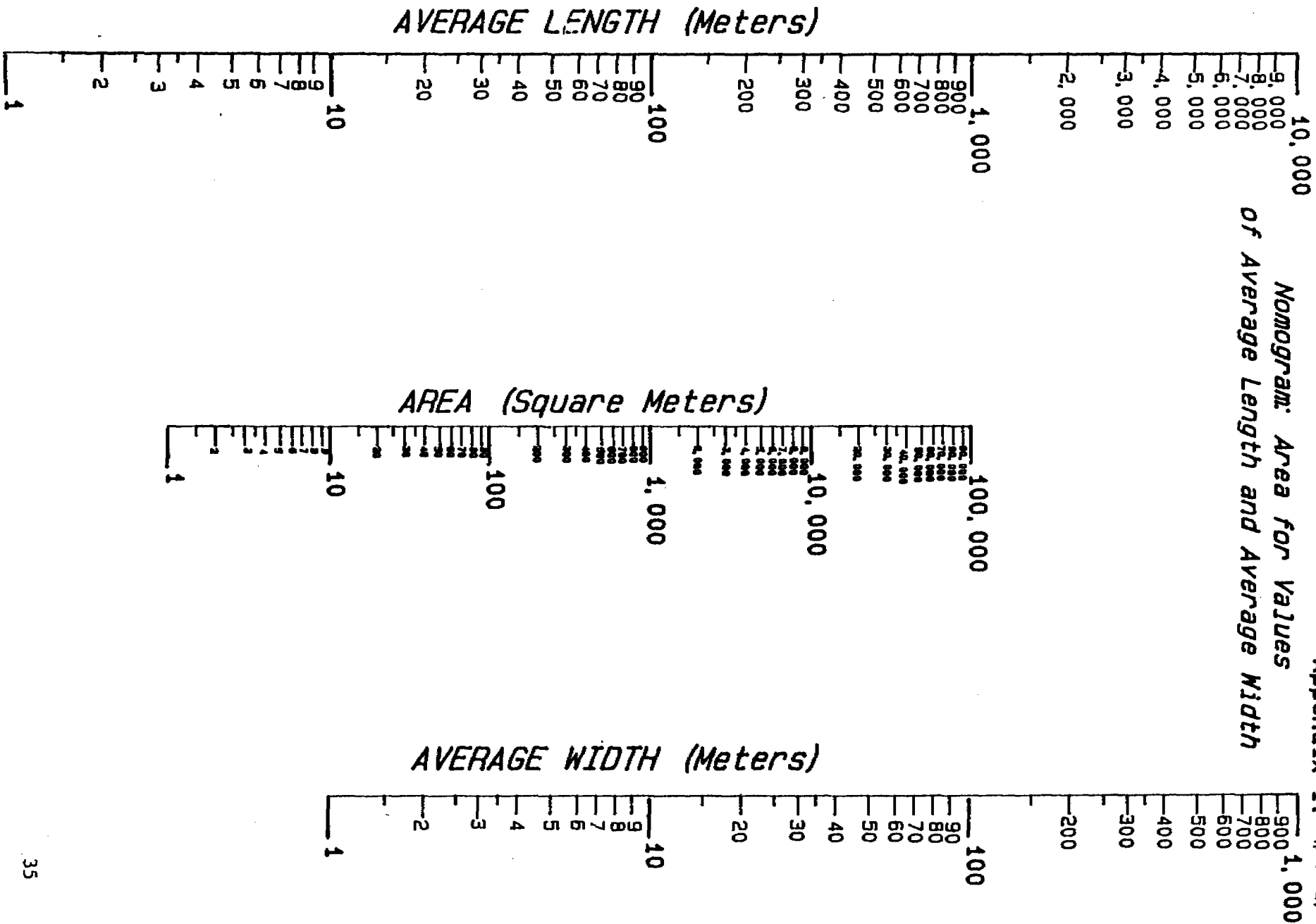
VII. Preparations for Temephos Applications

- A. When planning temephos applications the following requirements must be considered:
1. Determination of seasonal occurrence of dracunculiasis, including beginning of onset of patency (formation of lesions and worm emergence), is essential to prevent transmission from occurring. Timing of the first chemical application should take place at least one month before expected onset of patent cases.
 2. Listing of endemic villages (ranked in order of dracunculiasis incidence, if known).
 3. Ensuring that affected-community leaders are aware of the aims and safety of the temephos applications and their collaboration is assured (See Section A, page 9).
 4. Location of all drinking sources (within each endemic village and related hamlets/farming areas) utilized by villagers, and characterization of drinking sources as to type (pond, lake, pool, well, etc.). Preparation of a map localizing all known drinking sources relative to the village.
 5. Frequency of use by the population of sources of water for drinking purposes, especially during the transmission season.
 6. Training of personnel in mapping, estimating water volume, use and handling (including storage) of temephos, and sampling for copepods.

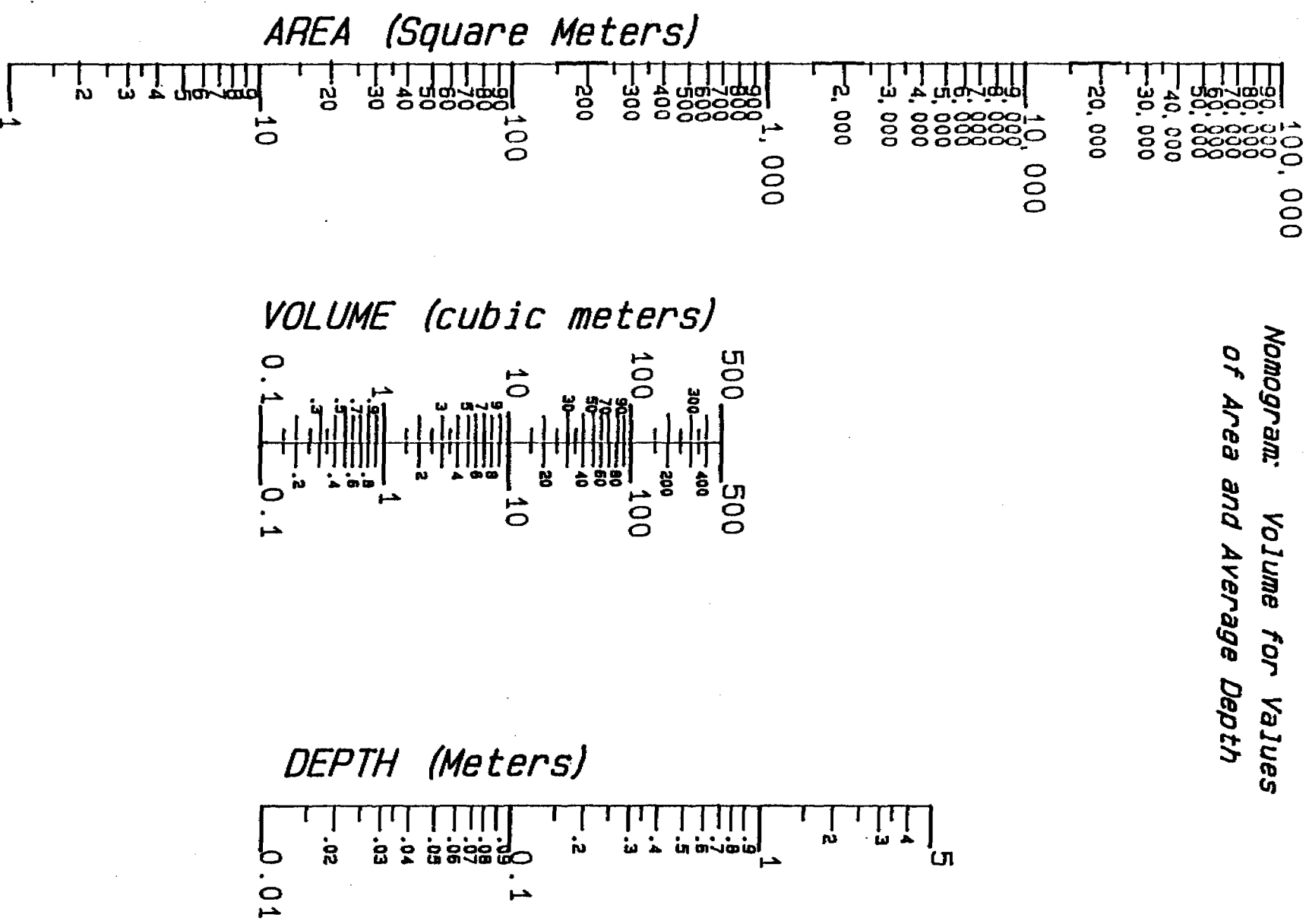
7. Outfitting field teams with supplies and equipment. The following is a list of materials needed by temephos field teams:
- a. Maps of the areas in which the teams are working (should be suitable for entering appropriate field notations).
 - b. Graduated cylinders (preferably 100 ml and 1 liter capacity) used for measuring temephos.
 - c. Instruments for measuring length, width and depth of water source (e.g., meter stick, measuring tape, calibrated length of rope).
 - d. Field record book and/or field record form used for calculating and recording volumes of water sources, temephos dosages, and related data (see Appendix 5).
 - e. Nomograms of water volume for specified dimensions (see Appendices 1 and 2).
 - f. Chart for determining the amount of temephos needed (see Appendix 3).
 - g. Plastic bucket and mug (for dispensing temephos).
 - h. Bar of hand soap (for washing temephos from hands) and towels.
 - i. Wide mouth vessel (1 liter capacity), fine mesh filter (100-200 micrometer pore size), small glass sample bottle with screw cap, 70% alcohol or 10% formalin, and labels (for sampling copepods).

APPENDICES

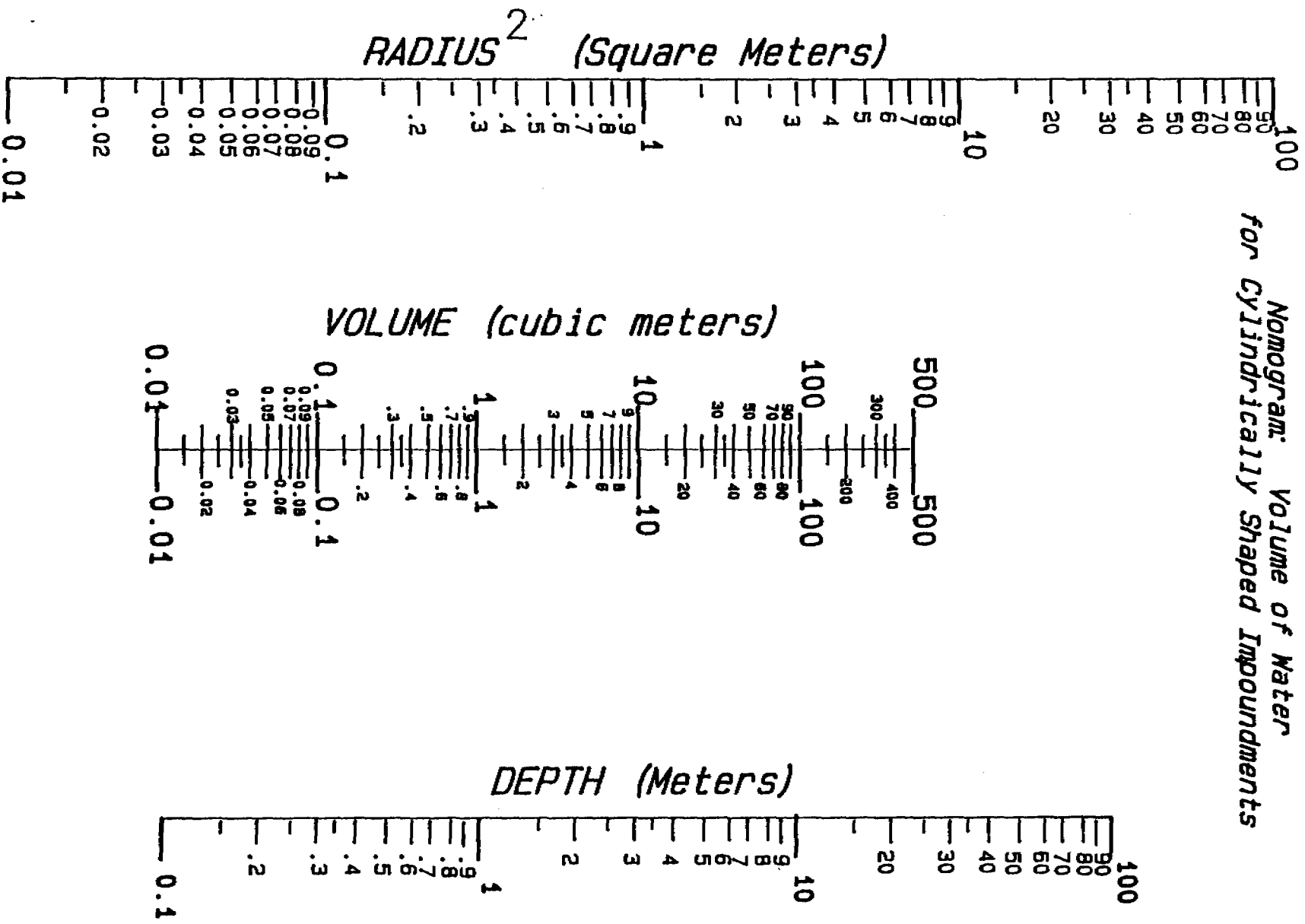
Nomogram: Area for Values
of Average Length and Average Width



Nomogram: Volume for Values
of Area and Average Depth



Nomogram: Volume of Water
for Cylindrically Shaped Impoundments



Appendix 3

MILLILITERS OF TEMEPHOS 50% EC NEEDED FOR 1 mg/LITER CONCENTRATION

[1 mg/liter = 2 ml of temephos 50% EC per cubic meter of water]

<u>Volume of water</u> (in cubic meters)	<u>Liters of water</u> (cubic meter = 1000 liters)	<u>ml of 50% EC</u>
0.5	500	1
1	1,000	2
2	2,000	4
3	3,000	6
4	4,000	8
5	5,000	10
6	6,000	12
7	7,000	14
8	8,000	16
9	9,000	18
10	10,000	20
20	20,000	40
30	30,000	60
40	40,000	80
50	50,000	100
60	60,000	120
70	70,000	140
80	80,000	160
90	90,000	180
100	100,000	200
200	200,000	400
300	300,000	600
400	400,000	800
500	500,000	1,000

Appendix 4

IMPORTANT FACTS FOR CALCULATING AREA AND VOLUME

Diameter of a circle = circumference x 0.31831

Area of a circle = Pi x radius squared
= diameter squared x 0.7854
= circumference squared
4 x Pi

Circumference of a circle = 2 x Pi x radius

Pi = 3.1

NOTES ON PARTS PER MILLION (ppm)

Concentration of a substance expressed in parts per million (ppm) signifies a weight-to-weight relationship in which one part of a material is added to 1,000,000 parts of water. For example, 1.0 mg of a pesticide or disinfectant containing 100% active ingredient added to 1.0 kg of water is one ppm. Since one liter of water weighs exactly 1 kg, then 1 ppm is equivalent to 1 mg/liter of water.

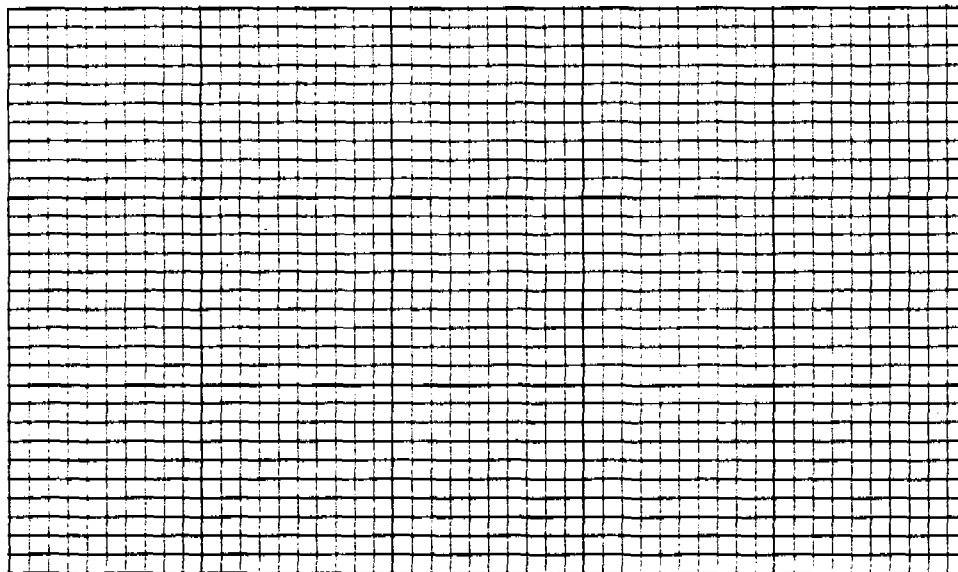
1 cubic meter = 1000 liters
1 ml weighs 1 gram (1000 mg)
1 g or ml per cubic meter of water = 1 mg/liter

Temephos 50% EC contains only 50% active ingredient, hence 2 ml are needed per cubic meter of water.

Appendix 5 (p. 1)
GUINEA WORM ERADICATION PROGRAM TEMEPHOS APPLICATION RECORD

1. Village name _____ 3. Date _____
2. District _____ 4. Inspector _____
5. Type of water source: Pond _____
 Well _____ Cistern _____ Spring _____
 Other _____
6. Location of water:source:
 Within village _____ Outside Village _____
 Identification _____
 (Code, symbol, or other identifier)

7. Sketch a neat outline of the water source ("bird's eye" view).



Length

8. If source of drinking water is cylindrical, record diameter _____ (m), and depth _____ (m), then volume = $\pi r^2 h =$ _____ (m^3); alternatively, refer to Appendix 2.
9. If source of drinking water is rectangular or irregular in shape, estimate maximum width and length by pacing.
- Maximum width _____ Meters (m) Maximum length _____ (m)
9. Refer to table below to determine intervals at which measurements will be made.

If dimension of source is: _____	Interval between parallel transects across dimension is:
<5 meters	0.5 meters
5-10 "	1 "
11-20 "	2 "
21-30 "	3 "
31-40 "	4 "
41-50 "	5 "

No. intervals along width _____ No. intervals along length _____

APPENDIX 5 (p. 2)
 GUINEA WORM ERADICATION PROGRAM TEMEPHOS APPLICATION RECORD

10. Measure width and length at each prescribed interval. Enter each measurement on space provided below. Determine:

A. _____ <u>WIDTH</u>	I. _____ <u>LENGTH</u>
B. _____	II. _____
C. _____	III. _____
D. _____	IV. _____
E. _____	V. _____
F. _____	VI. _____
G. _____	VII. _____
H. _____	VIII. _____
I. _____	IX. _____
J. _____	X. _____
SUM _____ / # _____ = AVG. _____	SUM _____ / # _____ = AVG. _____

DEPTH ALONG WIDTH TRANSECTS

	A	B	C	D	E	F	G	H	I	J
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
TOTALS	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____

SUM OF ALL (A-J) _____; AVERAGE DEPTH = $\frac{\text{SUM (A-J)}}{\text{TOTAL \#}}$ = _____

11. To determine volume, refer to Appendix 1, or use $V = \text{length} \times \text{width} \times \text{depth}$.

Volume _____ (m³)

12. Calculate amount of temephos required as follows; alternatively, refer to Appendix 3).

Volume _____ x 2 = _____ (Amount, in milliliters, of 50% EC required to obtain a 1 mg/liter concentration)

13. Mix temephos with sufficient pond water in a vessel or sprayer, and distribute solution as uniformly as possible over the entire surface.

TECHNICAL INFORMATION ON TEMEPHOS (ABATE™)

Chemical names.	0,0,0',0'-tetramethyl 0,0'-thiodi-p-phenylene phosphorothioate [IUPAC] 0,0'-(thiodi-4, 1-phenylene) bis (0,0-dimethylphosphorothioate) [CA].
Common name.	Temephos [BSI, ANSI, ISO].
Empirical formula.	C16 H20 O6 P2 S3.
Molecular weight.	466.5.
Color and state.	Analytical grade: white crystalline solid. Technical grade: amber liquid that may contain temephos crystals below 30C.
Purity.	Technical grade: 90% minimum.
Melting point.	Analytical grade: 30.0 to 30.5C. Technical grade: 25 to 30C.
Boiling point.	Technical grade: decomposes at 120 to 125C.
Refractive index.	Technical grade: n 25/D = 1.586 to 1.588.
Specific gravity.	Technical grade: 1.32 at 22 to 23C.
Solubility.	Soluble in acetonitrile, carbon tetrachloride, diethyl ether, ethylene dichloride, lower alkyl ketones, and toluene. Essentially insoluble in hexane, methylcyclohexane, and water (1 ppm).
Vapor pressure.	7.17 x 10 to the minus 8mm Hg at 25C.
Viscosity.	3000 Centipoise at 5C; 300 at 25C; 180 at 40C; 30 at 80C.
Stability.	Stable at 25C for at least 2 years. Decomposes rapidly at 120-125C. Good chemical stability in natural fresh and saline water. Moderately stable to hydrolysis with aqueous alkali; no observed hydrolysis at pH 8 and 25C for several weeks, or at pH 11 and 40C for several hours; hydrolysis at high pH (greater than 9) for prolonged periods may be expected. A highly acidic pH (greater than 2) can promote hydrolytic decomposition.
Toxicity.	Oral LD50 of active ingredient for laboratory rats (mg/kg of body weight) of 2% temephos is 20g per kg.
Effect on non-target organisms.	None at the recommended dosage levels.
Formulations.	50% weight/volume emulsifiable concentrate (EC) containing 500 g. active ingredient (a.i.)/liter. 20% weight/volume EC containing 200 g. a.i./liter. 1-SG. A formulation containing 2% a.i. on sand granules.

WARNING!

MAY BE HARMFUL IF SWALLOWED, INHALED, OR
ABSORBED THROUGH SKIN.

CAUSES EYE AND SKIN IRRITATION.

Avoid breathing mist.
Avoid contact with eyes, skin, and clothing.
Keep container closed.
Use with adequate ventilation.
Wash thoroughly after handling.
Keep out of reach of children.

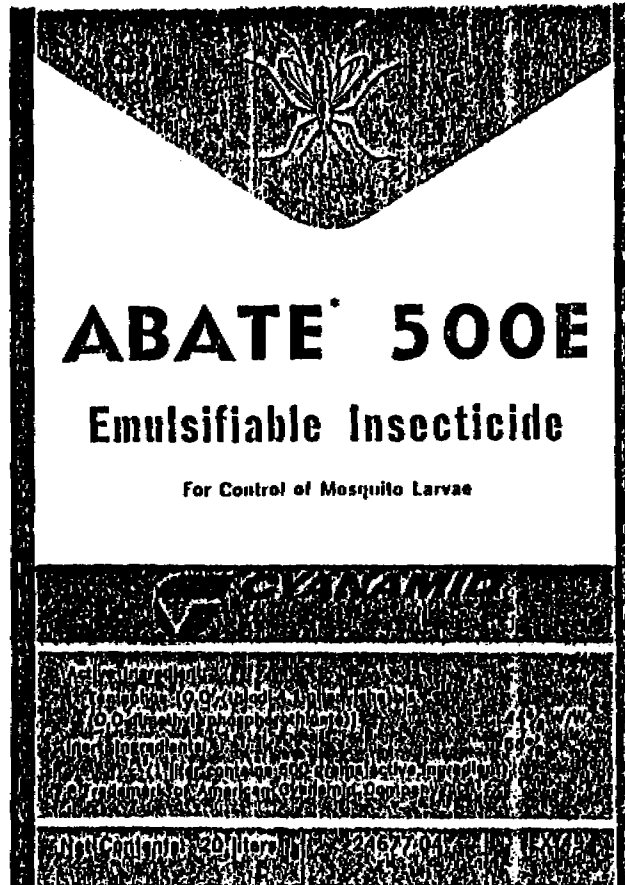
FIRST AID

If swallowed, do not induce vomiting. Call a
physician immediately.

In case of contact, immediately flush eyes with
plenty of water for at least 15 minutes. Call a
physician. Flush skin with water.

EPA Est. No. 241-NJ-2

1879 R11 IM 7-81 LN

**DIRECTIONS FOR USE**

For control of mosquito larvae in lakes, ponds, marshes,
drain ditches, irrigation ditches or other mosquito breeding
areas, use ABATE 500E insecticide at the rate of:

0.5 to 1.5 fl. oz. per acre

or

40 to 120 ml. per hectare

Apply as a uniform spray in sufficient water for good cover-
age. The higher rate should be used in areas of heavy
vegetation or where water contains high amounts of organic
matter. Repeat applications as necessary.

The label instructions for the use of this product reflect
the opinion of experts based on field use and tests. The
directions are believed to be reliable and should be followed
carefully. However, it is impossible to eliminate all risk
inherently associated with use of this product. Ineffectiv-
ness or other unintended consequences may result because
of such factors as weather conditions, presence of other
insecticides, or the manner of use or application all of which
are beyond the control of American Cyanamid Company.
All such risks shall be assumed by the user. American
Cyanamid Company warrants only that the material con-
tained herein conforms to the chemical description on the
label and is reasonably fit for the use therein describ-
ed when used in accordance with the directions for use sub-
ject to the risks referred to above.

Any damages arising from a breach of this warranty shall
be limited to direct damages and shall not include con-
sequential commercial damages such as loss of profits or
values or any other special or indirect damages.

American Cyanamid Company makes no other express or
implied warranty, including any other express or implied
warranty of FITNESS or of MERCHANTABILITY.

AMERICAN CYANAMID COMPANY

AGRICULTURAL DIVISION
WAYNE, NEW JERSEY, U. S. A.

PRECAUTIONS FOR HANDLING, STORING & APPLYING TEMEPHOS

American Cyanamid Company, Princeton, New Jersey

When used in accordance with label instructions, Abate™ larvicide has a low degree of hazard to mammals, birds, fish, and other non-target organisms, combined with a high degree of activity against various insect disease vectors and copepods. However, as with all organophosphorous pesticides, the following precautions should be observed during handling or application of the product:

When mixing and applying temephos:

- o Keep away from food.
- o Keep out of the reach of children.
- o Avoid splashing on skin or eyes.
- o Mark all containers and utensils used so that they will not be used for any other purpose.

After applying temephos:

- o Thoroughly wash hands and any other body part that came into contact with the temephos.
- o Change clothing if any temephos splashed on it.
- o Do not reuse empty cans which contained temephos. Wash cans with 5% caustic potash or triple rinse with water, break container to make it unusable, and bury in the ground.
- o Wash equipment and facilities with soap.
- o Properly label all containers temephos.

When storing temephos:

- o Keep chemical out of the reach of children.
- o Keep away from food.
- o Store temephos in a secure, cool, well-ventilated place to avoid degradation due to excessive heat.
- o Always use the temephos with the closest expiration date.
- o Storage building should be weatherproof and secured by a lock and/or watchman.

When transporting temephos:

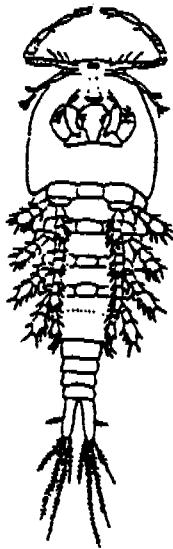
- o Make sure there are no leaks in the container.
- o Keep away from food and clothing.

For treating emergencies:

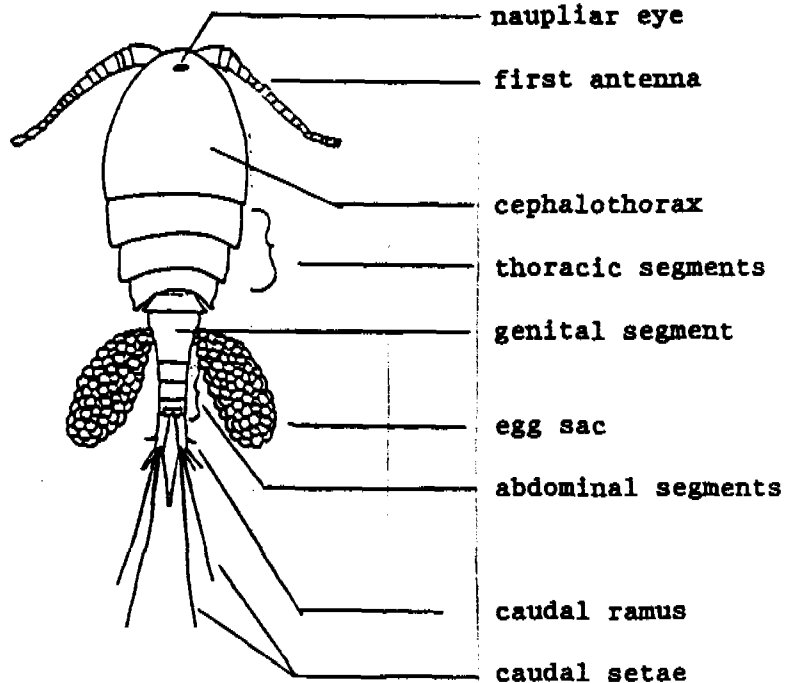
- o **IN CASE OF CONTACT TO EYES OR SKIN**, immediately flush with plenty of water for at least 15 minutes. Seek immediate medical attention.
- o **IF SWALLOWED**, DO NOT induce vomiting. Seek immediate medical attention.

NOTES ON CYCLOPOID COPEPODS

1. Generalized view of a fresh water, free-living adult male and female cyclopoid copepod (after Yeatman, 1959).



Ventral view
Adult Male



Dorsal view
Adult Female

2. Cyclopoid Copepods belong to the Phylum Arthropoda, Class Crustacea, Subclass Copepoda, Order Cyclopoida, Family Cyclopidea. Copepods are important constituents of plankton and food chains in bodies of fresh water.

Useful information on copepods in relation to guinea worm is summarized in the WHO slide set (see WHO, 1986) and McCullough (1982), among other documents.

Important host species include:

Mesocyclops leuckarti

[This species is frequently cited as an intermediate host in studies of African dracunculiasis. A recent redefinition of African Mesocyclops (Van de Velde, 1984) states that the species is not found in Africa, indicating changes in taxonomical status. Literature mentioning M. leuckarti as a host species in Africa will require careful interpretation.]

Mesocyclops aequatorialis

Metacyclops minutus

Thermocyclops hyalinus

Thermocyclops inopinus

Thermocyclops neglectus

Thermocyclops nigerianus

3. Adult females typically have a pair of egg sacs, each containing 40-50 eggs. After fertilization, eggs hatch releasing the nauplius stage, usually within a few days (ranging from 12 hours to 3-4 days). After passing through 5-6 naupliar stages, they progress into the copepodid stages and take on general adult morphological characters. Copepodids pass through 5 stages before emerging as mature adults. The female adult cyclopoid copepod is larger than the male and ranges from 1-3 mm in length. In addition to smaller size, the male is distinguished from the female by the recurving configuration of the first antennae. The entire life cycle ranges from 7-365 days, depending on species and environmental conditions. Many genera are macroscopic but microscopic magnification is required to make specific identification.
4. When experiencing adverse environmental conditions, such as drying, copepodids may become inactive and encyst. The cysts withstand desiccation and survive when the habitat is dry. They are able to regenerate rapidly, and certain adult copepods have been found within 2 days after a previously dry water source has been refilled by rainfall. The rapidity with which adult copepod stages reappear indicates that encysting takes place in an advanced copepodid stage. It has been reported that adult copepods have been found in a previously dry water source 2 hours after being filled with rain. In this case, encysting could have occurred in the adult stage.
5. Adult copepods readily ingest free-swimming first-stage larvae of D. medinensis. Larvae will die within approximately 5 days if not ingested by copepods. The larvae must undergo development in copepods before becoming infective. Once ingested, the 1st stage larvae penetrate into the copepod body cavity and molt 2 times. The two molts are completed in about 14 days, and the resultant 3rd stage larvae are infective for humans. Larvae can be seen inside the transparent copepods by microscopic magnification. When consumed by humans in drinking water, copepods are destroyed through digestion. The larvae are liberated in the process, penetrate the intestinal wall and develop into mature adults.

SIMPSON'S RULE FOR ESTIMATING THE AREA OR VOLUME OF IRREGULAR SURFACES
(CRC, 1969)

Divide the area into an even number ($2x$) of panels by means of $2x + 1$ parallel lines, drawn at constant distance z apart; and denote the lengths of the intercepted segments by:

$y_0, y_1, \dots, y_{2x-1}, y_{2x}$. The first and last of these may be zero. The area will then be:

$$A = (1/3)(z)[(y_0 + y_{2x}) + 4(y_1 + y_3 + \dots + y_{2x-1}) + 2(y_2 + y_4 + \dots + y_{2x-2})]$$

While the formula is exact in many simple cases, ordinarily the formula provides only an approximation, for which the accuracy increases with the number of divisions. Simpson's rule may be applied to finding volumes, if the measures y_0, y_1, \dots, y_{2x} be interpreted as the areas of parallel plane sections at constant distance z apart.

SELECTED REFERENCES

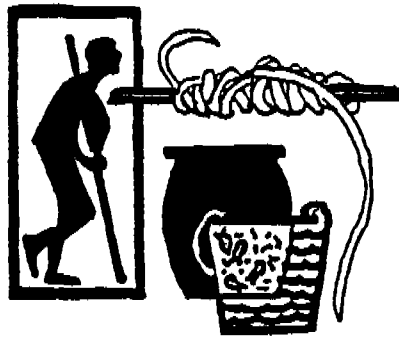
- American Cyanamid Company. 1980. Abate™ larvicide. Agricultural Research Division. 36 pp. Princeton, NJ.
- Brooks, G.D., et al. 1967. Accumulative Effects of Repeated Abate™ Granular Treatments in Water Storage Drums. Mosquito News 27(2): 164-171.
- Chippaux, J.P. 1988. Le Fil de L'Eau. Tribune Medicale 244: 23-25.
- CRC Standard Mathematical Tables. 1978. 25th Edition. The Chemical Rubber Company. 724 pp. Cleveland, OH.
- Desfontaine, M. and Prod'Hon, J. 1982. Correlation Between Bio-climatic Variations and the Transmission of Dracunculiasis. Proceedings of Workshop on Opportunities for Control of Dracunculiasis. pp. 49-54.
- Guiguemde, T.R. 1986. Caracteristiques Climatiques Des Zones D'Endemie Et Modalites Epidemiologiques De La Dracunculose En Afrique. Bulletin De La Societe De Pathologie Exotique. 79: 89-95.
- Laws, E. R., Morales, F.R., Hayes, W.J., Jr., and Joseph, C.R. 1967. Toxicology of Abate in Volunteers. Archives of Environmental Health 14: 289-291.
- Laws, E. R., Sedlak, V.A., Miles, J.W., Joseph, C.R., Lacomba, J.R., and Rivera, A.D. 1968. Field study of the safety of Abate for treating potable water and observations on the effectiveness of a control programme involving both Abate and Malathion. Bulletin WHO 38: 439-445.
- McCullough, F.S. 1982. Cyclopoid Copepods: Their roles in the Transmission and Control of Dracunculiasis. Proceedings of Workshop on Opportunities for Control of Dracunculiasis. pp. 65-76.
- Muller, R. 1970. Laboratory experiments on the control of Cyclops transmitting Guinea worm. Bulletin WHO 42: 563-567.
- Paul, J.E., R.B. Isely and G.M. Ginsberg. 1986. Cost-effective approaches to the control of dracunculiasis. WASH Technical Report No. 38, Water and Sanitation for Health Project. U.S. Agency for International Development. 53 pp. Washington DC.
- Schoof, H.F. 1967. Insecticides for Use against Aedes aegypti. Bulletin WHO: 36: 618-622.
- Steib, K. and P. Mayer. 1988. Epidemiology and vectors of Dracunculus medinensis in northwest Burkina Faso, West Africa. Annals of Trop Med and Parasitology, 82: 189-199.
- Van de Velde, I. 1984. Revision of the African species of the genus Mesocyclops Sars, 1914 (Copepoda Cyclopidea). Hydrobiologia 109: 3-66.

SELECTED REFERENCES (continued)

- World Health Organization. 1986. Slide set series. The Guinea Worm. Geneva.
- World Health Organization. 1973. Safe use of pesticides. Twentieth report of WHO Expert Committee on Insecticides. Technical Report Series No. 513. Geneva.
- Yeatman, H. C. 1959. Order Cyclopoida. In Fresh water biology--Ward and Whipple. W. T. Edmondson, ed. John Wiley and Son, Inc., New York. 1248 pp.

Life Cycle Flipchart

Health Education Visual Aid



Global 2000-BCCI Guinea Worm Eradication Project
United Nations Development Programme

1. One hot day Kofi went to get a drink of water from the village water hole. The water had guinea worm babies in it, but he could not see them. The babies went into his body where they will live and grow into adult guinea worms.



1.

2. It will take about 12 months for a baby guinea worm to grow into an adult guinea worm. During this long time there is no way for Kofi to know that he has guinea worm. It will live inside his body and slowly move from the stomach to a place where it decides to exit through his skin.



3. When the worm is ready to come out, a painful blister appears, which causes a burning feeling. Many people try to relieve the pain by putting the blister in water.



4. When it touches water, the blister breaks, the worm starts to come out, and thousands of tiny guinea worm babies are released into the water. So whenever Kofi goes into the water to gather water, or just to relieve the pain, he is filling the water with guinea worm babies.



5. Most of the time, a guinea worm comes out from either the legs or the feet. However, a worm may sometimes come out from the hand, arm, chest, head, breast, or other body part. It is possible for one person to have several guinea worms at once coming out of different places. Kofi has a worm coming out of his foot. His wife, Mary, has two worms, one on her leg and one on her arm.



6. When Kofi's neighbor, Aya, comes to drink the water containing the babies, the cycle starts all over again.

Review Questions

1. How did Kofi and Mary get guinea worm?

Answer

By drinking water that had guinea worm babies in it.

2. Do you think any other people in this village have guinea worm?

Answer

Yes, because they all drink from the same guinea worm contaminated water.

3. Why is it important that people with guinea worm not go into the water?

Answer

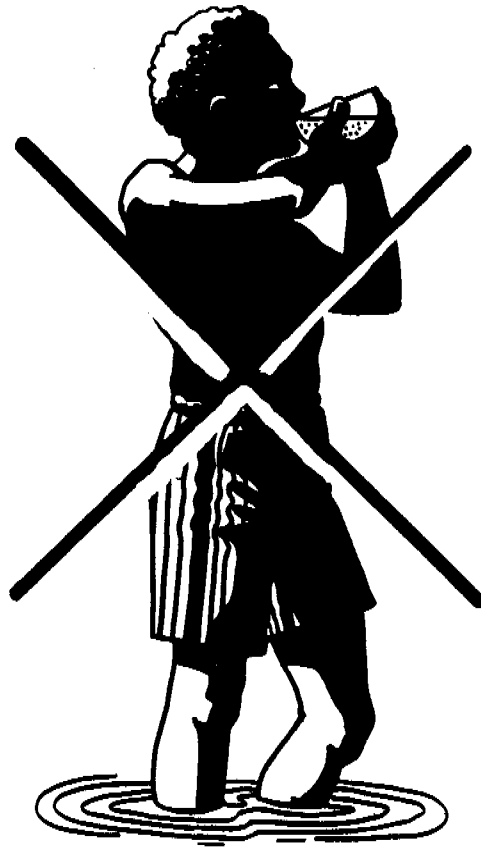
So that guinea worm babies will not be released into the water and the guinea worm cycle will be stopped.

4. What can we do to keep infected people out of the water?

Answer

- *Spread the word to those who are infected;*
- *Be firm with those who do not cooperate;*
- *Encourage people with painful ulcers to rinse off the ulcer in a bucket of water instead of immersing it in the drinking water source (water in bucket should then be poured on the ground, away from water source);*
- Keeping infected people out of the water requires the cooperation of the whole community.





STOP
Guinea Worm Disease



STOP
Guinea Worm Disease



STOP
Guinea Worm Disease



STOP
Guinea Worm Disease



STOP
Guinea Worm Disease



STOP
Guinea Worm Disease



STOP
Guinea Worm Disease



STOP
Guinea Worm Disease



STOP
Guinea Worm Disease



Training Course for Guinea Worm Coordinators

Agenda

DAY 1

Morning

Registration
Welcome
Opening Ceremony
Pretest

Afternoon

Guinea Worm Overview
Surveillance

DAY 2

Morning

Community Assessment
Promoting Community Action (Part I)

Afternoon

Field Trip

DAY 3

Morning

Promoting Community Action (Part II)
Promoting Individual Action

Afternoon

Field Trip

DAY 4

Morning

Vector Control
Case Treatment

Afternoon

Field Trip

DAY 5

Morning

Field Trip Reports
Posttest
Course Evaluation
Closing Ceremony

Training Course for Guinea Worm Coordinators

Course Objectives

Guinea Worm Overview

1. Describe the extent of the guinea worm problem in this country and region.
2. Describe the life cycle of the guinea worm and causes of the disease.
3. List the various methods used to prevent guinea worm.
4. Describe the Guinea Worm Eradication Programme and the part Guinea Worm Coordinators play in it.

Surveillance

1. Describe the functions of the existing communicable disease case reporting system, ongoing village-level monitoring, and case searches in the control and elimination of guinea worm disease.
2. Describe the Guinea Worm Coordinator's responsibilities for ongoing surveillance.
3. Describe how to prepare for a case search.
4. Describe how to administer and fill out case search forms correctly.
5. Describe how to complete a surveillance report form for a village and district and what the procedure is for forwarding the reports to appropriate authorities.

Community Assessment

1. Describe how the community assessment process fits in with the overall Guinea Worm Eradication Programme.
2. Describe the four community assessment topics: Community Leaders and Groups, Community Beliefs and Practices, Community Resources, Community Water Supply.
3. Describe the procedure for finding out information on the four community assessment topics.
4. Given the description of a community, summarize key considerations for conducting an appropriate community assessment.

Course Objectives, Continued

Promoting Community Action

1. List at least three qualities of a community guinea worm project that helps to promote community action and participation.
2. Describe how the brainstorming method could be used to get community members involved in planning guinea worm projects.
3. Describe how to plan for and conduct a community meeting.
4. Develop an implementation plan for a community project that describes at least three tasks, dates for their completion, and persons responsible.

Promoting Individual Action

1. Describe the five primary health education messages.
2. Give a health education talk which teaches villagers that guinea worm comes from the drinking water and why it is important that persons with guinea worm ulcers not go into the drinking water.
3. Give a health education talk which teaches villagers to identify local drinking water sources which are safe from guinea worm and, if applicable, to describe ways to protect the water sources from guinea worm contamination.
4. Give a health education talk which teaches villagers to correctly filter drinking water which comes from unprotected sources.

Vector Control

1. Describe the major characteristics of temephos (Abate).
2. Describe situations most suitable for using temephos for vector control.
3. List the main points which should be discussed with village leaders when trying to gain their support for temephos application.
4. Describe safety precautions which should be taken when mixing, applying, storing, and/or transporting temephos.
5. List the details which should be recorded for every temephos application.

Case Treatment

1. Distinguish whether a guinea worm case is pre-emergent, emergent, or complicated.
2. Describe the appropriate treatment response for emergent, pre-emergent, and complicated guinea worm cases.
3. State key patient education messages which should be communicated to patients with guinea worm disease.

TRAINING COURSE FOR GUINEA WORM COORDINATORS
PRETEST

Name _____

Current Job _____ Years in Current Job _____

Town/Village _____ District _____

Region _____

PRACTICE QUESTIONS

A. Causes of guinea worm include...

- allowing people with guinea worm ulcers to enter the drinking water.
- drinking water with guinea worm larvae in it.
- someone with an emerging guinea worm bathing in the drinking water source.
- drinking filtered water.

B. Important guinea worm prevention method(s) include...

- winding guinea worms on sticks.
- filtering water before drinking it.
- not wading in guinea worm contaminated ponds.
- keeping people infected with guinea worm out of the drinking water.

C. True or False The main purpose of surveillance is to find out which villages have guinea worm and how many cases there are in each village.

PART I

For questions 1 through 32, tick the answer or answers that are most appropriate. Some questions may have more than one appropriate answer.

1. Someone may become infected with guinea worm by...

- walking barefoot on a farm.
- wading in contaminated pond water.
- eating fruit that has fallen on the ground.
- drinking unfiltered water from a guinea worm contaminated pond.

2. Effective and affordable methods for preventing guinea worm disease include...

- filtering drinking water through cloth.
- keeping infected persons out of the drinking water.
- adding alum to water.
- defecating in a latrine.

3. A community assessment can help you find out more information about...

- who the community leaders and groups are.
- community beliefs and practices.
- community water supply.
- local resources.

4. Case searches...

- involve visiting villages in order to detect all cases of guinea worm.
- may be used to collect initial information for use in planning intervention activities.
- miss counting most of the guinea worm cases.
- require accuracy and validation.

5. The existing communicable disease reporting system which counts the number of cases seen in dispensaries, health posts, and hospitals...

- misses counting most of the guinea worm cases.
- can help to monitor the overall occurrence of guinea worm cases.
- can be strengthened by ongoing village-level monitoring.
- is an ongoing surveillance activity.

6. Temephos (Abate) is a chemical which...

- can be added to a pond to kill cyclops, thereby preventing transmission of guinea worm.
- requires competence in calculating the correct dose.
- is tasteless, colorless, and odorless except for an unpleasant odor and milky color present for several hours after application.
- is used as a primary guinea worm prevention method for most villages affected by guinea worm.

7. Ongoing village-level case monitoring...

- uses villagers to find out how many guinea worm cases are in their villages.
- helps to strengthen the existing communicable disease reporting system.
- requires that a health worker be posted in every village.
- depends on the Guinea Worm Coordinators to find responsible villagers to report case numbers to them.

8. A community assessment should be conducted...

- as one of the first guinea worm activities in a community.
- after all programme activities have been implemented.
- to count the number of complicated and uncomplicated guinea worm cases.
- so that the Guinea Worm Coordinator can identify appropriate solution options to a community's guinea worm problems.

9. A 30-year-old woman with three children has four guinea worms: two in her right leg, one in her right breast, and one in her left arm. This is a complicated case and should be referred to a medical facility because she...

- has more than three guinea worms.
- is over 25 years of age.
- has a guinea worm located in her breast.
- has more than two children.

10. In the Community Assessment process, information is gained by...

- reading literature written by authorities on guinea worm.
- meeting with the community leaders.
- conducting a house-to-house survey of all families with guinea worm.
- trying out a prevention programme in a community to see how the villagers respond.

11. A guinea worm community project should have one or more of these qualities. It...

- is something the community wants to do.
- makes use of local resources.
- is funded by the government.
- is directed by local community leaders.

12. When talking to villagers about how guinea worm comes from the drinking water...

- give a detailed scientific explanation of the guinea worm life cycle.
- an important message to communicate is that persons with guinea worm blisters or ulcers must stay out of the drinking water.
- use visual aids, if possible.
- combine traditional beliefs with modern explanations, if applicable.

13. Guinea worm disease has a bad effect on...

- productivity of villages.
- family-income.
- attendance at schools.
- adult males only.

14. Brainstorming is a good method to use for getting community members involved in guinea worm projects because...

- uneducated and inexperienced people can participate.
- the leader chooses the ideas he thinks are best.
- unusual ideas are rejected.
- it encourages everyone to submit ideas.

15. A community implementation plan for a village should...

- list the dates for completing each project task.
- indicate persons responsible for each task.
- consist of specific tasks.
- be developed solely by a district level health worker.

16. When giving health education talks to villagers, you should...

- use local names when telling stories.
- demand that the villagers change their practices to more sensible behaviors.
- ask villagers questions to determine if they understand the messages.
- be aware of the objective(s) of each talk.

17. Villagers can make unsafe drinking water safe by...

- filtering water through a cloth.
- using water treated with temephos.
- putting water out in the fresh air to settle.
- boiling water.

18. In preparing for a case search, it is important to...

- get permission and cooperation of the village chief.
- plan eradication activities for the village.
- learn how to administer and fill out the case search forms correctly.
- find out the local term for guinea worm disease.

19. Using temephos as a guinea worm intervention is appropriate for...

- villages where previous attempts to change villagers' behavior have consistently failed.
- areas where there is very little transmission remaining and rapid elimination is desired (such as in the final stages of the eradication programme).
- small ponds (less than 500 cubic meters).
- villages with no feasible alternative safe water sources.

20. The main point(s) to discuss with village leaders when trying to gain their support for temephos application include(s)...

- temephos is a substance which can be added to the water to kill guinea worm babies and help rid the village of guinea worm.
- it is very safe and will not harm humans or animals.
- no other prevention measures will be needed.
- it is worth the risk, because the illnesses caused by temephos are not as serious as guinea worm disease.

21. Important health education messages that should be communicated to villagers include...

- Persons with guinea worm ulcers or blisters must stay out of the drinking water sources.
- Drink water which is safe from guinea worm contamination.
- Work with your community to protect your water sources from guinea worm contamination.
- It is safe to drink guinea worm contaminated water, if you do not drink it more than once a week.

22. Safe storage and use of temephos requires that it be kept...

- in the open where it can be quickly and easily reached.
- away from skin and eyes.
- in a secure place.
- away from food.

23. A villager with a guinea worm blister and mild swelling can be classified as...

- a pre-emergent case.
- an emergent case.
- a complicated case.
- someone who requires medical attention immediately.

24. Treatment for an emergent guinea worm case includes...

- applying animal dung or root remedies to the wound.
- eating raw vegetables.
- giving patient education messages.
- giving analgesics (medicine for pain) and/or antibiotics, if necessary.

25. When conducting a community meeting, you should...

- discourage discussion so the meeting will end on time.
- invite community leaders to attend.
- make sure that you are in charge so you can make the major decisions.
- prepare an agenda for the meeting.

26. Patient education messages for guinea worm patients includes explaining that...

- it is safe to enter the drinking water only if the wound is bandaged.
- the wound should be kept clean and dry.
- the patient should seek medical attention if he or she gets a high fever or the wound becomes very swollen.
- they must wind the worm around a stick every day.

27. The purpose(s) of filtering drinking water is to...

- remove adult guinea worms from the water.
- make the water clear.
- clarify the chemical temephos.
- remove cyclops from the water so that the water cannot spread guinea worm to persons who drink it.

For questions 28 - 32, circle your response indicating whether the statement is true or false.

28. True or False Empty temephos containers make good wash tubs to use when cleaning guinea worm wounds.
29. True or False Every application of temephos should be accurately recorded including details on the type of water body, measurements, water volume, amount of chemical applied, date of application, and person applying the temephos.
30. True or False Health education and the promotion of community action are two guinea worm intervention activities which may or may not be necessary.
31. True or False A man has an extremely swollen guinea worm wound and limited movement of his knee. The proper treatment response is to offer him analgesics, antibiotics, and tetanus toxoid, if available; deliver patient education messages; and refer him to a clinic or physician.
32. True or False The main events in the life cycle of the guinea worm occur in this order:
- A person drinks water containing cyclops which have eaten guinea worm larvae.
 - The guinea worm causes a painful blister to appear on the person's skin.
 - The guinea worm matures and mates within the person's body.
 - When coming into contact with the water, the blister breaks and thousands of tiny guinea worm larvae are expelled into the water where they can be transmitted to someone else.
-

PART II

For each of the tasks listed below:

- If you have ever done any of the tasks, put a check in the "done" column.
- If you have experience training others to do the task, put a check in the "trained others" column.
- If you have both done and trained others, check both columns.
- If you have no experience with the task, do not check anything.

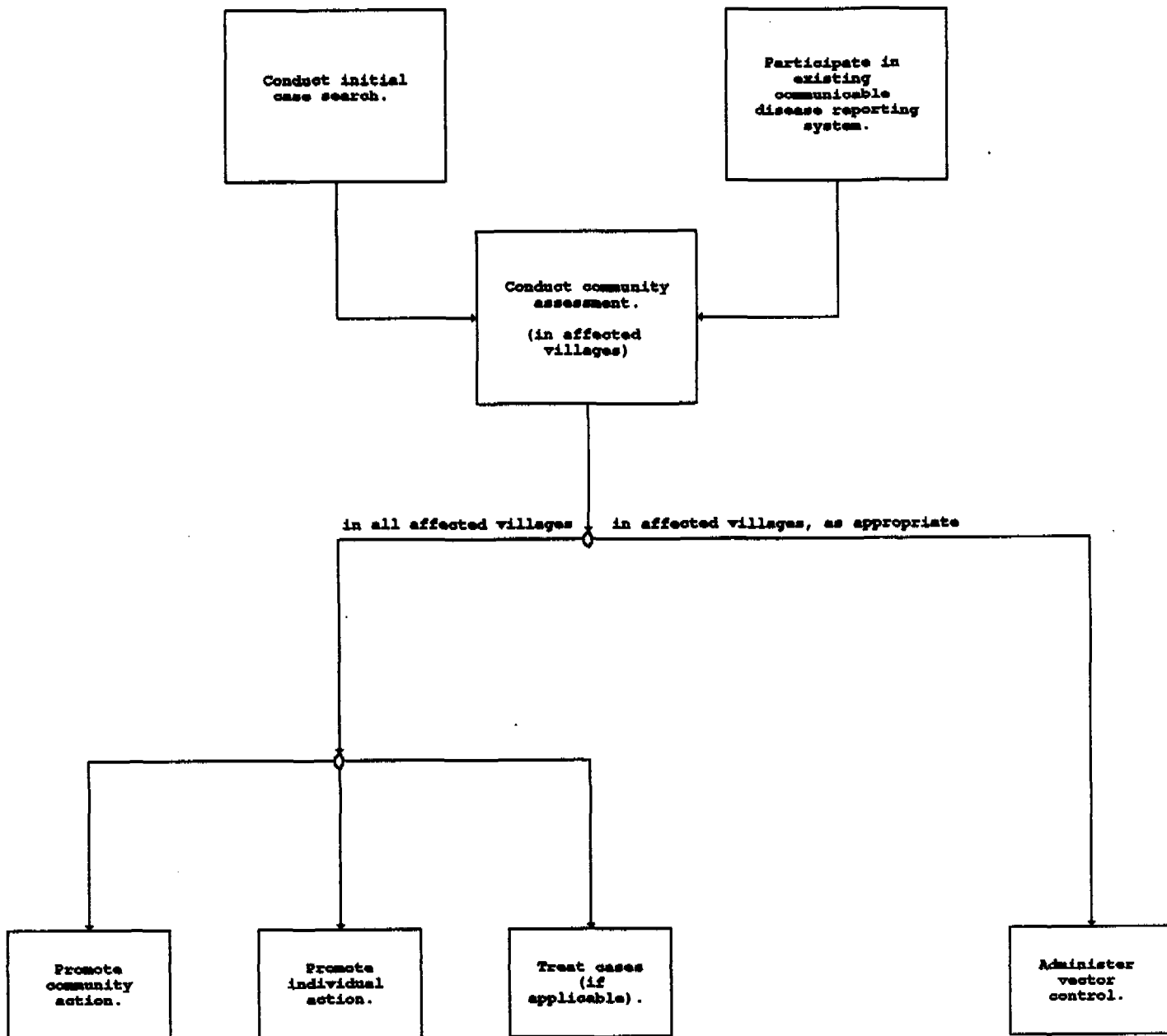
	I have <u>done</u> the following:	I have <u>trained others</u> to do the following:
Participated in a village case search		
Given a health education lesson or health talk		
Treated a person with guinea worm		
Used visual aids to teach villagers about health problems		
Advised village leaders on implementing a community project		
Worked on a guinea worm intervention project		
Assessed community problems with village leaders		
Organized a community meeting		
Developed a written community project plan		
Measured the volume of a pond or other body of water		
Added temephos or other chemical to a body of water according to an exact formula		
Compiled surveillance data for a report		

Prevention Methods

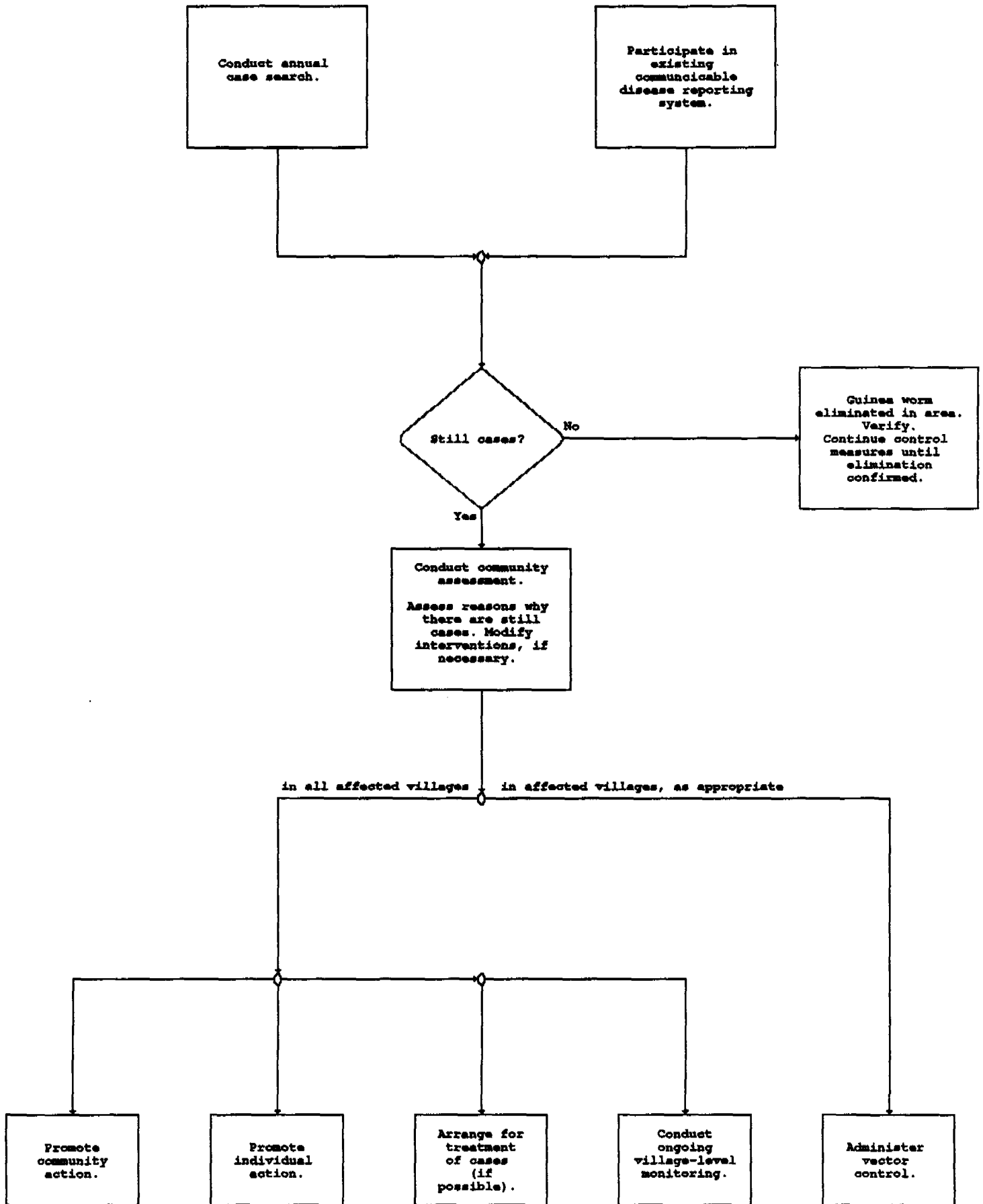
Prevention Method	Advantages	Disadvantages
Health education and community action to deter infected persons from entering drinking water	low cost, fairly effective, minimal need for outside support	may depend on quality of education, one infected person can contaminate water source for whole community, changing behaviors takes time
Filtering drinking water	low cost, effective, minimal need for outside support	temporary solution, may not be locally accepted, larvae can get through if used incorrectly, does not protect whole village--just individuals
Building physical barriers to keep infected people from entering drinking water (e.g., walls)	low to moderate cost, fairly effective, permanent if properly maintained	may require some maintenance, under certain circumstances larvae can still get into water source, rising water level may affect barrier
Constructing safe water sources	very effective, permanent if properly maintained, protects against other water-related diseases	high cost, depends on outside support, takes time to implement, requires maintenance
Boiling drinking water	effective, minimal need for outside support, kills other disease-causing germs	temporary solution, effects taste of water, requires time, fuel may be unavailable or expensive, may not be locally accepted
Vector control	very effective, with proper training and supplies villagers may be able to implement themselves, minimum behavior change required, protects all users	moderate cost, temporary solution, may not be locally accepted, depends on imported material, requires precise measuring and application skills

Guinea Worm Coordinator Roles

Beginning Eradication Programme



Ongoing Eradication Programme



Preparing for the Case Search

- Meet and secure the permission and cooperation of the village chief (or other appropriate village leader). Discuss the following with the chief:
 1. State the purpose of the case search. Explain to the chief the importance of finding out exactly how many cases have occurred in this village.
 2. Request the assistance of the chief and the villagers.
 3. Inform the chief about when the search will take place.
 4. Discuss the procedures involved in the search.
 5. Describe the benefits that the village will gain from the search, such as being put "on the map" of affected villages, thus being brought to the attention of the national eradication programme and ultimately eliminating guinea worm altogether.

- Find out from the chief or other village leader what the local term for guinea worm disease is. Use a photograph showing a typical guinea worm case, if necessary (and if available). Plan to use this term and the photograph when questioning the villagers.

- If using an interpreter, make sure he/she is familiar with the local term(s) for guinea worm and with the questions on the case search form.

- Make sure you and your co-workers know how to administer the case search form correctly.

Guidelines for the Case Search

- Find out and use the local term for guinea worm. If you have been provided with a case recognition card, use it to show the villagers exactly what you are looking for.
- Numbers should be assigned to all households in the village and indicated on a map or on the houses themselves.
- Questions should be addressed to the designated head-of-household. If he is not present, interview another adult member of the household.
- Attempt to have as many household members present as possible during the survey.
- Questions must be asked about all members of the household, with parents answering for young children.
- Visiting family members who regularly live in another village must not be included in the questionnaire for this village.
- The questionnaire should be filled out as completely, accurately, and legibly as possible. When a box [] is supplied for an answer, put a check inside the appropriate box. Leave the other boxes empty, i.e., do not put a mark in the boxes which do not apply.
- If there is any doubt about a question, answer, or procedure, immediately contact your search team leader.
- Inform persons in villages affected with guinea worm about preventive measures. Emphasize the following:
 1. Stay out of the drinking water source(s).
 2. Drink only safe water. (well, flowing stream, piped, filtered, etc.)
 3. Filter or boil unsafe water.
- At the end of each village search, team members should get together and check each other's forms. If any mistakes or missing data are noticed, the surveyor should make corrections immediately. It will be easier to correct these while you are still in the village.

Example Case Search Form
(based on form used in Ghana)

Instructions: Complete PART A for all Villages.
Complete PARTS B and C for Villages
with cases now or in past year.

Date _____

PART A

1. Region _____

2. District _____

3. Village _____

4. CDR Unit No. _____

5. Source of village information (Name) _____

5a. Number of drinking water sources during DRY season _____

5b. Check sources of drinking water used in DRY season _____

Pond [] Dam [] Lake [] Stream [] Pool [] Spring []
Bore Hole [] Well [] Other _____
(pump) (hand dug) Describe

5c. What is the estimated village population? _____

Unknown []
The above estimate is based on: 1984 Census []
Tax Role [] (Year)
CDR Data [] (Year)
Other Estimate (Specify) _____

5d. Ask: Is there guinea worm disease in this Village or has there been guinea worm disease in this Village during the past year?

Yes [] No []

If no, go to next village.

If yes, get an estimate of the total number of cases, or do a house-to-house survey and complete PARTS B & C

PART B

6. Household Number _____

7. Head of Household (Name) _____

8. Length of Residence in Village _____

9. Do you migrate out of this village seasonally? Yes [] No []

10. Do you filter your drinking water? Always [] Sometimes []
Never []

Directions For Filling Out the Case Search Form

Begin with Part A. It is to be filled out only once for each village. This information should be supplied by the village chief, priest, or other reliable leader.

(Questions 1-4 can be filled out ahead of time.)

Questions 1-3 -- Write the names of the region, district, and village.

Question 4 -- Write the number of the local CDR Unit.

Question 5 -- Write the name and title (if applicable) of the person who is supplying you with the information for Part A.

Question 5a -- Enter the number of drinking water sources used by the villagers in the dry season.

Question 5b -- Check boxes indicating all types of drinking water sources which are used by villagers in the dry season. You may check more than one box. If there are drinking water sources used other than the ones listed, please write them in the blank labeled "Other."

Question 5c -- If it is known, enter a number indicating the population of the village. Check the box indicating the source of the number. For data which comes from the Tax Role or CDR Data, write the number of the year it was reported. If the estimate came from another source or was someone's guess, specify the source, e.g., "Chief's estimate."

Question 5d -- Ask the interviewee if there is currently guinea worm disease in the village or if there were any cases during the past year. Check the box indicating the answer. The answer to this question will determine whether to continue with a house-to-house search in this village or to move on to another village. If the answer is "No", your search is complete for this village and your team can continue with the next village. If the answer is "Yes", estimate the number of cases and proceed with the house-to-house search.

Parts B and C of the form should be filled out for every household in the infected village.

Part B is to be addressed to the head of each household in the village. If the head-of-household is absent, another adult member of the household may answer the questions.

Question 6 -- Write the household identification number. Each house in the village should be assigned a different number. If identification numbers are not being assigned, ask for the local popular name of the house.

Question 7 -- Write the name of the head-of-household.

Directions For Filling Out the Case Search Form, Continued

Question 8 -- Write the total length of time that this family has lived in this village as permanent residents. If they were born there, then write "since birth."

Question 9 -- Seasonal migration is defined as a temporary move of the family away from this village for at least two months at a time. For example, if a family moves to another location in June and returns to the village in August, you should check the "Yes" answer to this question; if the family's stay in another village was for seven weeks or less, you should check the "No" answer.

Question 10 -- Check the answer which indicates how often the family filters their drinking water.

Part C consists of a chart which case searchers should fill out while still in each house. It is used for recording data about the current number of active guinea worm cases and the history of cases over the past 12 months. This is the most important part of the form. Make sure that these data are recorded correctly.

Col. 1 -- Enter the household identification number.

Col. 2 -- Write the name of each infected family member in the household.

Col. 3 -- For each family member, check the "Yes" or "No" column indicating whether or not the family member has a current case of guinea worm. Do not check "Yes" unless you can actually see a guinea worm emerging from an ulcer. If you see an ulcer or a swelling under the skin surface but do not see a guinea worm, you must check the "No" column. Ask your team leader to verify if you are not sure.

Col. 4 -- For each family member, write the person's age in years. Estimate, if not known.

Col. 5 & 6 -- For each family member, check the column indicating whether he/she is male or female.

Col. 7 -- Check the column indicating whether or not each family member had guinea worm in the past 12 months.

Col. 8 -- For every "Yes" answer in the previous column, check the month when the worm(s) started emerging. Use local reference points for time estimation, e.g., festivals, planting season.

Col. 9 -- For every person having a guinea worm now or in the past 12 months, check whether he or she had one, two, or three or more worms emerging.

Question 11 -- Write the total number of family members reported as living in this household.

Directions For Filling Out the Case Search Form, Continued

Question 12 -- The surveyor should write his or her name here.

Question 13 -- The surveyor should write the name of his or her official designation here (e.g, MFU Technical Officer, Malaria Supervisor).

Question 14 -- Write the date of the visit of the search team to this village. If more than one day was taken for the search in this village, write all of the dates taken.

Reporting Case Search Data

- Complete all required case report forms, including the village summary and district summary.
- Review the data for accuracy.
- Send reports to appropriate authority(ies) on time.
- Use the results in planning prevention activities and monitoring their progress.

Example Village Summary Form

Guinea Worm Eradication Programme

Region _____ Village Population _____
 District _____ Name of Village Chief _____
 Village Name/No. _____ Date _____
 Health Worker's Name _____

Total number of cases* for this village _____ Check if none _____

Time frame for number reported above _____
 (current cases or cases over past year)

Drinking water source(s) for this village (Check all sources used.)

Pond _____ River _____ Tube Well With Hand Pump _____
 Dam _____ Pipes _____
 Lake _____ Rainwater Catchment _____
 Stream _____ Well _____
 (Hand Dug)
 Other (specify) _____

Please provide the following information, if known.
 Interventions used in this village in last year:

None _____
 Health Education _____
 Filtering (cotton or nylon cloth _____
 used by more than half of village)
 Application of temephos (Abate) _____
 Providing Safe Water Supply _____
 Other (specify) _____

*Case-- A) Any person who now has an emerging guinea worm B) or any person who reports having had an emerging guinea worm during the past year. Use Part A or Parts A and B depending on the type of search data desired.

Community Assessment Topics

For each community affected by guinea worm, find out information on the following topics:

1. Community Leaders and Groups

Who are the leaders and community groups which can become involved in solving the community's guinea worm problem?

2. Community Beliefs and Practices

What are the community's beliefs and practices regarding guinea worm?

3. Community Resources

What local resources are available for guinea worm eradication activities?

4. Community Water Supply

What is the status of the community's drinking water supply?

Community Leaders and Groups

1. Identify the community leaders and established groups in the community.

2. Find out those who might be interested in supporting guinea worm activities.

3. Check the leaders and groups below which you should arrange to meet.

Community Leaders

- _____ village elder or chief
- _____ religious leader
- _____ community health worker
- _____ school teacher
- _____ political organization representative (CDR)
- _____ health center employee
- _____ traditional healer
- _____ agricultural worker
- _____ water supply worker
- _____ women's group leader
- _____ other literate villagers
- _____ other _____

Community Groups

- _____ village development committee
- _____ women's groups
- _____ parent-teacher organization
- _____ village health committee
- _____ agriculture club
- _____ religious group
- _____ political organization (CDR)
- _____ other _____

Community Beliefs and Practices

Ask the following questions to community members:

1. What is guinea worm and where does it come from?
2. How do most people in this village treat guinea worm?
3. How much guinea worm is in this village and how does it affect the village?
4. During what times of the year is guinea worm most common?
5. Do the community leaders understand the causes of guinea worm and the methods of prevention? If not, explain causes and prevention methods to them; if so, ask why guinea worm is still a problem.
6. Do the people in this village want to take action to eliminate guinea worm?

Community Resources

Explore potential community resources by finding out if resources such as the following are locally available for guinea worm eradication activities.

- _____ local funds specifically designated for community improvement projects
- _____ persons skilled in well or pump maintenance
- _____ a teacher who resides in the village
- _____ a village health worker
- _____ appropriate storage facility for temephos
- _____ persons with the skills to sew filter cloth into usable filters
- _____ outlets for selling filters
- _____ churches or other donor groups who contribute to this village

Community Water Supply

Ask the following questions to community members:

1. What drinking water sources are used by members of this community?

2. Which drinking water sources are used by most of the people?

3. For each drinking water source, is it used

- all of the time
- frequently
- some of the time
- just during the dry season
- just during the wet season

4. Where is each drinking water source located?

5. Are any drinking water sources shared with other villages?

It is helpful to sketch a map of the community, indicating all of this information.

Water Supply Protection Options

If the village has:	Do one or more of the following:
<p>No safe drinking water source available.</p>	<ul style="list-style-type: none"> • Promote filtering or boiling of water. • Promote keeping infected persons out of water sources. • Help villagers organize to raise money and/or donate labor for constructing well(s) or rainwater catchments. • Use temephos.

If the village has:	Do one or more of the following:
<p>A safe drinking water source available, but it is not used by all.</p>	<ul style="list-style-type: none"> • Conduct interviews to find out why the safe source is not used. • Promote personal protective measures (filtering, boiling). • Challenge the village: <i>Those who drink only from safe source will have no guinea worm next year.</i> • Promote keeping infected persons out of water sources.

If the village has:	Do one or more of the following:
<p>A potential safe drinking water source available, but it is currently contaminated.</p>	<ul style="list-style-type: none"> • Use temephos. • Promote keeping infected persons out of water sources. • Promote personal protective measures (filtering, boiling).

SOLUTION TABLES

The following eight tables reflect eight problems which you may have identified in the Community Assessment. For each of the applicable reasons listed on the left, consider the solution options listed on the right. The key to the solution options is on page 4.

1. Community leaders and organized groups are not committed to eliminating guinea worm from their community.	
If the reason is:	Then consider these options:
They are not aware that guinea worm can be eliminated	2, 3, 4, 7, 8, 11, 15, 17, 19, 21
They consider other problems to be higher priority	6, 11, 18, 19
They are not aware of impact of guinea worm on community	8, 11, 16, 18, 21
They are distrustful of outsiders	6, 7, 10, 11, 12, 16, 20, 21

2. The villagers do not understand that guinea worm comes from drinking contaminated water.	
If the reason is:	Then consider these options:
They are not aware of facts	2, 3, 4, 7, 8, 11, 15, 19
Facts conflict with customs or beliefs	6, 7, 11, 16, 19, 20

3. Most villagers do not filter or boil their water.	
If the reason is:	Then consider these options:
They don't know they should or how to	1, 2, 3, 4, 7, 8, 11, 13, 15
Filtering or boiling conflicts with customs or beliefs	6, 7, 11, 16, 17, 19, 20, 21
Nylon filters or fuel not available	5, 9, 10, 13, 17, 22

4. The villagers go into the drinking water source when they have guinea worm.	
If the reason is:	Then consider these options:
They are not aware they can contaminate water	2, 3, 4, 7, 8, 11, 15, 19
They have no other way to get water	5, 9, 10, 13, 17, 21
A few individuals are uncooperative	1, 5, 8, 9, 16, 17, 20, 21

5. The villagers use unsafe treatment methods for guinea worm ulcers.	
If the reason is:	Then consider these options:
They are not aware that treatment is unsafe and/or what safe alternatives are	1, 2, 3, 4, 12, 14, 15
Safe treatment conflicts with customs or beliefs	1, 2, 3, 4, 6, 11, 12, 14, 20
Treatment facility not accessible	1, 9, 10, 12, 14, 19

6. Some or all of the villagers are using an unsafe drinking water supply.	
If the reason is:	Then consider these options:
They are not aware that source used is unsafe and/or what alternatives they have.	1, 2, 3, 4, 6, 7, 8, 11, 15, 16, 19, 21
No safe water source is available	5, 9, 10, 11, 13, 15, 17, 19, 21
Using safe supply conflicts with customs, beliefs, and/or personal preference.	1, 6, 7, 11, 16, 17, 19, 20

7. The villagers do not work together to protect their drinking water sources from contamination.	
If the reason is:	Then consider these options:
They are not aware that they should or aware of protection options available	2, 3, 4, 5, 8, 9, 11, 15, 16, 18, 20
They do not know how to implement protection options	2, 3, 5, 9, 10, 11
Protection options conflict with customs or beliefs	1, 6, 7, 11, 16, 19, 20, 21

8. Resources are not available to support desired guinea worm activities.	
If the reason is:	Then consider these options:
Economic condition of area is poor	5, 9, 10, 18
Potential resources not developed	5, 9, 10, 11, 16, 18, 19, 20

Solution Options

1. make home visits to get support of individual families
2. meet with community women
3. have publicity campaign with posters, etc.
4. give health talks with role plays, songs, etc.
5. give problem solving sessions with brainstorming, consensus building, etc.
6. implement trust building activities , e.g., spending more time in village, helping with other village problems
7. give demonstrations, e.g., showing cyclops in water sample or cyclops on filter
8. show films or video
9. organize community action committee
10. link up with other organizations and agencies
11. tell about or have leaders visit other villages which have had successful guinea worm activities
12. set up temporary clinic in village to treat guinea worm patients
13. teach primary school children to build sand filters
14. train school children, village healer(s), or VHW to provide basic treatment of guinea worm
15. organize village theatre groups to promote guinea worm prevention
16. arrange for visit by district commissioner or local political figure to motivate villagers
17. implement vector control
18. publicize facts about impact guinea worm has on community, e.g., agricultural productivity, missed school days
19. teach school children where guinea worm comes from and how to prevent it
20. solicit help of local religious leader(s)
21. challenge villagers to filter water (or drink other types of safe water) and serve as an example to others
22. Use commonly available cloth for filtering, such as cotton gray baft

Meeting Process

Once you have identified the kinds of leaders and groups who can play a key role in guinea worm eradication, bring them together to plan solutions to their community's guinea worm problem.

Preparation

- Find a day and time that is convenient for the leaders you have identified and invite them to come talk with you about guinea worm in their community.
- Identify a convenient location to meet, such as a school, church, health center, or someone's house.
- Review the Community Assessment handouts to understand what you need to accomplish in this meeting.
- Prepare copies of the Life Cycle Flipchart and any other health education materials to teach the leaders about the causes and prevention of guinea worm.

The Meeting

- Explain that you represent the guinea worm eradication programme. Emphasize that your role is to help the village leaders to help themselves and their community.
- Discuss Community Beliefs and Practices and follow the suggestions in the handout.
- If necessary, educate the community leaders using the Life Cycle Flipchart.
- Discuss Community Resources and Community Water Supply and follow the suggestions in the handout.
- Suggest the formation of a guinea worm committee to work with you on solving the community's guinea worm problem.

Closing the Meeting

- Thank the attendees for the time they gave you. Tell them you look forward to working with them.
- Schedule a time and place to meet with the guinea worm committee.
- Ask if it would be possible for someone to take you to see the community drinking water source(s).

After the Meeting

- Visit the community drinking water sources.
- Go through the notes you made and make sure you understand all that you were told.
- Follow up, if clarification is necessary.

Once you have collected all the information for the community assessment, refer to the Solution Tables to help you identify appropriate solution options.

Community Situation A

In your initial visit to Village A, you met a very enthusiastic chief and identified several community leaders interested in guinea worm eradication. The chief agreed for you to return the next Tuesday to talk further with the leaders about how to solve their guinea worm problem.

Task:

Plan how you will conduct this meeting.

What information would you like from this group?

What questions will you ask?

What information will you present?

What will your next steps be after the meeting?

Plan a short dramatization of part of the community meeting.

Presentation:

Summarize your conclusions.

Dramatize a scene from the community meeting.

Community Situation B

You visit Village B (see diagram). This village has an active village development committee and an enthusiastic chief. A nearby dam is the main source of drinking water throughout the year. You explain about guinea worm and advise the villagers to ensure that no one with guinea worm enters their dam. They assure you that with the help of their defence committee, they will enforce your advice.

Task:

Do you think Village B will be successful in controlling guinea worm? Why or why not?

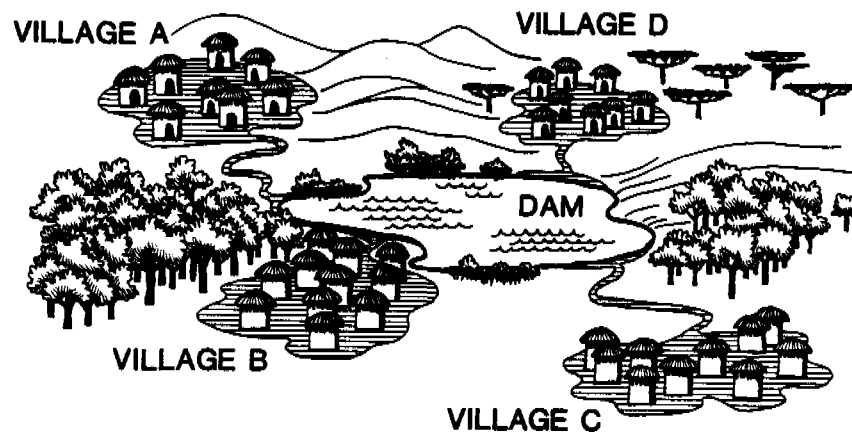
What additional information do you need?

How will you collect this information?

How will you use this information?

Presentation:

Summarize your conclusions.



Community Situation C

You visited Village C which has a population of 500 people. The village has one chief who seemed drunk when you visited him. There is a school with two male teachers from the district capital. During your first visit you met the chief sitting with five of his elders. After listening to you, the chief told you that guinea worm is not an important problem in his village. You know, however, from the Regional Guinea Worm Survey that Village C is a moderately high endemic area. During your visit, you observed several guinea worm cases (including one of the teachers).

Task:

What should your next step be?

What additional information do you need?

How do you intend to collect and use this information?

What will you say to the chief when you return to the village?

Plan a short dramatization your next meeting with the chief.

Presentation:

Summarize your conclusions.

Dramatize your meeting with the chief.

Steps in Promoting Community Action for Guinea Worm Eradication

Planning

1. Present the major guinea worm problems that you identified in the Community Assessment to the community leaders.
2. Discuss the possible options for solutions which you consider appropriate, based on the Community Assessment. Present them merely as suggestions and emphasize that you would like to hear the community's ideas.
3. Help the leaders to generate acceptable solution(s) and community projects, using the brainstorming process.
4. Help the leaders to think of ways to get the commitment and involvement of as many villagers as possible.
5. Help the leaders to make an implementation plan for each project chosen. The plan should identify tasks, dates for achieving the tasks, and persons responsible for each task.

Implementing

6. Meet frequently with the villagers to show your interest and help them solve problems which may arise.
7. Check progress against the implementation plan. Revise, as necessary.
8. Recognize accomplishments. Celebrate small victories to help maintain enthusiasm and momentum.

Ideas for Community Projects

1. Community members develop a puppet show or play to demonstrate how guinea worm gets into the water.
2. Political leaders talk about the causes of guinea worm and how important it is not to blame the disease on superstition.
3. Community leaders demonstrate correct filtering procedures and encourage filtering throughout the whole village. They praise those whom they see practicing it.
4. The Village Mobilization Committee plans a scheme to use locally available cloth for filtering, local women or tailors to sew it into usable filters, and local merchants to market it.
5. Villagers build shelters (patas) using communal labor and local materials for infected persons to sit in while non-infected persons gather water for them.
6. Issue a "challenge" to all who want to avoid guinea worm disease to filter their drinking water for two years. Those who do not accept may continue to have guinea worm disease, while those accepting the "challenge" will serve as positive examples.
7. Teacher(s) teach village school children about how guinea worm is spread, how to protect village water supplies, and how to filter their families' drinking water.

Sample Implementation Plan

Village _____ Date _____

<u>Task</u>	<u>Date</u>	<u>Person Resp</u>
Recruit at least five members for Guinea Worm Eradication Committee (GWEC)	7/10/88	GWC*
First meeting of GWEC to elect chairman	14/10/88	GWC
Second meeting of GWEC to plan guinea worm rally	22/11/88	GWEC chair
Plan puppet show and make puppets to inform villagers about guinea worm prevention methods	25/11/88	GWEC membs.
Hold a rally to demonstrate use of filters and perform puppet show	5/12/88	GWEC membs.
Solicit donations from at least 20 families to go into a fund for maintaining the hand pump	10/12/88	chief
Have school children design posters to encourage filtering	10/12/88	teachers
Post posters at all drinking water sources	15/12/88	GWEC membs.

*Guinea Worm Coordinator

Implementation Plan

Village _____ Date _____

Task _____ Date _____ Person Resp _____

Exercise Problem Descriptions

1. In your community assessment for village A you discover that the residents believe that guinea worm is caused by a god whom they angered in some way. The main source of drinking water is a dam which is used by several villages and many migrants. The villagers cannot avoid walking into the water when they are infected with guinea worm, because there are no other means for them to fetch drinking water. What type of community project(s) might you recommend for this village?

2. In Village B many villagers with guinea worm walk into the drinking water source because they are unmotivated to cooperate with the District Health Worker's advice about preventing guinea worm. The health worker is a very impatient person and has not displayed much sensitivity to the customs and beliefs of the village in the past. The villagers have expressed unwillingness to filter their drinking water because it is not a traditionally accepted practice; they also think it is too much trouble. You have just been designated to work in this District. What type of community project(s) might you recommend for this village?

3. In your community assessment for Village C, you discover that the major source of drinking water is a guinea worm contaminated pond. There is also a well in the village, but the villagers prefer to drink from the pond because they believe it is sacred and has a better taste. The residents treat their guinea worm ulcers using a method which often leads to serious infection. This is the method taught to them by the village healer who is highly respected throughout the village. What type of community project(s) might you recommend for this village?

4. The residents of Village D are interested in eliminating guinea worm from their village, but they have been suffering from a drought, leaving the village very poor and dependent on outside resources. They have a large pond which provides contaminated drinking water, but it could easily be protected from future guinea worm contamination by building a pier or some other physical structure which keeps people from coming into contact with the water. What type of community project(s) might you recommend for this village?

Health Education Talk Summary

Health Education Talk	Message	Visual Aids Provided
A	<ol style="list-style-type: none"> 1. Guinea worm comes from the drinking water. 2. Persons with guinea worm ulcers or blisters must not go into the drinking water. 	<p>Life Cycle Flipchart</p> <p>Intervention Posters</p>
B	<ol style="list-style-type: none"> 3. Work with your community to protect your water sources from contamination. 4. Drink only water which is safe from guinea worm contamination. 	<p>Drinking Water Source Cards</p>
C	<ol style="list-style-type: none"> 5. If only unsafe water is available, always filter it before drinking. 	<p>Intervention Poster on filtering</p>

Guide to Using the Health Education Visual Aids

Uses of the health education visual aids are not limited to those described below. You will probably find other ways in which they can be used to support your health education activities.

Life Cycle Flipchart

This is a seven-page flipchart to use with villagers in teaching them that guinea worm comes from the drinking water. When using it, hold it upright in front of you so that the villagers can see the pictures. You will be able to see the words to read for each picture.

Intervention Posters

There are five posters which you can give to villagers to post in and around their villages. Distribute the posters which are most reinforcing of the health talk you are giving. You may want to leave all five in a village or just leave those that you think are most appropriate (e.g., the poster showing a bore-hole well may not be effective in a village with no bore-hole well). Be sure to explain the meaning of all posters that you leave with the villagers and encourage them to explain it to others. The five Intervention Posters include:

1. X through someone drinking water directly from a pond. ("X" stands for "do not do this.")
2. X through someone with an emerging worm going into the water. ("X" stands for "do not do this.")
3. A woman getting water from a bore-hole well. (Should be used as an example of a practice that can protect from guinea worm contamination. It is especially effective in villages where a bore-hole well is available, in addition to other unsafe drinking water sources.)
4. A woman filtering water. (Should be used as an example of a practice that can protect from guinea worm contamination.)
5. A man filtering water while farming. (Should be used to encourage men to filter their drinking water when they are away from home.)

Drinking Water Source Cards

This is a set of 15 cards which show various types of drinking water sources. They can be used in your health education talks to show which village drinking water sources are safe and which are unsafe. The cards you use may vary from village to village depending on the water sources found in each village. The cards include:

- | | |
|-------------------------------|--|
| <u>Safe Sources</u> | <u>Options For Making Water From Unsafe Sources Safe</u> |
| 1. Tube well with hand pump | 8. Filtering water |
| 2. Well with rope and bucket | 9. Adding temephos (Abate) to water |
| 3. River, stream, or canal | 10. Boiling water |
| 4. Rainwater catchment system | |
| 5. Piped water | |
| <u>Unsafe Sources</u> | <u>Options For Keeping Infected Persons Out Of Water</u> |
| 6. Large pond, lake, or dam | 11. Displaying posters at water source |
| 7. Small pond or riverbed | 12. Building a resting shelter at the water source |
| | 13. Building a platform into water source |
| | 14. Posting local authority to monitor water source |
| | 15. Educating community members |

Health Education Talk A

MESSAGES

- Guinea worm comes from the drinking water.
- Persons with guinea worm ulcers or blisters must not go into the drinking water.

PREPARATION

From information you gathered for the community assessment, you should have an idea of what the local beliefs about the causes of guinea worm are. If necessary, tailor this presentation to take these beliefs into consideration. You may want to gather a water sample containing guinea worm "babies" to show the villagers. (A magnifying glass may help.)

Substitute local names into the flipchart story if the existing names are unfamiliar to the villagers.

Objective: At the end of this lesson, villagers should be able to explain that guinea worm comes from the drinking water and why it is important that persons with guinea worm ulcers not go into the drinking water.

Time: 15 minutes

Materials: Life Cycle Flipchart

Four Intervention Posters

1. X through someone drinking water from a pond
 2. X through someone with emerging worm going into water
 3. someone getting water from bore-hole well
 4. a woman filtering water
 5. a man filtering water while farming
- (should have at least one copy of each to distribute--will depend on how many you have available and number and type of contaminated drinking water sources in village)

PROCEDURE

1. Introduce yourself.
2. Explain that you would like to talk about how people get guinea worm.
3. Present the Life Cycle Flipchart. Directions for what to say are on the back of each flipchart page.
4. Ask the review questions printed on the back of the flipchart. Assess whether villagers understood the messages. If necessary, review information which was misunderstood.
5. Explain the Intervention Posters and discuss how they could be used in the village. Ask for volunteers to display them throughout the village.
6. Summarize the important points of the lesson. Emphasize the two messages.

Health Education Talk B

MESSAGES

- Work with your community to protect your water sources from contamination.
- Drink only water which is safe from guinea worm contamination.

PREPARATION

From information you gathered for the Community Assessment you should know the type, location, and safety of the drinking water sources used in this village. You should also have a good idea of which methods of protection might be possible in this community.

Go through the Drinking Water Source Cards, select those showing drinking water sources and possible protection measures applicable to this community. You may also want to include drinking water sources found in surrounding areas which the villagers might have access to.

Remember that you should include boiling and temephos treatment only if they are practical for this community.

In this lesson you will briefly discuss the importance of taking community action to protect water sources against guinea worm contamination. You may want to review your course materials on Promoting Community Action before giving this lesson.

Objective: At the end of this lesson, villagers should be able to identify local drinking water sources which are safe from guinea worm and, if applicable, be able to describe ways to protect them.

Time: 15 minutes

Materials: Water Source Cards

PROCEDURE

1. Introduce yourself and explain that you would like to find out about local drinking water sources.
2. Ask villagers to name all the places where they collect drinking water. As each is mentioned, display the corresponding card (e.g., lay it on the ground or lean it against a wall).
3. Identify each unsafe source using one of the following methods:
 - draw guinea worm "babies" on the cards with a wipe-off marker
 - mark with a piece of tape
 - sprinkle grains of sand or dirt (representing guinea worm "babies") on them
 - group all unsafe sources together into one group
4. Explain why each source is safe or unsafe. Refer to the back of the card for a description. Explain that the unsafe sources are unsafe for drinking only; they may be safe for bathing and watering crops and animals.

Health Education Talk B, continued

5. Lead a discussion according to the situation described below.

If the village has only safe drinking water sources, discuss item A below. Remark on how lucky the village is in comparison to many villages.

If the village has only unsafe drinking water sources, discuss item B below.

If the village has both safe and unsafe drinking water sources, discuss items A, B, and C below.

A. Discuss the importance of properly maintaining the safe drinking water sources. Ask what the villagers would do if any of the safe sources dried up or broke down. If there is no one qualified to repair wells, pumps, etc., you may want to suggest that they arrange for a local person to take on this responsibility.

Remind them to avoid unsafe sources when traveling to other locations and to protect their own water sources from infected visitors.

B. Use the cards as described below to discuss ways individuals and families can clean the water which comes from unsafe drinking water sources. [Answers will depend on what is viable for this community.] Discuss what to do if any of the water sources are shared by other villages.

Display pictures of all the protection measures that this community could possibly undertake. Ask the following questions:

- What do these pictures show?
- Would any of these protection measures be useful in your village?
- How might you get a for your village?

Lead villagers to the conclusion that these are all actions which they must join together in order to accomplish. They cannot achieve them as individuals or families. Discuss ways they, as a community, could organize their efforts (and join in with neighboring villages, if needed) to achieve these goals.

C. Discuss the importance of drinking water only from safe drinking water sources.

6. For review, pick up the cards and remove identifying marks from them. Shuffle them up and display them again. (You may want to add some additional cards.) Ask a volunteer to come up and identify all the water sources which he/she would drink or gather from for his/her family. If he/she chooses any of the unsafe sources, he/she should mention that it should be filtered, boiled, or have been treated with temephos. Repeat this several more times or as long as there is interest or time. Assess whether villagers comprehended the message. If necessary, review information which was misunderstood.

7. Summarize the important points of the lesson. Emphasize the messages.

Lesson Plan C

MESSAGES

- If only unsafe water is available, always filter it before drinking.

PREPARATION

The activities in this lesson will depend on the type of filtering cloth available to this community.

Keep the village training session limited to a small group so that everyone can see and practice the filtering demonstration.

Objective: At the end of this lesson, villagers should be able to correctly filter drinking water which comes from unsafe sources.

Time: 15 minutes

Materials: filters appropriate for this community
containers of guinea worm contaminated water
an empty container to filter water into
copies of Intervention Poster on filtering
two clear glass or plastic containers
magnifying glass, if available

PROCEDURE

1. Introduce yourself and explain that you would like to show how to filter drinking water so that it will be safe from guinea worm.
2. Discuss how filtering removes the guinea worm "babies" from contaminated water. Remind villagers which local water sources may be contaminated and stress the importance of filtering all drinking water which comes from these sources.
3. Demonstrate pouring a vessel of contaminated water through a filter cloth into another vessel.
4. After demonstrating how to pour the water through the filter, show the "babies" on the filter cloth to the villagers.
5. Compare the filtered water to the unfiltered water by putting each into a clear glass container, holding it up into the light, and observing with a magnifying glass. (If a magnifying glass is unavailable, villagers can still see some difference with the naked eye.)

Health Education Talk C, continued

6. If nylon or polyester filters are a viable option, explain that they are preferable because they last longer and can filter faster.
 7. Show the Intervention Poster on filtering and ask villagers for suggestions of places to display it. Ask for volunteers to take responsibility for putting up the posters around the community.
 8. Assess whether villagers understood message. If necessary, review information which was misunderstood.
 9. Summarize the important points of the lesson. Emphasize the message.
-

Characteristics of Temephos

- It usually remains effective in the water for four to six weeks, if applied correctly.
- Unmixed temephos will keep approximately two years if stored properly.
- Four to six applications per year are adequate for most areas if transmission is seasonal and the chemical is used starting just before the season begins. Where transmission occurs year-round, more applications will be necessary.
- The timing of the first application should be one to two months before the expected appearance of guinea worm in the community.
- The recommended concentration of temephos for guinea worm control is 1 milligram per liter of water, or 1 part per million. [.05 milliliters per 25 liters of water]
- At recommended concentrations temephos has an unpleasant odor and causes the water to appear milky for several hours after application.
- Measuring the volume of the contaminated source accurately and calculating the correct amount of temephos can be difficult. It is extremely important that this be done accurately.
- Once accurate calculations have been determined, it is easy to apply.
- Whoever administers the chemical must be competent in measuring, mixing, and applying the exact amount required.

Using Temephos Appropriately

It is appropriate to recommend the use of temephos only when a village is affected by guinea worm and one or more of the following conditions exist:

- Provision of alternative safe drinking water sources is not feasible.
- Previous attempts to change villagers' behavior have consistently failed.
- The water source is frequently used, the probability of villagers coming into contact with the water is high, and no other intervention is immediately available.
- There is a large outbreak, but the village must wait for provision of safe drinking water source(s).
- The body of water is small to moderate in size. (Treating volumes of water greater than 500 cubic meters is considered not to be cost effective.)
- The local guinea worm transmission cycle is known and the application can be timed appropriately.
- The area has many migrants passing through, some of whom might contaminate the water.
- The area has very little transmission remaining and rapid elimination is desired (most likely in the final stages of the eradication programme).
- There is lack of control over who uses the drinking water source, e.g., several villages, including some infected people, share the same water source.
- Political pressure demands vector control.

Preparing the Village for Temephos

It is important to get the support of the village leader(s) before applying temephos. Follow this outline in talking to the leaders.

- I. Explain that you wish to add a substance called temephos to (specify targeted drinking water sources). It will kill the guinea worm babies in the water which grow into the adult guinea worms that cause the villagers so much pain and disability. This substance can help to rid the village of guinea worm disease; however, villagers will still need to avoid contaminating the water source.
- II. Explain that a very small amount of the substance will be used and assure the leaders that the treated water will not harm any villagers or their livestock. Except for the guinea worm babies, it will not harm any animals living in the water. If possible, show the leaders how small the required amount of temephos is by showing him an amount of water in a bucket approximate to the amount of temephos to be added.
- III. Warn that the water may look and smell differently for a couple of hours after the treatment; however, it is still safe to drink and will quickly return to normal. Get the leaders to help you decide what time of day would be best for the application; for example, if water fetching is heaviest during the morning, then treatment can be made late in the day. If possible, plan the application so that the odor and color of the chemical have time to disappear before most people fetch the water.
- IV. Remind the leaders of how long it takes for a guinea worm baby to grow into an adult after a person drinks it, and that because of this long growth period, the effects of this application of temephos will not be seen until next season. (You probably have already introduced the idea of the long period of guinea worm development in your initial visits with the village leaders.)
- V. Emphasize the need to continue to keep persons infected with guinea worm out of the water. In addition, the leaders must stress to the villagers that they should drink only water that has been treated with temephos, filtered, boiled, or taken from a safe well.
- VI. Request the leaders' assistance in teaching the rest of the community members about temephos and gaining their acceptance and support.

Applying Temephos

Use this checklist to help keep track of all of the steps required in applying temephos.

Letters in brackets indicate who should perform each step.

GWC -- Guinea Worm Coordinator

VCW -- Vector Control Worker (qualified person designated by national or regional office--in some areas may be the GWC)

- _____ 1. Obtain permission from the village leader(s). [GWC or VCW]

- _____ 2. Determine appropriate times to apply temephos. [GWC or VCW]

- _____ 3. Prior to the first application of temephos, inform the villagers about the reasons for its use and gain their acceptance. (Continue to emphasize personal protection measures.) [GWC or VCW]

- _____ 4. Inform villagers of the time scheduled for application and encourage them to gather water before this time or at least several hours afterwards. (Remind them to filter or boil this untreated water before drinking.) [GWC or VCW]

- _____ 5. Accurately calculate the water volume of the targeted drinking water source. [VCW]

- _____ 6. Determine the correct amount of temephos to be applied. [VCW]

- _____ 7. Prepare the temephos mixture and disperse into the body of water. [VCW]

- _____ 8. Wash containers used for preparing and dispersing mixture. [VCW]

- _____ 9. Properly store unused portion of temephos. [GWC or VCW]

- _____ 10. Record the date, location, water volume, and amount of temephos applied on appropriate form and report to supervisor. [GWC or VCW]

Temephos (Abate) Application Record

District _____ Village _____ Water Source ID # _____

Date of Initial Visit _____ Date of suspected first case of guinea worm _____ Type of Water Source _____

Permission of leader(s) granted? yes no Villagers prepared? yes no Name of person applying temephos _____

Date of application	Length	Width	Depth	Water volume (cubic meters)	Amount temephos used (mls)	Remarks

Safety Guidelines for Temephos

When mixing and applying temephos:

- Keep away from food.
- Keep out of the reach of children.
- Avoid splashing on skin or in eyes.
- Mark all containers and utensils used so that they will not be used for any other purpose.

After applying temephos:

- Thoroughly wash hands and any other body part that came into contact with the temephos.
- Change clothing if any temephos splashed on it.
- Do not reuse empty cans which contained temephos. Wash cans with five percent caustic potash (or other disinfectant), break them up so that they are unusable, and bury them in the ground.
- Wash equipment and facilities with soap.
- Properly label all containers of temephos.

When storing temephos:

- Keep chemical out of the reach of children.
- Keep away from food.
- Always use the temephos with the closest expiration date.
- Storage building should be
 - dry
 - secured by a lock and/or a watchman
 - weatherproof
 - cool and well ventilated (to avoid degradation due to excessive heat).

When transporting temephos:

- Check for leaks in the container.
- Keep away from food and clothing.

For treating emergencies:

- In case of contact to eyes, immediately flush eyes with plenty of water for at least 15 minutes. Seek medical attention. In case of contact to skin, flush skin with water.
- If swallowed, do not induce vomiting. Contact a physician immediately.

Guinea Worm Classification and Treatment Matrix

STAGE	SIGNS AND SYMPTOMS	TREATMENT RESPONSE
<u>Pre-emergent</u>	<ul style="list-style-type: none"> ● Blister ● Localized itchiness or burning ● Mild swelling ● Mild pain ● Worm visible under skin 	<ul style="list-style-type: none"> ● Patient Education Messages (refer to handout)
<u>Emergent</u>	<ul style="list-style-type: none"> ● Ruptured blister ● One to three worms emerging ● No or localized secondary infection ● Moderate pain ● Limited or no incapacitation (e.g., patient still able to perform daily routine tasks like bathing or toileting, not bed-ridden) 	<ul style="list-style-type: none"> ● Patient Education Messages ● Analgesics (e.g., aspirin) and/or antibiotics— if necessary and available
<u>Complicated</u>	<ul style="list-style-type: none"> ● Severe secondary infection (e.g., cellulitis, discoloration, extensive swelling, pus) ● Involvement of joint (e.g., knee, elbow) ● Severe incapacitation (e.g., patient unable to perform daily routine tasks, bed-ridden) ● Location of worm in breast or genital region ● Cow dung or root remedies on wound ● More than three worms emerging 	<ul style="list-style-type: none"> ● Patient Education Messages ● Analgesics (e.g., aspirin), antibiotics, tetanus toxoid-- if available ● Refer to clinic or physician for appropriate treatment

Patient Education Messages

When you are treating guinea worm cases, be sure to explain the following important messages to the patients:

- When you have guinea worm, do not go into the drinking water sources.
- Keep your wound clean and dry.
- If you begin now to always filter your water, you will not have guinea worm next year.
- Do not cover your guinea worm wound with any kind of animal dung.
- If you get a high fever or your wound becomes very swollen, see a doctor or nurse as soon as possible. If you are unable to go, send someone in your family to bring the medical help to you.

Guinea Worm Treatment Record

Region _____ District _____ Date _____

Village _____

NUMBER	NAME	SEX	AGE	STAGE	NUMBER OF WORMS	SITE	ONSET	DURATION	REMARKS

TRAINING COURSE FOR GUINEA WORM COORDINATORS
POSTTEST

Name _____

Current Job _____ Years in Current Job _____

Town/Village _____ District _____

Region _____

PRACTICE QUESTIONS

A. Causes of guinea worm include...

- allowing people with guinea worm ulcers to enter the drinking water.
- drinking water with guinea worm larvae in it.
- someone with an emerging guinea worm bathing in the drinking water source.
- drinking filtered water.

B. Important guinea worm prevention method(s) include...

- winding guinea worms on sticks.
- filtering water before drinking it.
- not wading in guinea worm contaminated ponds.
- keeping people infected with guinea worm out of the drinking water.

C. True or False The main purpose of surveillance is to find out which villages have guinea worm and how many cases there are in each village.

PART I

For questions 1 through 32, tick the answer or answers that are most appropriate. Some questions may have more than one appropriate answer.

1. Someone may become infected with guinea worm by...

- walking barefoot on a farm.
- wading in contaminated pond water.
- eating fruit that has fallen on the ground.
- drinking unfiltered water from a guinea worm contaminated pond.

2. Effective and affordable methods for preventing guinea worm disease include...

- filtering drinking water through cloth.
- keeping infected persons out of the drinking water.
- adding alum to water.
- defecating in a latrine.

3. A community assessment can help you find out more information about...

- who the community leaders and groups are.
- community beliefs and practices.
- community water supply.
- local resources.

4. Case searches...

- involve visiting villages in order to detect all cases of guinea worm.
- may be used to collect initial information for use in planning intervention activities.
- miss counting most of the guinea worm cases.
- require accuracy and validation.

5. The existing communicable disease reporting system which counts the number of cases seen in dispensaries, health posts, and hospitals...

- misses counting most of the guinea worm cases.
- can help to monitor the overall occurrence of guinea worm cases.
- can be strengthened by ongoing village-level monitoring.
- is an ongoing surveillance activity.

6. Temephos (Abate) is a chemical which...

- can be added to a pond to kill cyclops, thereby preventing transmission of guinea worm.
- requires competence in calculating the correct dose.
- is tasteless, colorless, and odorless except for an unpleasant odor and milky color present for several hours after application.
- is used as a primary guinea worm prevention method for most villages affected by guinea worm.

7. Ongoing village-level case monitoring...

- uses villagers to find out how many guinea worm cases are in their villages.
- helps to strengthen the existing communicable disease reporting system.
- requires that a health worker be posted in every village.
- depends on the Guinea Worm Coordinators to find responsible villagers to report case numbers to them.

8. A community assessment should be conducted...

- as one of the first guinea worm activities in a community.
- after all programme activities have been implemented.
- to count the number of complicated and uncomplicated guinea worm cases.
- so that the Guinea Worm Coordinator can identify appropriate solution options to a community's guinea worm problems.

9. A 30-year-old woman with three children has four guinea worms: two in her right leg, one in her right breast, and one in her left arm. This is a complicated case and should be referred to a medical facility because she...

- has more than three guinea worms.
- is over 25 years of age.
- has a guinea worm located in her breast.
- has more than two children.

10. In the Community Assessment process, information is gained by...

- reading literature written by authorities on guinea worm.
- meeting with the community leaders.
- conducting a house-to-house survey of all families with guinea worm.
- trying out a prevention programme in a community to see how the villagers respond.

11. A guinea worm community project should have one or more of these qualities. It...

- is something the community wants to do.
- makes use of local resources.
- is funded by the government.
- is directed by local community leaders.

12. When talking to villagers about how guinea worm comes from the drinking water...

- give a detailed scientific explanation of the guinea worm life cycle.
- an important message to communicate is that persons with guinea worm blisters or ulcers must stay out of the drinking water.
- use visual aids, if possible.
- combine traditional beliefs with modern explanations, if applicable.

13. Guinea worm disease has a bad effect on...

- productivity of villages.
- family-income.
- attendance at schools.
- adult males only.

14. Brainstorming is a good method to use for getting community members involved in guinea worm projects because...

- uneducated and inexperienced people can participate.
- the leader chooses the ideas he thinks are best.
- unusual ideas are rejected.
- it encourages everyone to submit ideas.

15. A community implementation plan for a village should...

- list the dates for completing each project task.
- indicate persons responsible for each task.
- consist of specific tasks.
- be developed solely by a district level health worker.

16. When giving health education talks to villagers, you should...

- use local names when telling stories.
- demand that the villagers change their practices to more sensible behaviors.
- ask villagers questions to determine if they understand the messages.
- be aware of the objective(s) of each talk.

17. Villagers can make unsafe drinking water safe by...

- filtering water through a cloth.
- using water treated with temephos.
- putting water out in the fresh air to settle.
- boiling water.

18. In preparing for a case search, it is important to...

- get permission and cooperation of the village chief.
- plan eradication activities for the village.
- learn how to administer and fill out the case search forms correctly.
- find out the local term for guinea worm disease.

19. Using temephos as a guinea worm intervention is appropriate for...

- villages where previous attempts to change villagers' behavior have consistently failed.
- areas where there is very little transmission remaining and rapid elimination is desired (such as in the final stages of the eradication programme).
- small ponds (less than 500 cubic meters).
- villages with no feasible alternative safe water sources.

20. The main point(s) to discuss with village leaders when trying to gain their support for temephos application include(s)...

- temephos is a substance which can be added to the water to kill guinea worm babies and help rid the village of guinea worm.
- it is very safe and will not harm humans or animals.
- no other prevention measures will be needed.
- it is worth the risk, because the illnesses caused by temephos are not as serious as guinea worm disease.

21. Important health education messages that should be communicated to villagers include...

- Persons with guinea worm ulcers or blisters must stay out of the drinking water sources.
- Drink water which is safe from guinea worm contamination.
- Work with your community to protect your water sources from guinea worm contamination.
- It is safe to drink guinea worm contaminated water, if you do not drink it more than once a week.

22. Safe storage and use of temephos requires that it be kept...

- in the open where it can be quickly and easily reached.
- away from skin and eyes.
- in a secure place.
- away from food.

23. A villager with a guinea worm blister and mild swelling can be classified as...

- a pre-emergent case.
- an emergent case.
- a complicated case.
- someone who requires medical attention immediately.

24. Treatment for an emergent guinea worm case includes...

- applying animal dung or root remedies to the wound.
- eating raw vegetables.
- giving patient education messages.
- giving analgesics (medicine for pain) and/or antibiotics, if necessary.

25. When conducting a community meeting, you should...

- discourage discussion so the meeting will end on time.
- invite community leaders to attend.
- make sure that you are in charge so you can make the major decisions.
- prepare an agenda for the meeting.

26. Patient education messages for guinea worm patients includes explaining that...

- it is safe to enter the drinking water only if the wound is bandaged.
- the wound should be kept clean and dry.
- the patient should seek medical attention if he or she gets a high fever or the wound becomes very swollen.
- they must wind the worm around a stick every day.

27. The purpose(s) of filtering drinking water is to...

- remove adult guinea worms from the water.
- make the water clear.
- clarify the chemical, temephos.
- remove cyclops from the water so that the water cannot spread guinea worm to persons who drink it.

For questions 28 - 32, circle your response indicating whether the statement is true or false.

28. True or False Empty temephos containers make good wash tubs to use when cleaning guinea worm wounds.
29. True or False Every application of temephos should be accurately recorded including details on the type of water body, measurements, water volume, amount of chemical applied, date of application, and person applying the temephos.
30. True or False Health education and the promotion of community action are two guinea worm intervention activities which may or may not be necessary.
31. True or False A man has an extremely swollen guinea worm wound and limited movement of his knee. The proper treatment response is to offer him analgesics, antibiotics, and tetanus toxoid, if available; deliver patient education messages; and refer him to a clinic or physician.
32. True or False The main events in the life cycle of the guinea worm occur in this order:
- A person drinks water containing cyclops which have eaten guinea worm larvae.
 - The guinea worm causes a painful blister to appear on the person's skin.
 - The guinea worm matures and mates within the person's body.
 - When coming into contact with the water, the blister breaks and thousands of tiny guinea worm larvae are expelled into the water where they can be transmitted to someone else.
-

Course Evaluation

Directions: Answer the following questions. Please provide as much detail as possible.

1. What were the strengths of the course?
2. What were the weaknesses of the course?
3. Was the length of the course appropriate?
4. How would you judge the course site?
5. How would you rate the quality of the facilitators?
6. How would you judge the quality of the handouts and the Health Education Visual Aids?
7. What other comments do you have about the course?

1. Tube well with hand pump--Safe source

Considerations:

- Villagers may not like the taste.
- May require more soap when used for washing.
- May require special funds for training and/or maintenance.
- Requires villagers to wait their turn to collect water.
- Water use tariff may be required by the government.



2. Well with rope and bucket--Safe source

Considerations:

- Villagers may not be able to provide bucket and rope.
- Requires villagers to wait their turn to collect water.
- Water use tariff may be required by the government.
- Villagers must not climb upon the well and spill water with guinea worm larvae into the well.
- Requires more energy and effort than most other types of water sources.



3. River, stream, or canal--Safe source

Considerations:



- During dry season, pools may form or people may dig water holes in the river or stream bed which can become contaminated.
- Only safe if flowing.

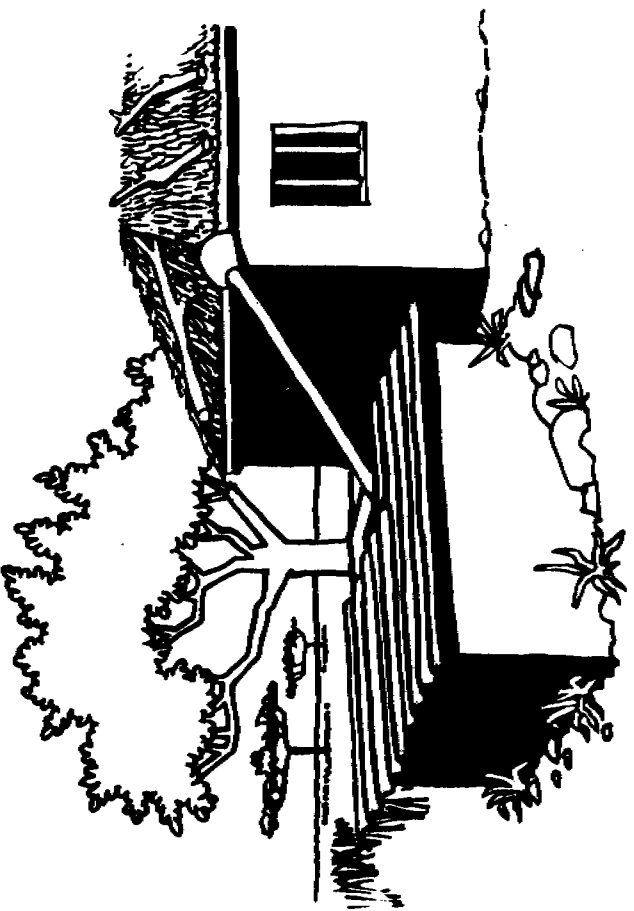




4. Rainwater catchment system--Safe source

Considerations:

- Requires knowledge, labor, and materials for construction.
- 
- 



5. Piped water--Safe source

Considerations:

- Requires villagers to wait their turn to collect water.
- Water use tariff may be required by the government.



6. Large pond, lake, or dam-- Unsafe source

Considerations:

- See illustrations 8 - 10 for options on how to make the water safe. See illustrations 10 - 15 for options on how to keep infected persons out of the water.
- When water volume is small enough, may be suitable for temephos (Abate).



7. Small pond or riverbed --Unsafe source

Considerations:

- See illustrations 8 - 10 for options on how to make the water safe. See illustrations 10 - 15 for options on how to keep infected persons out of the water.
- Application of temephos (Abate) may be appropriate.



8. Filtering water--Makes water safe by filtering out cyclops

Considerations:

- Accidental contamination occurs if filter material used improperly, or has tears.
- Requires consistent behavior.



9. Applying temephos (Abate) to water--Makes unsafe water safe by killing all the cyclops in the body of water, thereby breaking the life cycle

Considerations:

- Causes odor and cloudiness for a period after application.
- Requires care in handling temephos.
- Requires precision in calculating water volume and required dose.



10. Boiling water--Makes unsafe water safe by killing all of the cyclops in the water

Considerations:

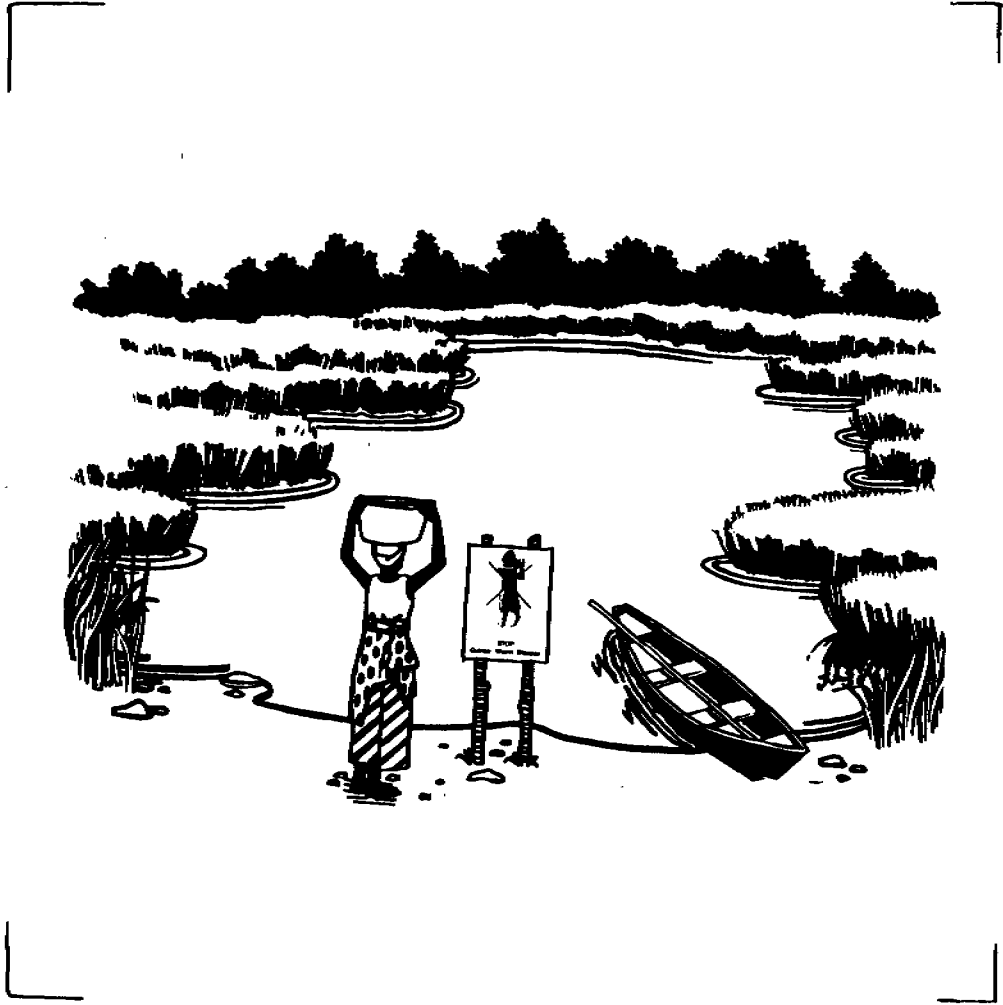
- Shortage or expense of fuel.
- Requires time for cooling.
- Affects the taste of water.
- May be difficult concept to teach.
(There is no word for boiling in many local languages.)
- Boiling also kills other germs.



11. Displaying posters at water source--One way to keep infected persons out of the water

Considerations:

- Cannot be read by majority of villagers.
- Requires personal responsibility for compliance.
- Someone may remove poster.



12. Building a resting shelter at water source
One way to encourage infected persons to stay out of the water while a noninfected person gathers water for them

Considerations:

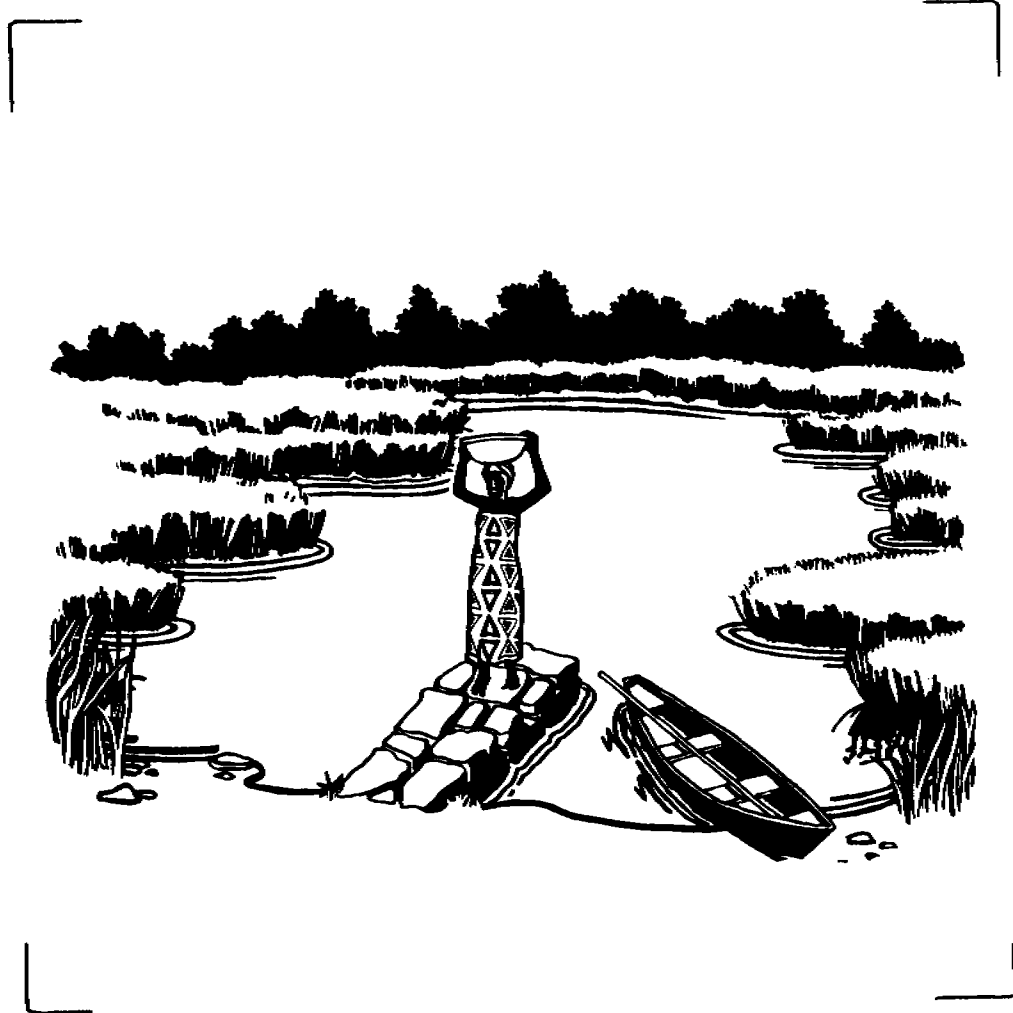
- Requires labor and materials for construction.
- Requires infected person to wait.
- Requires person willing to gather water.
- Requires maintenance.



13. Building a platform into water source--One way to keep infected persons from coming into contact with the water

Considerations:

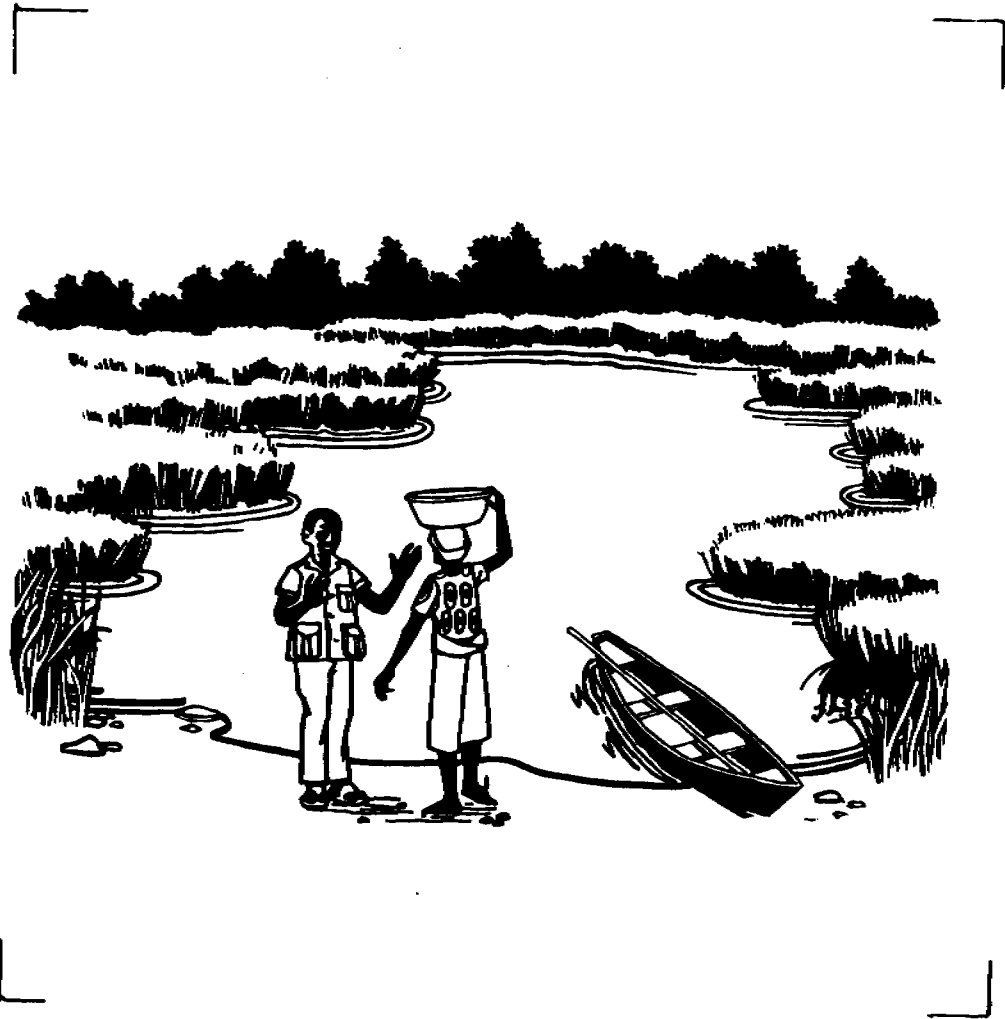
- Contamination can still occur if people are careless.
- Requires labor and materials for construction.



14. Posting a local authority to monitor water source--One way to keep infected persons out of the water source

Considerations:

- Requires payment of watchman.
- Depends on proficiency of watchman.
- May be difficult to enforce where villages share a water source.



15. Educating community members--One way to keep infected persons out of the water source

Considerations:

- Requires visit by someone to deliver health education messages.
- Depends on ability of educator to communicate messages.
- Everyone who uses water source must hear and understand messages.

