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ENVIRONMENTAL HEALTH PROJECT

WASH Reprint: Field Report No. 321

Teaching Guinea Worm Prevention
in Secondary Schools:
A Guide for Training Peace Corps
Volunteer Teachers

David Yohalem
Sarah Fry

January 1991

Prepared by Peace Corps and
USAID's Water and Sanitation Health Project
under WASH Task No. 091

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WASH and EHP

With the launching of the United Nations International Drinking Water Supply and Sanitation Decade in 1979, the United States Agency for International Development (USAID) decided to augment and streamline its technical assistance capability in water and sanitation and, in 1980, funded the Water and Sanitation for Health Project (WASH). The funding mechanism was a multiyear, multimillion-dollar contract, secured through competitive bidding. The first WASH contract was awarded to a consortium of organizations headed by Camp Dresser & McKee International Inc. (CDM), an international consulting firm specializing in environmental engineering services. Through two other bid proceedings, CDM continued as the prime contractor through 1994.

Working under the direction of USAID's Bureau for Global Programs, Field Support and Research, Office of Health and Nutrition, the WASH Project provided technical assistance to USAID missions and bureaus, other U.S. agencies (such as the Peace Corps), host governments, and nongovernmental organizations. WASH technical assistance was multidisciplinary, drawing on experts in environmental health, training, finance, epidemiology, anthropology, institutional development, engineering, community organization, environmental management, pollution control, and other specialties.

At the end of December 1994, the WASH Project closed its doors. Work formerly carried out by WASH is now subsumed within the broader Environmental Health Project (EHP), inaugurated in April 1994. The new project provides technical assistance to address a wide range of health problems brought about by environmental pollution and the negative effects of development. These are not restricted to the water-and-sanitation-related diseases of concern to WASH but include tropical diseases, respiratory diseases caused and aggravated by ambient and indoor air pollution, and a range of worsening health problems attributable to industrial and chemical wastes and pesticide residues.

WASH reports and publications continue to be available through the Environmental Health Project. Direct all requests to the Environmental Health Project, 1611 North Kent Street, Suite 300, Arlington, Virginia 22209-2111, U.S.A. Telephone (703) 247-8730. Facsimile (703) 243-9004. Internet EHP@ACCESS.DIGEX.COM.

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TEACHING GUINEA WORM PREVENTION IN SECONDARY SCHOOLS:

A GUIDE FOR TRAINING PEACE CORPS VOLUNTEER TEACHERS

Prepared by Peace Corps and
USAID's Water and Sanitation
for Health Project
under WASH Task No. 091

by
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and
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January 1991

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INTRODUCTION

Background and Purpose of the Guide

The World Health Organization (WHO) has set 1995 as the target for eradicating guinea worm disease in Africa. International aid organizations such as the United Nations Children's Fund (UNICEF), the United Nations Development Programme (UNDP), the U.S. Agency for International Development (USAID), Global 2000-BCCI, World Neighbors, and Peace Corps are directing their resources to support this eradication campaign. Given the community-based nature of its programs, the Peace Corps is uniquely placed to contribute to this effort.

This training guide is aimed at Peace Corps volunteer (PCV) secondary school teachers assigned to endemic guinea worm areas. Its purpose is to help familiarize these volunteers with the nature of guinea worm disease and to help them define the role they and their students might play in controlling or eradicating the disease in their families and communities.

The underlying assumption is that in rural communities where PCVs serve, teachers—and their students—can become effective change agents and promoters of community action. However, this training guide does not seek to impart specific community organization, development, or health education skills to secondary school teachers. Its aim is instead to help these teachers train and support their students as community guinea worm activists. If more-specific technical or community organization skills will be required of the PCVs, trainers could refer to Peace Corps/WASH Guide No. 3: *Helping Communities to Eradicate Guinea Worm.*

Workshop Goals

This workshop focuses on the causes and prevention of guinea worm disease and on how PCV teachers can involve their students and colleagues in the campaign against it.

There are seven workshop goals:

- Explain the symptoms and transmission cycle of guinea worm disease.
- Explain proper care for individual cases of guinea worm.
- Examine ways guinea worm can be prevented.
- Describe international and host country guinea worm eradication programs and Peace Corps's collaboration with them.

- Identify ways that students can become guinea worm activists in their communities and families.
- Discuss the elements of a guinea worm curriculum, including session content and teaching methods.
- Identify strategies to involve other teachers in the use of a guinea worm curriculum.

Organization of the Training Guide

This guide contains seven training sessions that vary in length from 1 to 3.5 hours. The first three sessions provide an introduction to the disease itself, covering causes, transmission, treatment, and prevention. Session 4 covers national and international efforts to eradicate the disease, and the last three sessions (5, 6, and 7) focus on how teachers can train their students as guinea worm activists, develop a guinea worm curriculum, and involve other teachers in guinea worm activities.

Each session has detailed trainer guidelines that provide instructions for preparing and conducting the session. These guidelines include—

- Session objectives
- Session overview
- Procedures (detailed instructions for conducting the session)
- Handouts for the trainees and background materials for the trainers

Using the Training Guide

The guide has been designed for trainers to use with in-service training programs for Peace Corps secondary school teachers. These in-service trainings would benefit greatly if national counterparts, i.e., the volunteers' teacher colleagues, were invited to participate as well.

Trainers should be aware that the first four sessions are linked to the skills-development training materials contained in Peace Corps/WASH Training Guide No.3: *Helping Communities to Eradicate Guinea Worm*. If there is a strong skill-development need in the group, trainers may wish to pursue such topics as community hygiene education or surveillance with sessions or parts of sessions from Training Guide No.3

In preparing for the workshop, trainers should alert outside speakers required for Session 4 well in advance, and provide these persons with presentation guidelines (found in the session plan).

Session 1

INTRODUCTION *60 minutes*

Objectives

1. Describe the purpose, goals, and schedule of the workshop.

2. Discuss workshop expectations.

Overview

This session will help trainees understand the workshop purpose, which is to provide secondary school teachers with enough information and materials to develop and carry out a guinea worm curriculum in their schools. This session includes the sharing of trainee expectations, an explanation of the goals, and a description of the workshop schedule. It also includes an optional segment on viewing and discussing "The Fiery Serpent."

Procedures

1. Welcome and Introductions ***15 minutes***

Welcome the trainees to the workshop and introduce yourself. If the trainees don't know each other, have them introduce themselves by name, site, and teaching position.

2. Expectations ***25 minutes***

Each trainee will have expectations about the workshop and what will be learned from it. This short exercise is designed to determine what those expectations are so that participants will know which are likely to be met and which are not.

Ask the trainees to answer the following question:

> "The two most important things I hope to learn from this workshop are...."

Record each response on a flipchart (but don't write duplicate responses).

3. Workshop Goals *10 minutes*

Present the goals and review them with trainees. Explain that the workshop will focus on the facts about guinea worm transmission and on simple prevention and treatment measures students can do and promote. The primary purpose here is to help teachers help students to become guinea worm activists in their communities, not to train teachers how to carry out community projects such as improving water supply.

4. Workshop Schedule and Methodology *10 minutes*

Post the workshop schedule and explain how the activities are arranged to meet workshop goals. Explain that the training approach will be active and participatory.

Materials

Handout 1.1: Workshop Goals
Handout 1.2: Workshop Schedule

Optional: VIEWING "THE FIERY SERPENT"

Trainer Note: If at all possible, procure this videotape from ICE (Peace Corps/Washington or the WASH Project) before the workshop. (Be sure you have access to a VCR.) Present the video during the Introduction, either as part of Session 1 or at another convenient time. Try to show "Serpent" before conducting the rest of the workshop because the film touches on most aspects dealt with in the first sessions. Also, it is a graphic way to make trainees aware of the severity of the problem.

Before viewing the film

Tell trainees that they will be watching a graphic film about guinea worm disease. Although "The Fiery Serpent" was filmed in Nigeria, the effects of guinea worms vary little from country to country. Ask trainees to pay close attention to how guinea worm is transmitted, what its social and economic effects are, how to recognize it, and how to prevent it. These aspects of the disease will be explored in greater detail during the workshop.

After viewing the film

Ask for trainees' reactions to the film—what struck them the most? How did their impressions of the disease change? Next, ask them to recall different aspects of the disease presented in the film:

- How do people catch guinea worm?
- How is the life cycle perpetuated?
- What does it look like?
- How should it be cared for?
- What are some complications of the disease?
- What are social and economic effects of guinea worm?
- What are some ways to prevent it?
- What should PCVs themselves do to prevent guinea worm?

To close the activity, ask trainees to think about how teachers and students can help with efforts to control and eradicate guinea worm disease in their communities. Explain that the workshop will examine the points seen and discussed, and that trainers will devote several sessions to defining appropriate roles and activities for teachers and students in secondary schools.

WORKSHOP GOALS

1. Explain the symptoms and transmission cycle of guinea worm disease;

2. Explain proper care for individual cases of guinea worm;

3. Examine different ways guinea worm can be prevented;

4. Describe international and host country guinea worm eradication programs and Peace Corps' collaboration in them;

5. Identify ways that students can become guinea worm activists in their communities and families;

6. Discuss the elements of a guinea worm curriculum, including session content and teaching methods;

7. Identify strategies for involving other teachers in the use of a guinea worm curriculum.

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WORKSHOP SCHEDULE

Day 1

9:00	Session 1: Introduction	60 minutes
10:00	Break	15 minutes
10:15	Session 2: Overview of Guinea Worm Disease	65 minutes
11:20	Session 3: Prevention of Guinea Worm	1 hour, 40 minutes
12:15	Lunch	60 minutes
1:15	Session 3 (con't.)	
2:00	Session 4: Role of Teachers and Students in Guinea Worm	1 hour, 40 minutes
3:15	Break	15 minutes
3:30	Session 4 (con't.)	
4:00	Session 5: Students as Community Guinea Worm Activists	2 hours, 10 minutes
5:00	End of Day 1	

8:30	Session 5 (con't.)	
9:50	Break	10 minutes
10:00	Session 6: Developing a Guinea Worm Curriculum	3 hours, 30 minutes
12:15	Lunch	60 minutes
1:15	Session 6 (con't.)	
2:30	Break	15 minutes
2:45	Session 7: Training Other Teachers to Use a Guinea Worm Curriculum	1 hour, 50 minutes
4:35	Session 8: Evaluation and Closing	30 minutes
5:00	End of Workshop	

Session 2

OVERVIEW OF GUINEA WORM DISEASE *65 minutes*

Objectives

1. Recognize the symptoms of guinea worm disease.
2. Describe the life cycle of the guinea worm and how it is transmitted to humans.
3. Explain proper individual and communal care for guinea worm sufferers.

Overview

This session provides essential information concerning the life cycle of the guinea worm and how humans become infected. Teachers must be clear about this process if they are to help their students overcome any misconceptions they may have.

The trainer will present this information by lecturette. Afterward, trainees will discuss the proper way to care for guinea worm sores and how to prevent complications.

Procedures

1. Introduction ***15 minutes***

Begin by asking the trainees what they know about signs, symptoms, and transmission of guinea worm disease. Emphasize that guinea worm is a disabling parasitic disease, spread by contaminated drinking water and affecting all age groups but the very young.

Next, explain the purpose of the session and present the objectives on a flipchart.

2. Recognition and Transmission Cycle *25 minutes*

Using a flipchart with key points written and a pre-drawn chart of the transmission cycle based on the lecturette illustration, give a presentation that covers signs of guinea worm and its transmission cycle.

Lecturette Notes
What Is Guinea Worm and How Do People Catch It

Guinea Worm Disease: What Is It?

- Common in parts of both Asia and Africa, guinea worm disease is one of the oldest parasitic diseases of man. In Africa, 19 countries are known to be infected, in a belt extending across the northern part of the continent. Annual estimated incidence in Africa is 3.32 million cases and the population at risk is approximately 120 million.

- It is a water-borne disease that is present in areas where drinking water is obtained from unsafe sources. Although people rarely die from guinea worm disease, it is extremely incapacitating. The pain can be so great that victims must discontinue many activities that are a part of daily life. Guinea worm is relatively easy to prevent and can be eradicated.

Signs of Guinea Worm Disease

- There are no signs or symptoms until the female worm matures and is ready to emerge from the skin.

- Localized swelling appears at the spot where the worm will emerge. The worm usually emerges on the lower limbs where there is contact with water, but may also emerge from other areas: arms, hands, breast, etc.

- Swelling is accompanied by intense burning or itching, and a blister develops in one or two days. Several days later, the blister ruptures and becomes a superficial ulcer.

- The worm may be seen emerging from the ulcer, especially when the victim wades in water.

- Tissues near the emergent site become swollen, red, and tender.

- A variety of generalized, nonspecific and usually mild symptoms may occur, including stomach upset, vomiting, skin rashes, fever, pain, and loss of appetite.

Guinea Worm Life Cycle

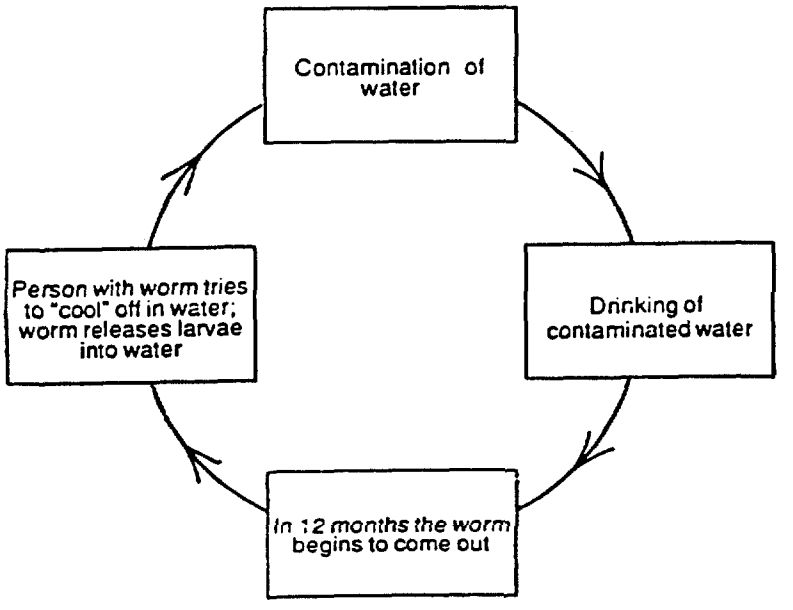
- Humans get guinea worm by drinking water containing *cyclops* (a very small water flea) that have eaten guinea worm babies or larvae.

- Once a person has drunk infested water, it takes about one year for the guinea worm to mature and move to a position where it begins to emerge from the person's body.

- When the worm is ready to emerge, a blister appears that causes a painful burning. When the blister breaks, the worm comes out.

- When the afflicted person comes into contact with water, whether to relieve the pain, gather drinking water, or for any other purpose, thousands of tiny guinea worm larvae are released from the worm into the water.

GUINEA WORM LIFE CYCLE



- Once in the water, some guinea worm larvae die. Many, however, are swallowed by cyclops. Inside the cyclops, the larvae continue developing. When humans drink the infested water, they provide the final "home" where the guinea worm can develop into an adult. Over the next year, the worm matures and mates in the human abdomen and then migrates to the surface of the skin, to emerge as an adult. And so the cycle continues.

3. Care of Affected Persons *15 minutes*

Explain that one reason guinea worm creates such a problem is that the sores become infected, thereby seriously disabling affected people. Ask if anyone knows of any traditional means of caring for guinea worm sores (rubbing on palm oil, covering with animal dung, etc.).

Ask trainees what they know about the proper care for guinea worm victims. Be sure they include all of the following:

- Clean the wound daily and cover it with a clean bandage or cloth.
- Rinse the worm daily with water.
- Prevent tetanus by getting an immunization.
- Avoid further contamination of the water source by not immersing infected limb in pond.
- Relieve physical discomfort.

Ask what a family and community might do to help those affected with guinea worm (*help them get to a health center for treatment, help them with chores, put supportive pressure on them not to enter the water source*).

Mention that although students should be able to counsel others in the proper care of sores (to prevent serious complications), they must not see themselves as healers or as replacing health personnel.

4. Wrap-up *10 minutes*

Ask the group if there are any questions concerning symptoms, transmission, or care of guinea worm disease. Close the session by pointing out that the suffering caused by guinea worm is all the more poignant since it is easily preventable. Tell trainees that the next sessions will look at ways guinea worm can be prevented, and how students can help families and communities do so.

Distribute *Handouts 2.1 and 2.2.*

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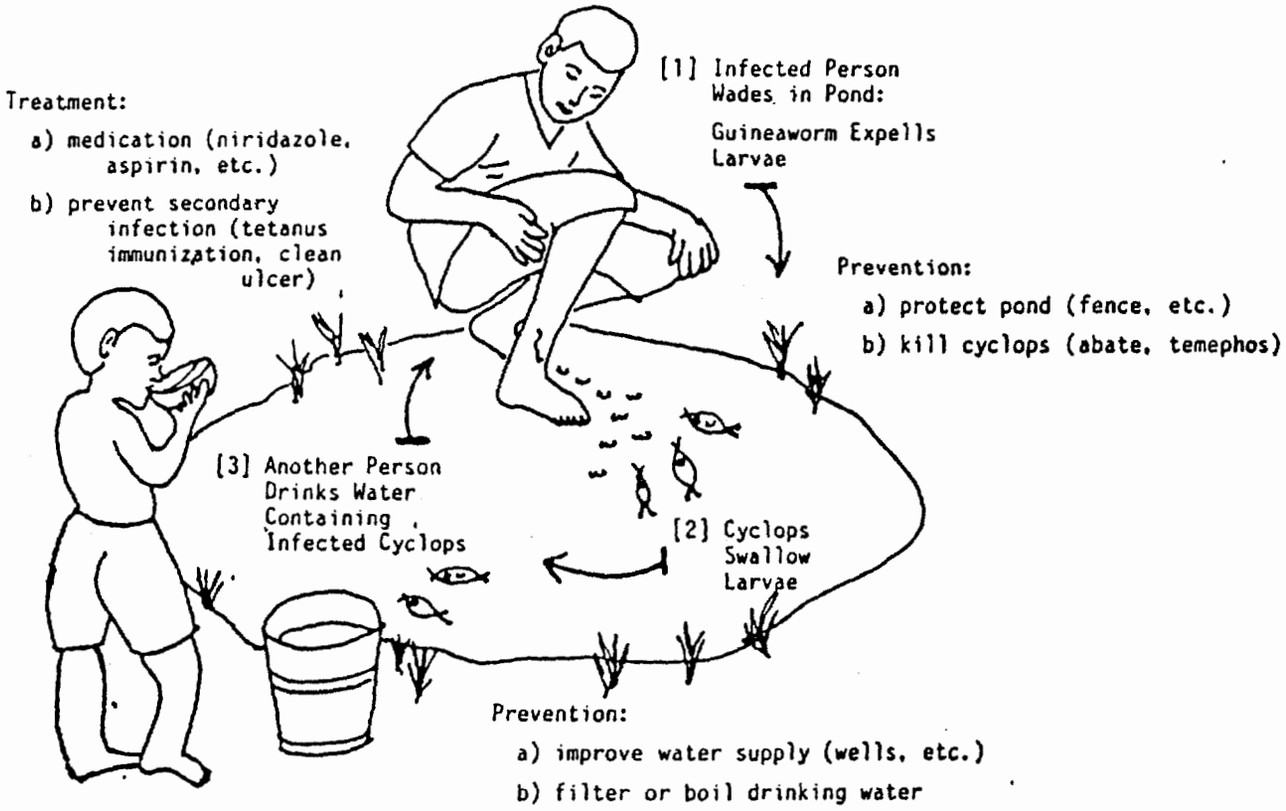
Materials

Handout 2.1: Lifecycle, Causes, and Treatment of Guinea Worm
Handout 2.2: Guinea Worm Vocabulary List

GUINEA WORM: CAUSE, PREVENTION, & TREATMENT



CAUSES OF GUINEA WORM

Guinea worm is in fact a worm known as Dracunculus medinensis. The disease is called Dracunculiasis or Dracontiasis. The adult female guinea worm grows up to a meter long and contains thousands of tiny larvae. The worm is usually located right under the skin of an infected person.

When the worm is ready to release its larvae, it causes a blister to form on the skin of the affected person. When this blister comes in contact with water, it bursts open, allowing the guinea worm to release some of its larvae into ponds and streams. This occurs frequently when people wade into ponds to collect water, to bathe, to wash clothes or similar activities. The guinea worm does not release all its larvae at once, but requires many contacts with water over a period of a few weeks. When the worm has finished releasing all its larvae, it will die and will slowly come out from the person's body.

The guinea worm larvae can not live freely in pond water. They will survive only if they are swallowed by a small shrimp-like animal called cyclops. Cyclops can barely be seen with the unaided eye, but can easily be viewed with a hand lens. The cyclops serve as intermediate host to the guinea worm larvae. The larvae grow inside the cyclops, and are mature enough to infect a human being after about two weeks.

Guinea worm disease passes on to other people when they drink pond water that contains cyclops which are infected with guinea worm larvae. The cyclops are dissolved inside the person's stomach. The guinea worm larvae are then freed and quickly pass through the stomach wall where they continue to grow. At some point the male and female guinea worm mate, and the male dies shortly thereafter. The female worm migrates to the person's skin. Within nine to twelve months from the time that the guinea worm larvae were swallowed, a fully grown worm is ready to release its larvae, beginning another round in the life cycle of guinea worm.

TREATMENT OF GUINEA WORM

There is no real cure for guinea worm. That is why prevention is so important. The drug niridazole (Ambilhar) is sometimes used in the treatment of guinea worm. It helps reduce inflammation and eases the slow, natural removal of the worm. Common aspirin also reduces inflammation and is much cheaper than niridazole. Niridazole also can have dangerous side effects. Other drugs have been tested, but none have been found very effective against guinea worm.

The biggest problem posed by guinea worm is that germs can enter the guinea worm ulcer and cause secondary infections. The most serious of these is tetanus, which can kill. Other infections cause painful disability such that the victim of guinea worm may be bedridden for weeks at a time.

Tetanus can be prevented by immunization. All infections can be prevented by keeping the ulcer site clean. A solution of dettol or another antiseptic lotion can be used to clean the ulcer at least once daily. Daily dressing is helpful for keeping out dirt and germs, but some people find the dressing uncomfortable as long as the guinea worm is still partially inside their bodies. Some people believe that covering the ulcer delays emergence of the worm, but this is not true. Whether dressing is used or not, treatment with antibiotics is very important. If the ulcer does become infected, treatment with antibiotics may be necessary, according to the advice of a physician.

In many societies people traditionally wrap the guinea worm gently around a small stick as it emerges. Care must be taken because if the worm is pulled too fast it will break and serious infection will set in. If the ulcer does not become infected, the worm will emerge naturally over some weeks with less pain and complications.

VOCABULARY LIST FOR GUINEA WORM TRAINING

Guinea worm
transmission cycle
vector
cyclops
pond
contamination
larvae
sore/wound
prevention
treatment
bandage
tetanus
infection
disability
blister
water filter
clean
cloth
water jar
eradication
surveillance
surveys
surveillance forms
community health committee
health education
beliefs
practices/behaviors
safe water supply

Session 3

PREVENTION OF GUINEA WORM *1 hour, 40 minutes*

Objectives

1. List adverse social and economic effects of guinea worm disease.
2. Discuss different ways guinea worm disease can be prevented.
3. Demonstrate how to filter drinking water.

Overview

This session consists of two distinct parts, which can be done separately if there are time constraints. In the first part, trainees explore two themes: the far-reaching effects of the disease within communities and the various prevention strategies. The trainees then analyze these strategies according to whether they are cost-effective, convenient, and feasible.

The second part features a demonstration of how to filter contaminated water through cloth. This is a skill that students should be able to apply in their homes and communities. The demonstration will be more effective if trainees have had a chance to visit a contaminated water source and collect the water themselves.

Procedures

1. Introduction *10 minutes*

Tell the trainees that beyond individual physical pain the disease carries important consequences for communities and schools. Awareness of these should provide all the more reason for engaging in control efforts. Given the lack of any kind of curative treatment for guinea worm, prevention it is the only approach to controlling the disease. PCVs should be knowledgeable about prevention, not only to help their schools and communities but also to preserve their own health.

Present session objectives on flipchart.

2. Adverse Social and Economic Effects *20 minutes*

Explain that the period of pain, weakness, and suffering from guinea worm disease can last up to three months. Ask trainees to name the adverse social and economic effects this period of disability can have, based on what they have seen or heard about in their communities. List the responses on a flipchart. Include the following if they haven't been mentioned by the group:

- high absenteeism from school
- lower agricultural productivity
- mothers who can't adequately care for their children
- loss of income when affected women can't take produce to market
- strain on social support system because of dependency of afflicted persons

3. Prevention *25 minutes*

Refer to the flipchart showing the guinea worm transmission cycle, and ask for a volunteer to recap how guinea worm is transmitted.

Ask the group how the disease can be prevented (i.e., how the cycle can be broken). List the responses on flipchart, and make sure they include the following:

- Protect water sources from infected people.
- Filter drinking water through cloth.
- Sterilize contaminated water by boiling.
- Improve community water supply.

Discuss chemical treatment of infected ponds with *Abate*, but stress that this is inappropriate for either students or PCVs.

Emphasize that surveillance of cases is the first step to prevention. Understanding who has the disease and how it is being transmitted facilitates the promotion of both individual and community-wide prevention.

Make sure everyone understands each prevention method.

Review each point on the list and ask the group what they think cost/convenience pros and cons might be relative to their communities. Make notes next to the listed methods.

4. Filtering Contaminated Water: Demonstration *30 minutes*

Trainer Note: This demonstration can be done as a separate session depending on time constraints.

Introduce the demonstration by telling the group that they will watch and then do a simple but effective procedure for filtering contaminated water. Refer to the flipchart showing the transmission cycle, and ask how filtering interrupts the cycle *(by preventing the ingestion of the intermediate host—cyclops).*

Demonstrate how to filter contaminated water through a cloth or other filter if a standardized one is being promoted. Discuss the difference between types of cloth: it is important to use a tightly woven cloth, such as the one being used by the guinea worm program, to prevent the cyclops from passing through. If you are unsure about the weave, double the cloth you are using.

You will need the following for the demonstration:

- Bucket of contaminated water, preferably collected by the trainees during an outing to the water source
- Local containers used for water storage
- Light-colored, fine-mesh cloth or a monofilament cloth sieve or other filter being promoted by the guinea worm program
- String, elastic, or local fiber used to attach cloth to mouth of storage jar
- Cup for pouring
- Magnifying glass, if available

Attach the cloth to (or place the filter over) the mouth of the water jar with string or elastic. Be sure there is a slight downward curve in the cloth.

Then pour the water by cupfuls into the jar through the cloth or filter. Explain the need to always have a "clean" side and a "dirty" side of the cloth. This prevents filtered cyclops from entering the water if the cloth is reversed and reused.

Have the trainees use the magnifying glass to examine the cloth or filter for organisms.

After filtering, remove the cloth or filter and clean it by washing it with soap and water. Dispose of the contaminated water safely, and hang the cloth or filter up to dry for the next day's use.

After the demonstration, ask one or two trainees to repeat the demonstration and explain every step.

Distribute *Handouts 3.1 and 3.2.*

5. Wrap-up *15 minutes*

Ask the group what they have learned about preventing guinea worm; get a few examples. Point out that volunteers and students can have the greatest impact on guinea worm by promoting preventive behaviors in their schools, families and communities.

Materials

Handout 3.1: Prevention of Guinea Worm
Handout 3.2: How to Filter Contaminated Water

PREVENTION OF GUINEA WORM

Preventive measures can be aimed at different points in the life cycle of guinea worm. Some are temporary measures, while others are longer lasting. In an endemic area there may be many ponds where people can become infected, especially if people are often moving among the different towns, villages, markets, and farms in the district. A good control strategy must take account of the various sources of infection. Different preventive measures are listed below.

1. An infected person can be kept away from community ponds. Social pressure and support are needed. Non-infected persons must help those with the disease to collect water for their domestic needs. Community members may take turns guarding the pond to keep out those with open guinea worm ulcers or blisters. Ponds can be protected by fences. These are only temporary or partial measures.

2. Chemicals can be used to kill the cyclops. Temephos (Abate) is safe to use if applied correctly by a trained health worker or community volunteer. The water should be acceptable for drinking a few hours after the chemical has been applied. Repeat applications are needed every six weeks. This method will fail unless regular supplies of the chemicals are available to every village and are used properly.

3. Boiling the drinking water kills cyclops and guinea worm larvae, as well as other germs. This is a time-consuming and expensive procedure which is socially unacceptable to most villagers.

4. Filtering water through clean cloth removes cyclops. The mesh size of the cloth must be small and uniform or else some cyclops may pass through. Monofilament nylon or polyester cloth is ideal for making filters, but unless the filter is used every time the water is collected, it will not protect. Also, the filter may eventually develop holes and tears and need replacement. Filtering is a good temporary measure and is also useful in villages that are too small to afford a well.

5. The best and most long-lasting solution to guinea worm is a permanent, clean source of water. The choice of a dug well, borehole, protected spring or tap water will depend on local geography, finance, and political realities. The benefit in this method is that it offers protection from many waterborne diseases, not just guinea worm.

6. Treatment is often considered a control measure for many diseases, but this is not very effective for guinea worm.

A comprehensive guinea worm control strategy will probably require a combination of the above methods. Unless a convenient and plentiful supply of water is available to everyone in a community, prevention will depend on a clear understanding by everyone in the community on how guinea worm is transmitted and on the adoption of preventive behaviors. A control program must, therefore, include hygiene education to promote this understanding and these behaviors.

HOW TO FILTER CONTAMINATED WATER

You will need:

- Water from a source infected with guinea worm
- Water storage jar or other large container
- Piece of light-colored fine mesh cloth, or
- Monofilament cloth sieve or other filter being promoted by the guinea worm program
- String, elastic, or fiber used to attach cloth to mouth of storage jar
- Cup for pouring

How to filter:

Attach the cloth to (or place the filter over) the mouth of the water jar with string or elastic, making sure there is a slight downward dent to the cloth.

Then pour the water by cupfuls into the jar through the cloth or filter. You should always have a "clean" side and a "dirty" side of the cloth. This prevents filtered cyclops from entering the water if the cloth is reversed and reused.
After filtering, remove the cloth or filter and clean it by washing it out with soap and water.

Dispose of the contaminated water safely, and hang the cloth or filter up to dry for the next day's use.

Session 4

ROLE OF TEACHERS AND STUDENTS IN GUINEA WORM ERADICATION EFFORTS *1 hour, 40 minutes*

Objectives

1. Describe international and host country guinea worm control programs and the Peace Corps role.

2. Discuss different ways students can become involved in controlling or eradicating guinea worm in their communities.

Overview

This session provides the background and context for school and community guinea worm eradication efforts. The session design calls for up to three guest speakers from a government ministry or international organization involved in guinea worm eradication. If no guest speakers are available, the trainers will need to provide an overview of eradication efforts using the background materials included here, as well as information gathered from sources in-country.

After the presentation, trainees brainstorm a list of possible areas for school/student involvement. This list serves as the basis for an exercise in Session 4: Students as Guinea Worm Activists.

Procedures

1. Introduction ***15 minutes***

Tell the group that in recent years, the focus on guinea worm eradication has gained momentum in the international health community. In fact, the World Health Assembly has passed a resolution targeting eradication by the end of 1995. This resolution is largely a result of efforts related to the International Drinking Water and Sanitation Decade. WHO, CDC, and concerned governments realize that eradication can soon be achieved if the water supply of afflicted communities is improved and if community members are taught and encouraged to use simple prevention measures.

Present the purpose of this session and the objectives.

Introduce the guest speakers from the host government ministry responsible for guinea worm eradication, international agencies, and/or from Peace Corps, by name and organization.

2. Presentations *60 minutes*

The guest speakers each give a 10 to 15-minute presentation on their agencies' involvement in guinea worm eradication. The trainers should provide the following outlines to the guests well in advance of their visit, and ask them to use the outlines to guide their presentations. Encourage the guests to use handouts, maps, tables, charts, flipcharts with key points, etc.

Host Country and International Programs

- Worldwide/local geographical distribution of guinea worm
- Basic epidemiological information on the disease (numbers affected, seasonality of transmission and incidence, etc.)
- Background/history of the program
- Overall program goals, long-term and intermediate objectives
- Main program strategies, specific activities
- Surveillance, reporting, and evaluation methods
- Collaborating organizations and ministry personnel
- Community organization and participation
- Successes and problems encountered to date

Peace Corps

- History of Peace Corps involvement worldwide and nationally
- Peace Corps/Washington mandate to assist guinea worm eradication efforts
- In-country program development
- Program objectives and strategies
- Guidelines and limitations to PCV involvement
- Case studies of PCV activities, including successes and problems

After the presentations, allow a 10-minute question and answer period. Thank the guests for the whole group.

3. Possible Areas for School/Student Involvement *20 minutes*

As a wrap-up to the presentations and in preparation for the next session, ask the trainees to brainstorm a list of possible activities that students and teachers could get involved in. This list can include any of the following:

- Filtering water at home and in school
- Providing hygiene education
- Counselling about caring for guinea worm sores
- Conducting community surveys and surveillance
- Promoting campaigns to prevent infected people from entering source
- Teaching younger children at home and in primary schools how to prevent guinea worm
- Working with community leaders on water improvement projects
- Organizing school events such as plays or fairs about guinea worm

Tell the trainees that they will use this list to select the most appropriate activities in the next session.

4. Wrap-up *5 minutes*

Ask the trainees what they felt was important new information from the presentations. Summarize key points of the session and review the objectives to see whether they were met.

Materials

Background Document 4.1: Overview of Guinea Worm Disease

OVERVIEW OF GUINEA WORM DISEASE

Dracunculiasis (guinea worm disease) is a disabling infection caused by the parasite Dracunculus medinensis. Infection is acquired by persons who drink water that contains cyclopoid copepods or, less technically, water fleas that have ingested D. medinensis larvae. Infected persons remain free of symptoms until about 1 year postinfection when adult female worms in the connective tissue 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. In about 90% of cases the worm emerges from a lower limb. The 70- to 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. Disability from infection lasts for weeks to months, depending on the number of worms and where they emerge.

The annual incidence is estimated at 5 to 10 million cases per year, and approximately 140 million people are at risk. Dracunculiasis occurs in West Africa, and extends across Sahelian countries into East Africa (a total of 19 countries). In Asia dracunculiasis is endemic in Pakistan and western India.

Areas in which Dracunculiasis is reported or probably exists

Transmission usually occurs seasonally, during the dry or rainy season (depending on the local ecology), and the impact on the productivity of agricultural workers may be dramatic. Incidence is highest in the 19- to 40-year old age group. 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 was declared eliminated from southern USSR (Turkestan) in the 1930s, from Iran in the 1970s, and from Tamil Nadu State in India in 1984. During the International Drinking Water Supply and Sanitation Decade (1981-1990) a major initiative to eradicate dracunculiasis has steadily gained momentum. The ultimate goal is global eradication of dracunculiasis. The intermediate goal is the elimination of endemic dracunculiasis from each endemic country. This goal is planned in the World Health Organization's (WHO) Global Medium Term Program for Parasitic Diseases (covering the period 1984 to 1989; PDP/MTP/83.3); it was declared in April 1981 and November 1987 by the Steering Committee of the International Drinking Water Supply and Sanitation Decade; and it was proclaimed in the resolutions "Elimination of Dracunculiasis" (adopted by the World Health Assembly in 1986, WHA39.21), and "Eradication of Dracunculiasis" (adopted by the Regional Committee for Africa in 1988, AFR/RC38/19/WP17).

There is a growing realization that dracunculiasis can be eradicated soon. The methods of control are simple. Affected populations can be educated about the origin of this disease and what they can do to prevent it, and can be provided with new sources of safe drinking water. However, before implementation of control, the location and incidence of dracunculiasis must be determined and appropriate planning for the implementation and monitoring of control interventions must take place.

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Session 5

STUDENTS AS COMMUNITY GUINEA WORM ACTIVISTS

2 hours, 10 minutes

Objectives

1. Identify the most appropriate ways students can become involved in guinea worm control activities in their communities.

2. Help students prepare for carrying out guinea worm control activities in their families and communities.

3. Describe the procedures for helping students to conduct a community guinea worm survey.

Overview

Teachers' role in carrying out a guinea worm program in secondary schools is to help their students understand the causes of the disease, how to prevent it, and how to promote the adoption of preventive practices in their homes and communities.

Session 5 prepares teachers for this role by first examining the advantages and limitations of using students as community activists, then determining what guinea worm-related activities are the most appropriate for students to engage in. The session ends with an introduction to conducting a community guinea worm survey, which is the first step of the students' guinea worm program.

Procedures

1. Introduction — *5 minutes*

Remind trainees that a school guinea worm program can encourage and prepare students to become activists for guinea worm prevention and control in their families and communities. Explain the session purpose and present the objectives.

2. Appropriate Activities for Students *45 minutes*

Begin by asking trainees what they view as strengths and limitations that students bring to the role of community activists. Make a list of each (strengths and limitations). These lists might include any of the following:

Strengths

- Students are members of families and communities, not outsiders.
- Their opinions are respected because they go to school.
- They are familiar with traditional beliefs and practices.
- They can counsel and instruct "on the spot" in their homes and in neighbors and friends homes.
- They are often in charge of younger siblings and can teach them preventive practices.
- They are more open to nontraditional explanations about disease transmission and prevention.

Limitations

- Students lack credibility because of their youth.
- In matters of community health, they lack certain skills to carry out activities.
- They tend to lose interest in projects.
- There are limits to how much they can teach and counsel, especially where treatment is concerned.
- They must overcome the same misconceptions about guinea worm that prevail in their communities.
- There is a potential for conflict between schools/students and the local health establishment unless roles and limitations are clear.
- Students lack material resources needed for some activities.

Present the following criteria on flipchart for selecting guinea worm activities appropriate for students to carry out.

Activities should be—

- inexpensive or free (no outside resources required)
- not highly technical

- acceptable in the eyes of community leaders and health center staff
- promotional and instructional
- aimed at families and neighbors rather than the community leadership

Ask if there are any additions to this list, and add them to the flipchart.

Refer to the list of possible activities the trainees brainstormed at the end of Session 3, and ask them to select the most appropriate ones using their criteria. Check those items on the list that are the most appropriate—

- demonstrating and promoting drinking water filtration
- surveillance for cases
- counselling guinea worm victims in their families and neighborhoods about proper care of sores and prevention of complications
- promoting certain behaviors in the community such as not entering the water source and providing support to affected persons (seeing to their comfort, helping with chores, etc.)

3. Student Preparation for Activities *45 minutes*

Ask the group what their students would need in order to be prepared to go out into the community to begin their "programs." Use the flipchart to list their ideas, which should include—

- a survey of the community to determine the extent of the problem
- a plan of action
- practice in certain areas (e.g., demonstrations)
- skill development (counselling, health education)
- approval from community leaders, school officials, and health professionals

Divide the trainees into three or four small groups. Then ask them to propose ideas for how teachers can help students carry out listed activities (from Session 3). After 30 minutes, ask each group to present its ideas. Make one complete idea list from the small group results (to be typed and distributed later).

Ideas might include the following:

- Provide survey forms to the students.
- Organize meetings with community and school officials.
- Call special PTA meetings to inform and involve other teachers and parents.

- Hold small workshops to develop certain skills.
- Help students design and practice events such as demonstrations or community theater presentations.
- Enlist other resource persons such as artists, health educators, etc., to counsel and train students.
- Plan periodic review meetings during the course of activities.
- Design simple planning forms for students to fill out.

At the end of this exercise, emphasize that an important role for teachers is one of follow-up and support to the students as they carry out their program. Ask trainees to think of ways they might provide this support.

4. Preparing for a Community Survey *25 minutes*

Explain to the group that the first step needs to be a community guinea worm survey, regardless of other activities the students have decided on. Such a survey would reveal the number of people affected by guinea worm, and if repeated periodically would determine seasonality and whether the disease is decreasing or increasing. Survey results could measure progress in controlling the disease locally, and could support national surveillance efforts. Students conducting the survey should be closely supervised by their teachers and any concerned health professionals.

Hand out the Sample Survey Forms (Handout 5.1) and explain that they are examples that can be adapted depending on local needs. Explain their function to the trainees. Distribute Handout 5.2: Steps for Conducting a Community Survey, and review it with the group. Ask them if these steps are practicable in their communities or if additions and/or changes would be needed.

Ask the group what they can do with the survey results. Here are some ideas: present them to community leaders; use them to decide which actions to undertake; present them at a PTA meeting and explain the student guinea worm control program; feed them into national guinea worm statistics; share them with the health center staff and decide on joint activities.

5. Wrap-up *10 minutes*

Ask trainees to reflect on what they feel to be the most important lesson(s) to keep in mind as they plan how to help students become community guinea worm activists. Ask a few volunteers to share their thoughts with the rest of the group.

Materials

Handout 5.1: Sample Survey Forms
Handout 5.2: Steps for Conducting a Community Survey
Handout 5.3: Targeting School Children for Tropical Disease Control: Preliminary Findings from a Socio-Behavioral Research Study in Nigeria

SAMPLE FORMS FOR GUINEA WORM SURVEILLANCE

INFORMATION FORM

- District _____
- Name of village _____
- Number of inhabitants _____
- Total number of cases of guinea worm reported this year or last _____
- Is there a school in the village?

  _____ No _____ Yes, how many?
- How far away is it? _____
- Number of students in the school _____
- Number of students with guinea worm this year or last year _____
- Is there a health center?

  _____ Yes _____ No
- How far away is the nearest health center? _____
- Is there a social center in the village?

  _____ Yes _____ No
- What are the water sources used in the village?

  _____ Pond

  _____ Dam

  _____ Creek or River

  _____ Well _____ Number

  _____ Cisterns _____ Public _____ How many?

  _____ Pumps _____ How many?

GUINEA WORM RESEARCH - _____ DISTRICT

VILLAGE EVALUATION

Name of Village: _____ County: _____

Trainer(s): _____ Date: _____

Ask the leader:

1. Approximate number of concessions in village: _____

2. Approximate number of people: _____

3. Approximate number of people with guinea worm last year: _____

4. In your opinion, what causes guinea worm? _____

   _____

5. In your opinion, can one prevent guinea worm?

   _____ Yes _____ No _____ I don't know

   If yes, how? _____

6. How is guinea worm treated in this village? _____

   _____

7. What water points are used by the village inhabitants during the year?

Type of water point	Does it dry up? (yes or no)	If yes, during which months?	Potential source of infection? (yes or no)

RESEARCH ON THE NUMBER OF GUINEA WORM CASES

MONTHLY EVALUATION

Name of village: _____ County: _____

Person who took poll: _____ Neighborhood: _____

(If the village is very big, it will be necessary to divide the research by neighborhood.)

Objective: Approximate number of people with guinea worm last month?

* Register the number of new cases last month (since the last census of the the last month until today).

Ask the following of the chief, leaders, and influential people:

Age and Sex	Male			Female			TOTAL
Date	0-14	15+	Total	0-14	15+	Total	

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VEUILLEZ ENUMERER LES VILLAGES QUI SONT SERVIS PAR L'ECOLE

Village	Population	Nbre de cas de ver de Guinée au cours de l'année 1984-85	Nbre et type de source(s) d'eau	Type de Pompe	Présence d'un comité de santé dans le village	Les services gouvernementaux travaillant dans le village (Indiquez nombre de dispensaires, agents sociaux, maisons familiales

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STEPS FOR CONDUCTING A COMMUNITY SURVEY

- Divide students into teams of twos or threes
- Assign specific areas and households to each team
- Explain the forms carefully to the students
- Decide on a time frame for completing the survey
- Present the plan to community leaders and health officials for approval and cooperation
- Practice using the survey forms beforehand (role plays)
- Carry out the survey
- Tabulate the results

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Targeting school children for tropical diseases control: preliminary findings from a socio-behaviour research in Nigeria

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Summary

This paper reports one study carried out among school children in Nigeria to investigate some of the social and behaviour factors contributing to the transmission of malaria, guineaworm, schistosomiasis and onchocerciasis. Data were gathered from 1310 secondary school children in a rural community. Analysis of data revealed that 70% of students wash and fetch water in the streams and ponds for domestic purposes. More than 70% claimed that their drinking water was pipe borne even though we knew that the taps had been dry for months. Only 29% specified streams, wells, ponds and water holes as sources of water supply. More than 30% claimed to treat their water before drinking in their homes. There is evidence from home visits in the community that a large proportion of the population do very little to improve the quality of drinking water before consumption.

With the exception of malaria, the student's knowledge on the causes and prevention of schistosomiasis, onchocerciasis and guineaworm is virtually nil.

All of these had implications for an educational intervention plan which was the next phase of the project.

Introduction

The school age population is one of the vulnerable groups known to suffer serious consequences from environmental hazards. High rates of morbidity among school children are well established. Infective and parasitic diseases, especially malaria, are responsible for high rates of absenteeism in schools in Nigeria. Bruce-Chwatt in a comprehensive malaria survey in Nigeria as far back as 1951 recorded a parasitic rate of 92% among school children (Bruce-Chwatt 1951). Since then numerous studies on prevalence and epidemiology of malaria among school children revealed that the rate has not decreased significantly. The morbidity rates for schistosomiasis are quite high in endemic areas. Infection rates range from 58 to 93% in school children. (Gilles *et al.* 1981; Siegal 1968). Guineaworm infection exists in most rural communities where the people depend on surface water holes for domestic and drinking purposes. Kale (1977) recorded a prevalence rate of 22–27% among the 10/14 years age group, while a rate of 13–23% absenteeism from schools was reported by Nwosu *et al.* (1982). Onchocerciasis has been known in Nigeria for more than 70 years. Blindness rates of up to 15% have been reported in heavily affected areas (Crosskey 1981). In some communities some children are already blind by the age of 9 years (Albiez 1981).

There is no doubt that much of the human behaviour that contributes to the transmission of disease has its roots in the practises, health beliefs and perceptions learned early in youth. Many diseases are strongly linked with people's life styles, occupation and poor living conditions and are complicated by ignorance and poverty.

In 1981, the UNDP/World Bank/WHO special programme supported a multidisciplinary research project for the control of

malaria, schistosomiasis, dracontiasis and onchocerciasis at the University of Ibadan, Nigeria. The main objective of the project is to assist the efforts of the biomedical scientists by examining the social, economic and behavioural factors in the transmission of these diseases. The school age group (5–18 years) in the community where the research programme (TDR) is based comprise 35% of the population and constituted the target for this study.

Study area and background

The project is being carried out in the Ibarapa district of Oyo State in western Nigeria. Ibarapa Division, as it is popularly known, covers about 2883 square km and has at present a population of 191 612. Ibarapa extends towards the savanna region in the north and the rain forest zone in the south. Hills and rocks occupy 4–5% of the land surface. The division comprises seven major rural towns, namely Eruwa, Igboora, Igangan, Idere, Tapa, Aiyete and Lanlate. Ibarapa has no acknowledged capital. Igboora, one of the larger towns, is the head of the Ibarapa District, while Eruwa is the divisional headquarters. The lack of a recognized Oba (a constituted traditional king with royal apparatus) has hindered Igboora or any of the larger towns from claiming to be the natural capital of Ibarapa Division. The population of Ibarapa is unevenly distributed, with about 70% in the seven major towns and 30% living in more than 700 villages or farm settlements scattered throughout the area. The farm settlements are temporary residences where the people camp in order to carry out their daily occupation of farming, crafts, etc. At weekends, festivals and ceremonial periods many village residents return to their family compounds in the town or to their permanent home settlement.

There is a dispensary in each of the rural towns, a health centre at Igboora and a district hospital at Eruwa. The larger towns, like Eruwa and Igboora, have piped water whose supply was intermittent while the remaining towns and villages rely on wells, ponds, water holes and streams which as sources of water supply are heavily polluted.

Methodology

A few years ago, the Oyo State Government declared free, and compulsory, education—from primary school to university level—for all in the State. In order to cope with the annual intake more secondary schools were created.

The study was carried out among secondary school students from 10 newly created schools randomly selected in five of the rural towns within Ibarapa district. The sample consisted of second year pupils of the 1981/82 session in all the 10 schools. Each class had an average of 140 students thereby making a total of 1400 students for inclusion in the study. Data collected included the children's socio-demographic data and their knowledge about causes treatment and prevention of malaria, schistosomiasis, dracontiasis and onchocerciasis as well as their beliefs and practices in relation to these diseases. Methods of data collection included: informal interviews with pupils, school personnel and parents; general observation in schools and in selected homes in the community; and a self-administered questionnaire completed by the pupils.

The questionnaire included questions on the pupils' notions of causation, preferences for treatment (traditional or modern) and notions of prevention. Other items related to recognition of disease symptoms, practices and behaviours known to be associated with transmission of the disease, personal protection measures and past experiences.

The purpose of the informal interviews and observation was to cross-check information given by the pupils when there was a need for clarification or confirmation of any sort. Four field assistants were trained to assist in the data collection.

Findings

DEMOGRAPHIC INFORMATION

Out of 1400 pupils in the 10 schools, data was collected from 1310. Most of the absenteeism in many schools was ascribed to an outbreak of guineaworm infection. A few others who were absent were preparing for the annual sports competition. Of the 1310 pupils, 60% were

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Table 1. Causes of malaria and guineaworm

Causes	Malaria (%)	Guineaworm (%)
Dust	7	—
Mosquito bite	36	—
Swimming in dirty water	—	8
Groundnut oil or palm oil	3	—
Bite of small insects	8	—
Working in the sun	4	—
Drinking impure water	—	43
Don't know	42	49

n = 1310.

Table 2. Prevention of malaria and guineaworm

Prevention	Malaria (%)	Guineaworm (%)
Insecticides (spray and coil)	1	—
Native medicine	6	2
Clear away bushes	4	—
Preventive drugs	18	4
Mosquito net	2	—
Injection	1	—
Boiling of water	—	6
Don't know	68	88

n = 1310.

males and 40% females. Their ages ranged from 11 to 23 years, with a large proportion (over 55%) of the children between 14 and 16 years. About 50% were Christians while 45% were Muslims. Seventy per cent of the parents had received no formal education. Over 64% of their fathers were involved in subsistence farming, while 60% of their mothers were engaged in trading.

STUDENTS' NOTIONS OF CAUSATION, TREATMENT AND PREVENTION OF MALARIA, GUINEAWORM, ONCHOCERCIASIS AND SCHISTOSOMIASIS

The findings are presented in Tables 1 to 6. They show that, except for malaria and guineaworm in which 36% and 43% of the pupils respectively had the correct notions of causes, the percentage of pupils with correct notions of causes, treatment and prevention of the four diseases was generally low, with 'don't know' responses ranging from 51 to 99%.

Table 3. Treatment of malaria and guineaworm

Treatment	Malaria (%)	Guineaworm (%)
Hospital	41	26
Native medicine	2	1
Drugs	4	1
Palm oil	—	1
Chemist	1	1
Traditional healer	1	1
Don't know	51	69

n = 1310.

It should be noted that the local name for schistosomiasis, which has a symptomatic origin (blood after urine), was used. By the same criterion, onchocerciasis was recognized as four different diseases—chronic itching, nodules, blurred vision and blindness.

BEHAVIOURAL DIAGNOSIS IN RELATION TO WATER CONTACT AND ITS USE

In relation to behaviour associated with guineaworm infection, the majority of pupils (71%) claimed to depend on pipe borne water as their source of drinking water in the home, while 29% indicated streams, ponds and wells. When asked in what form their water was consumed, 39% said they drank their water untreated all of the time, 26% claimed they only boiled their water sometimes and 31% said that water consumed in their homes was always boiled. More than 50% did not seem to associate the drinking of polluted water with guineaworm.

With respect to behaviour associated with the transmission of schistosomiasis, 70% of respondents said that they went to streams and ponds to bathe, swim, wash and fetch water for domestic use. When asked leading questions on the causes of schistosommiasis a few (26%) believed that bathing and washing in water could cause blood in urine but the remaining 74% did not think the two were connected.

Thirty-nine per cent of pupils believed that the bite of the black fly (*Similium damnosum*) could cause nodules in the hips and groin, blurred vision and blindness, all symptoms of onchocerciasis. They had no knowledge of

Table 4. Causes of schistosomiasis and onchocerciasis

Causes	Schistosomiasis	Onchocerciasis			
	Blood after urine (%)	Chronic itching (%)	Nodules (%)	Blurred vision (%)	Blindness (%)
Evil doers	—	—	—	1	1
Dust	—	—	—	1	3
From God	—	—	—	1	—
Swimming in dirty water	4	—	—	—	—
Flirting	1	—	—	1	—
Skin diseases	—	—	—	1	—
Anaemia	—	—	—	1	—
Groundnut oil or palm oil	—	2	—	2	—
Cheese (local)	—	10	1	—	—
Bite of small insects	—	—	2	1	1
Using dirty lamps for reading	—	—	—	1	1
Chronic itching	—	—	2	5	2
Bad blood	—	—	—	1	—
Working in the sun	—	—	—	5	1
Don't know	95	88	95	79	91

n = 1310.

Table 5. Prevention of schistosomiasis and onchocerciasis

Prevention	Schistosomiasis	Onchocerciasis			
	Blood after urine (%)	Blurred vision (%)	Chronic itching (%)	Nodule (%)	Blindness (%)
Native medicine	1	2	—	—	—
Preventive drugs	3	2	3	1	2
Pray to God	—	—	—	—	1
Blood tonic	—	1	—	—	—
Avoid heat	—	1	—	—	—
Read with recommended glasses	—	1	—	—	1
Don't know	96	93	97	99	96

n = 1310.

Table 6. Treatment of schistosomiasis and onchocerciasis

Treatment	Schistosomiasis	Onchocerciasis			
	Blood after urine (%)	Blurred vision (%)	Chronic itching (%)	Nodules (%)	Blindness (%)
Hospital	12	16	15	11	11
Native medicine	1	1	1	—	—
Drugs	1	1	1	—	—
Church/faith healer	—	—	—	—	1
Traditional healer	1	—	2	1	—
Chemist shop	1	1	—	—	—
Don't know	84	81	81	88	88

n = 1310.

protecting themselves against the bite of the fly.

When asked if they thought the bite of the mosquito could cause malaria, 89% answered in the affirmative, whereas earlier on (Table 1) only 36% linked malaria infection to mosquito bite in response to a non-leading question on the causes of malaria. Seventy-five per cent failed to specify what to do to protect themselves against the bite of the malaria vector.

PAST EXPERIENCES WITH THE FOUR DISEASES

When asked to list diseases from which they had suffered within the past year, malaria, guineaworm, blurred vision, stomach upset and headache topped the list of diseases identified.

SALIENT POINTS ON OBSERVATION OF ENVIRONMENTAL AND CONDITIONS OF SCHOOLS AND COMMUNITY

Eight of the 10 schools were situated about 5 km away from the town. All 10 schools had spacious well maintained surroundings with beautiful gardens. The students did their own cleaning and clearing of the bushes. All the schools had inadequate toilet and water facilities. In schools where pit latrines were not provided, the pupils made use of the surrounding bushes for defaecation and urination.

Sources of water supply in many of the schools were nearby streams. Children depended on these streams for drinking and washing their utensils after meals during the break period. Some schools had wells, but these usually dried up in the dry season. One of the schools had a tap installed but it hardly functioned since there was a perpetual shortage of water in the area. Asked informally what they were doing about the water problem teachers said that they advised students to bring water from home. According to one teacher, students found this cumbersome and so never complied. Discussions with many of the students revealed that they did not associate washing in the polluted streams and drinking from them with transmission of schistosomiasis and guineaworm infections.

Classrooms were overcrowded because of limited space. More classrooms, furniture and teaching facilities are needed to cope with the growing population of the schools. Teachers and principals complained of insufficient funds for the daily administration of the schools. According to the principals, one problem facing the schools was the constant transfer of teachers by the State Government. In addition there was a shortage of trained teaching personnel in the different subjects.

The only science subject offered by most of the schools was Biology. The schools lacked well equipped laboratories to teach Physics and Chemistry. Health Education was not on the school curriculm. Furthermore the first aid boxes in all the schools were empty. Teachers claimed that children were sent to the health centre dispensary in case of sudden illness or other emergencies.

It is obvious that the financial needs of the schools are urgent. Some schools had intensified their agricultural programme with the intention of generating funds from the sales of their farm produce. The school personnel fully appreciated their role in the control of tropical diseases, however there were more pressing needs, and the Parents Teachers Association (PTA) already had its hands full in its efforts to cater for the children's educational needs.

A few homes visited in the community maintained clean compounds. Almost none had toilet facilities. There were taps in all of the communities but they were dry. Many of the homes visited utilized streams, ponds, water holes and wells as sources of water supply. Igboora, Eruwa and Lanlate, where six of the schools are located, enjoyed a potable water supply more frequently than Idere and Igangan where the remaining schools were located. The incidence of guineaworm was low in some communities, for example Igboora, during the guineaworm season when compared to others, such as Idere. It was found that in Igboora there was a sanitary well in almost every compound. In some of the homes the common breeding places for mosquitoes were pots of water containing cassava flour left to ferment for many days before processing.

Parents in the community said they protected themselves against mosquito bites by using insecticides and coils. On the farm, some

farmers said they protected themselves from the bite of the blackfly (Amukuru) by rubbing kerosene and lime on their arms and legs.

Discussion

From the results there is no doubt that compared with malaria and guineaworm, onchocerciasis and schistosomiasis were diseases unfamiliar to the students. There is evidence that all four diseases are prevalent in Ibarapa district with malaria and guineaworm more common among school children. The students had little knowledge of the causes, prevention or treatment of the diseases, especially schistosomiasis and onchocerciasis. Although more than 25% claimed that they would go to the hospital for treatment of the diseases, utilization of health services was considered to be very poor among students. Many students resorted to home remedies and over-the-counter drugs. Malaria was usually treated with a traditional drug (agbo) made from boiled medicinal leaves. The rubbing of palm oil on the leg ulcer resulting from guineaworm infection was found to be widely practised.

The inability of many of the students to associate guineaworm infection to drinking of polluted water has its roots in the community. In the Idere community for instance, one of the worst affected areas, there was a popular belief that guineaworm is a 'curse from the gods'. An elderly traditional healer who was interviewed had this to say 'We have the ability to cure any kind of ailment, but that of the guineaworm beats us'.

A majority of pupils (71%) claimed to have pipe borne water as a source of water, even though we knew that the taps had been dry for months at the time of data collection. Similarly we had no evidence to support the claims of 31% who said that they filtered and boiled their water before consumption. The heavy infection of guineaworm during the season 1982 (when data was being collected) and recent occurrences testify that water collected from doubtful sources is consumed without adequate treatment.

The difficulties and financial problems being experienced by schools in the Ibarapa district are common to many secondary schools in Nigeria. They are due to the prevailing economic recession in the country. Unfortunately the newly created schools which are just beginning to establish their foundations are the worst affected.

Acknowledgements

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Session 6

DEVELOPING A GUINEA WORM CURRICULUM

3 hours, 30 minutes

Objectives

1. Identify the key components of a secondary school guinea worm curriculum.

2. Determine the most appropriate teaching methods for a guinea worm curriculum in secondary schools.

3. Develop sample lesson plans using existing materials and new ideas.

Overview

Participants are expected to leave this training program with at least the beginnings of a usable guinea worm curriculum. During this session, they will review the topics covered so far and decide which are relevant for a school curriculum and what others might be needed. They will then identify a range of teaching activities and methods that might be useful in carrying out this curriculum. Finally, in small groups, trainees will develop sample lesson plans for a few topics, using their own ideas, as well as examples and materials provided by the trainers.

Procedures

1. Introduction ***10 minutes***

Ask trainees in what ways a school guinea worm curriculum might be different from the standard curriculum (*it should be focused on action, not just knowledge; methods should be practical, not just lectures; it will involve more that just students and teachers, i.e., community leaders, health professionals, families, etc.).*

Present the session purpose and objectives.

2. Key Elements of a School Curriculum *20 minutes*

Ask trainees to recall the topics covered so far in this workshop. Refer to the overall goals and schedule to help their recall. Write the topics on a flipchart.

Next, ask which topics they think are relevant to a school curriculum, which are not, and which should be added. Revise the list of topics according to their ideas. At a minimum it should contain—

- Guinea worm lifecycle and transmission
- Effects of the disease
- Prevention of guinea worm
- Filtering drinking water
- Care of guinea worm victims
- Community guinea worm activities
- Community guinea worm survey

3. Teaching Methods for a Curriculum *45 minutes*

Remind trainees that at the beginning of this session they said the curriculum should be practical and active. Ask them what teaching methods respond to this need, and refer them as a starting point to methods used in this workshop. Write up their responses, and include active methods such as lecturettes with guided discussion, stories, role plays, songs, visual aids, small group work, demonstrations, skits.

Distribute *Handout 6.4: Health Education Methods*, and give the group 5 minutes to read it. Ask if there are any questions or additions. Explain that they can refer to this handout as they develop lessons on guinea worm.

Next, distribute the materials found in Handouts 6.1-3, and explain that these teaching materials on guinea worm have been prepared by others and might be useful in developing their own lessons. Go over each one and make sure trainees understand its purpose.

4. Developing Sample Lesson Plans *2 hours*

Divide the trainees into four or five small groups. Assign one or two topics from the list developed in Step 2 to each group, and explain that they will spend the next hour (?) developing sample lesson plans and teaching options for their topic. Review the main elements of a lesson plan: topic, objectives, procedures (beginning, middle, end), methods, materials, time.

Give each group several sheets of flipchart paper to draw up their plans.

After an hour, each group takes 10 minutes to present its work to the others. Invite comments, questions, and suggestions from the whole group after each presentation. Revise the plans if suggestions are accepted. Before the end of the workshop, type and distribute plans for teaching each topic.

5. Wrap-up *15 minutes*

Ask trainees what they can do with these sample materials when they return to their schools. Ask them to be specific about how they intend to use them. Return to the session objectives and discuss whether they were reached.

Materials

Handout 6.1: Lecturette—What Is Guinea Worm and How Do People Catch It?
Handout 6.2: The Story of Dale and Sina (Transmission)
Handout 6.3: The Story of Wormville (Prevention)
Handout 6.4: Health Education Methods

LECTURETTE NOTES:
WHAT IS GUINEA WORM AND HOW DO PEOPLE CATCH IT?

Guinea Worm Disease: What Is It?

- Guinea Worm Disease is one of the oldest parasitic diseases of man. It is common in parts of Africa and Asia. In Africa, 19 countries are know to be infected in a belt extending across the northern part of the continent. Annual estimated incidence in Africa is 3.32 million cases and the population at risk is approximately 120 million.

- It is a water-borne disease that is present in areas where drinking water is obtained from unsafe sources.

Signs of Guinea Worm Disease

- There are no signs or symptoms until the female worm matures and is ready to emerge from the skin

- There is localized swelling at the spot where the worm will emerge. The worm usually emerges on the lower limbs where there is contact with water. It may sometimes emerge on the arms, hands, breast, and other places.

- Swelling is accompanied by intense burning or itching and a blister develops in one or two days. Several days later, the blister ruptures and becomes a superficial ulcer.

- The worm is seen emerging from the ulcer, especially when the person suffering from guinea worm wades in water.

- The tissues near the emergent site become swollen, red, and tender.

- A variety of generalized non-specific and usually mild symptoms, including stomach upset, vomiting, skin rashes, fever, pain, and loss of appetite may occur.

Guinea Worm Life Cycle

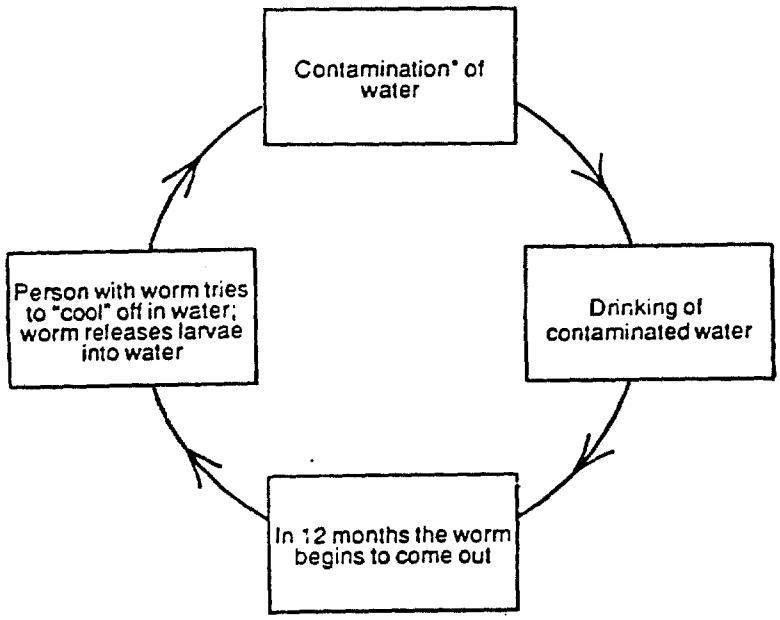
- Humans get guinea worm by drinking water containing cyclops, a very small water flea, which has eaten guinea worm babies or larvae.

- 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 begins to come out of the person's body.

- When the worm is ready to come out, a blister appears, which causes a painful burning feeling. The blister breaks and the worm comes out.

- When the person with guinea worm comes into contact with the water, whether to relieve the pain, to gather drinking water, or for any other purpose, thousands of tiny guinea worm larvae are released from the worm into the water.

GUINEA WORM LIFE CYCLE



- Once in the water some guinea worm larvae die. Many are swallowed by water fleas called cyclops. Inside the cyclops, the larvae continue developing. When the human drinks the water containing the 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.

THE STORY OF DALE AND SINA

Dale and Sina are best friends. Dale is from Idere and Sina is from Igbo-Ora. Both boys are students in form two at Okedere High School.

One day in November, Sina came to school and found that Dale was absent. After school Sina went to visit Dale to see what was the problem. He found that Dale had been knocked down by guinea worm. The disease was hurting Dale too much and he could not walk.

Sina said, "Dale, every year you get this guinea worm, but I do not. Why is this so?" Dale answered, "Our teacher says that drinking dirty water causes guinea worm. You know that Igbo-Ora has tap water, but here in Idere we fetch our water from ponds."

Sina said, "I do not believe you. My grandmother says that guinea worm is in the blood and will come out any time it wants to if blood becomes weak. I do not get guinea worm because my family has strong blood."

While the boys were arguing about the cause of guinea worm, Dale's mother entered the room and asked the boys to take food. Since Sina was hot and tired from work on the school farm and sports, he ate plenty of food and drank plenty of water.

After finishing the food, Sina looked up and saw that the sun was setting. He said, "I better reach home before dark." After thanking Dale and his mother for the hospitality, Sina started on his way back to Igbo-Ora.

After some weeks, Dale finally recovered from the guinea worm. Sina was glad to see has friend back in school. They started playing and talking and forgot all about the guinea worm. Both boys did well in school that year and passed on to form three.

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In September Dale and Sina returned to school. November came around again, but this year it was Dale who found that Sina was absent from school. Dale went to Igbo-Ora right after school and found Sina on his sickbed complaining of guinea worm.

Sina was worried. He asked, "Why do I have guinea worm? I never had it before. You said that if I drank clean water I would not get the disease. I only drink tap water in Igbo-Ora."

Discussion Questions:

1. Why did Dale and Sina get guinea worm?
2. How does guinea worm spread?
3. What are some of the different ways we can make sure our drinking water is safe from guinea worm disease?
4. What could Dale and Sina say to the grandmother to help her understand what really causes guinea worm?

THE STORY OF WORMVILLE:

How to Prevent Guinea Worm

Wormville is a village which lies not too far from here. The people of Wormville are farmers - good farmers. They grow maize, yams, cassava, beans and fruits. The money they make from selling these crops has been used in many ways to improve their lives. Most houses have iron sheet roofs. Many people have radios.

The people of Wormville feel that they would have an ideal life except for two things: They suffer from lack of water in the dry season, and many of the villagers suffer from guinea worm each year. The disease is so prevalent that the people of Wormville believe that their village has been cursed. The disease seems to strike hardest just when the growing season needs as many hands as possible. There is a special hut near the center of the village where the guinea worm sufferers are brought to spend the day. It is nearly always full.

Wormville gets its water from a nearby stream which is plentiful in the rainy season, but in the dry season shrivels to only a few shallow ponds here and there. Sometimes the people dig out these pond to make them deeper and wade into them to collect the water. Often the guinea worm sufferers go down to cool off their sores in the water. In the rainy season, there is always an abundance of water, and many new ponds spring up that everyone uses for bathing, washing clothes, and drinking. If only there were some way to keep all that water for the dry season!

Babu is a farmer in Wormville. His family lives in a large compound on the road leading out of town. The roofs are made of tin, and the household water is stored in large clay jars by different doorways. They are rarely full in the dry season. Babu's fields are large and far away. When the family goes to work in them, the take a small amount of water from the pond nearby, and get more from other ponds nearer to the fields. The work is very hot, and they drink a lot of water.

Practically everyone in Babu's household has had guinea worm. Babu himself has had it three times, and now has difficulty walking. Everyone says that there is a problem with ceremonies for a village ancestor and that is why it is cursed with guinea worm. Babu has performed many rites to appease the spirits, in hope of preventing more guinea worm. One of his sons recently told him that the teachers and students in his school were organizing a campaign to prevent guinea worm in the village. Babu wondered if the teachers knew more powerful fetishes.

Discussion Questions

1. What are the reasons that the people of Wormville have so much guinea worm?

2. What could the village as a whole do to prevent it?

3. What could Babu and his family do to prevent it?

4. What do you think the school guinea worm prevention campaign should consist of?

5. How would you explain this campaign to Babu? To the village leaders?

HEALTH EDUCATION METHODS

Health education consists of learning activities which help people choose to behave in a manner that enhances their health. These learning activities provide information, promote understanding, mobilize community resources, teach living skills, and encourage social (family and group) support for healthy life styles. Several health education activities that can be used at the village level with minimum cost are described below. Normally a good health education program uses a mixture of these activities.

1. Group Discussion

   Group discussions are useful for learning about community beliefs and needs, creating understanding about new ideas, and encouraging decisions for action. Discussions can be held with community leaders, people attending clinics, members of local organizations, and pupils at school.

   During a discussion a health worker must be ready to learn from community members as well as to provide them with new knowledge. By listening to community members talk about their beliefs, the health worker can look for similarities between local and scientific ideas of guinea worm cause, prevention, and treatment. Discussion can begin with what is already known and then can move on to the scientific point of view.

   Discussions are also an important part of community involvement. During a discussion community members can air their views about what actions against guinea worm are acceptable and affordable. Planning for guinea worm control can grow out of such discussion sessions.

2. Demonstrations

   Demonstrations are valuable for teaching people new skills. Filtering water to prevent guinea worm is one such skill. A demonstration should be realistic, using local water pots and available material for filtering.

   The health worker should explain carefully each step as he or she performs the demonstration. Community members should be given an opportunity to repeat the demonstration and to receive feedback and correction from those watching.

   To make the demonstration more vivid, the water used in the demonstration should be the same pond water that people in the village actually use. After the water has been filtered, the filter can be turned over into a small glass jar and any cyclops caught in the filter can be washed into the jar with clear water. Everyone can then actually see the cyclops. A magnifying glass or hand lens is helpful but is not absolutely necessary.

3. Stories

A traditional way of imparting knowledge and values in many villages is telling stories. Health workers can also find story-telling useful in health education. By listening to a story, community members should be able to gain insight on which behaviors are healthy and which are harmful.

A story should be realistic and believable. At the same time it should not be about real people in the village, as this may embarrass them. Stories should always be followed by discussion. The story-teller should ask the listeners questions to determine whether or not they understood the main points of the story. Sample stories are included here in Part 3: Teaching Materials. One story shows how two boys got guinea worm and what was done for prevention. Sample questions are also included.

4. Posters

Posters can provide simple pieces of information and make health talks more interesting. Each poster should contain no more than one picture and one idea.

Posters on guinea worm may be available from the Ministry of Health, but homemade posters are just as effective. Even school children can be involved in a poster-making contest. Not only will the posters be useful in the community, but also the children will learn about guinea worm in the process.

Homemade posters can use the backs of old calendars or old posters or signs. Pictures can be cut from magazines or traced or hand drawn.

When using a poster during a talk, the student in his community should always involve his or her community fully. He will first ask people what they see in the poster. If a poster shows a person collecting water from the pond, the following discussion questions may be asked to encourage people to learn the message contained in the poster:

What is the women doing?
Why is she collecting water from the pond?
Is there any danger in this practice?
How could the woman make sure that the drinking water is clean?

5. Proverbs

In all cultures proverbs remind people of desirable behaviors and values. Talks and discussions should use proverbs to emphasize important points. In western Nigeria there is a proverb that says, "Before guinea worm becomes an ulcer, it is oluganbe leaf we call for." Literally, this proverb means that when a problem strikes that can get out of hand, we have to consult with elders to help us stop it, whether it is guinea worm or the oluganbe plant. The oluganbe leaf is part of a plant that often becomes unmanageable and takes over crop areas. This proverb is similar to the English saying, "A stitch in time saves nine." Both emphasize the need to take quick action before a problem becomes worse.

6. Songs

Songs provide simple information and are a good way to help people remember new ideas. The teacher can pick a tune that people already know and add new words about preventing guinea worm. Such a song can be sung several times at the beginning and end of health talks and meetings to help people think about action they can take to avoid the disease.

7. Drama

Drama is an exciting and entertaining way to teach new ideas and values. A story like the one on guinea worm described above can form the basis of a drama. School children can be involved in the drama, or a local drama group can be called in to help.

In order to ensure that the points of the drama are understood by the audience, the health worker must lead a discussion with the audience after the drama is over. The discussion questions can be similar to those used after a story, with both the actors and the audience involved in the discussion. The actors can ask the audience for advice on what they could do the next time to prevent guinea worm.

8. Health Talks

Health talks are really group health education presentations. These presentations should include posters, proverbs, songs, etc. The health worker should plan to visit major community organizations, schools, markets, and clinics to talk about guinea worm and rally support for community actions.

Session 7

TRAINING OTHER TEACHERS TO USE A GUINEA WORM CURRICULUM

1 hour, 50 minutes

Objectives

1. Identify strategies for training or involving other teachers in curricular or extracurricular activities for guinea worm prevention.

2. Make a plan for doing so once they are back in their schools.

Overview

If school guinea worm activities are to be truly effective, the rest of the faculty must be interested and involved. If guinea worm control is viewed as the "volunteer's activity," there is likely to be less participation within the school and community than if it were perceived as a communal concern.

During this session, trainees reflect on how they might involve teachers both in teaching the curriculum to their students and in the community activities the students decide to carry out. In small groups, they identify and discuss ways to deal with resistance they might meet in trying to introduce a guinea worm program in their schools. Finally, the trainees make individual plans of action for when they return to their worksites.

Procedures

1. Introduction — *10 minutes*

Ask trainees what might result if they—the volunteers—were the only ones involved in the school guinea worm program. Expect answers like these:

- The program will seem imposed.
- Teachers won't identify with it.
- It won't be sustainable.
- It will be hard to get community cooperation.

Point out that the PCV role is not only one of teaching students but also one of activism within the school community. Explain that the more teachers and students become involved in guinea worm control activities, the greater the likelihood of making an impact on the disease.

Present the session rationale and objectives.

2. Involving Other Teachers *60 minutes*

Ask trainees to think of strategies for gaining the involvement of other teachers in the guinea worm curriculum, and note their responses. These might include—

- inviting the teachers to observe classes on guinea worm
- sharing lesson plans and other materials with them
- asking the head to organize a meeting to introduce the curriculum
- holding a workshop for teachers on how to use students for guinea worm disease control

Next, ask trainees how they might involve teachers in community activities the students have decided to carry out, such as a guinea worm survey or a community theater presentation about preventing guinea worm. Ideas might include—

- inviting them to planning sessions
- asking them if they would be supervisors for certain activities or teams
- asking for help in their areas of expertise

Note responses on a flipchart.

Finally, ask the group what problems or resistance they will likely encounter both to introducing a guinea worm curriculum in the school and to involving the other teachers in curricular and extracurricular activities. List these on a flipchart.

Divide the group into four or five small groups. Assign one or two potential problems to each group, and ask them to identify and discuss suggestions for dealing with these problems. Each group notes its final ideas on flipchart. Give them 30 minutes for the task.

When the time is up, have each small group present and ask for reactions from the others. Modify or add to their flipcharts, and have the final ideas typed and distributed.

3. Individual Plans *30 minutes*

Ask trainees to take a few minutes to reflect upon the task of introducing a guinea worm curriculum in their schools and also upon the strategies for involving other teachers. Instruct them to note down responses to these questions:

> "What are the first things I can do to introduce a guinea worm curriculum in my school?"
>
> "What will I do to involve other teachers in school guinea worm activities?"

Either ask a few volunteers to read their plans to the whole group, or have them pair up and share plans with each other.

4. Wrap-up *10 minutes*

Ask trainees what challenges they may face in implementing the plans they have developed. Return to the session objectives and discuss whether they have been reached.

Materials

Handout 7.1: Using Teachers as Change Agents in the Control of Tropical Diseases: An Extracurricular Approach

Case Studies

USING TEACHERS AS CHANGE AGENTS IN THE CONTROL OF TROPICAL DISEASES—AN EXTRA-CURRICULAR APPROACH

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ABSTRACT

For years the teaching of health education has always been a problem in the Nigerian schools either due to the absence of the subject on the curriculum or inadequate professional preparation of teachers to handle it. This study introduces an extra-curricular approach using four endemic diseases as an example in the teaching of health education in five secondary schools. The findings revealed that: 1) teachers can be successfully used as informal agents in the school environment if exposed to appropriate health education techniques, and 2) endemic diseases can be controlled through the provision of learning experiences in the school environment where feasible.

THE SCHOOL CURRICULUM AND THE CONTROL OF TROPICAL DISEASES IN NIGERIA

The colonial government paid little attention to the educational needs of the people. Education was left entirely to the Missions who, according to Lord Lugard assumed that the African culture and religion had "no system of ethics, and no principles of conduct" [1]. Before the turn of the nineteenth century

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many schools were founded in Nigeria by the missions with no clearly defined educational policy by the colonial rulers to guide them [1].

Formal education made significant impact in Nigeria in the late nineteenth century with the activities of the missionaries and the colonial government. The primary objective of the early missionaries was to convert the "heathen" to Christianity through education. Hence their efforts were concentrated on English grammar, Latin, Catechism, and writing—with the Bible as a major text book [2].

It was only in 1899 when the Northern and Southern Protectorates were established under the British Government that the government got involved in the education of the people [1]. Government schools and education departments were created and educational requirements and regulations were promulgated in the early twentieth century.

By 1925 it was soon evident through the Phelps-Stokes Reports on Education in Africa that the content of the curriculum in schools was not relevant to local needs [1]. Instead it was centered around the needs of the colonial government. The secondary school curriculum was based on the syllabus for the Cambridge Junior and Senior Local Examinations Syndicate and the Matriculation Examination of the University of London [1]. After the Phelps-Stokes Report, the colonial government made efforts through the years to adapt the school curriculum to local situation but these efforts were generally unsatisfactory.

In 1969, nine years after Independence, a National Curriculum Conference was convened by the National Education Research Council (NERC) to deliberate on curriculum planning in Nigerian Schools [3]. The aftermath of this conference and a subsequent one in 1977 culminated in the formation of a national policy on education which took into consideration the "psychological and emotional needs of the Nigerian Child." In all these deliberations and activities, health education was never featured as a subject. Where it was mentioned by contributors, its content was usually related to biology [4]. The education experts continue to joggle health education around biology, physical education, and hygiene curricula.

Up until today, health education in Nigerian schools is yet to be properly recognized and appreciated by the education experts and school administrators. Because of this lack of enthusiasm, teachers continue to receive little or no professional preparation in the teaching of health education. Health education is combined with physical education in teacher training colleges—a situation which deters the effective teaching of health education, according to popular reasoning among health educators [5].

In Nigeria, communicable diseases are responsible for substantial rates of mortality and morbidity, loss of manpower, and impaired productivity. Although there are several measures to control some of these diseases at the one through four age group level in maternal and child health clinics—the latest of which is the Expanded Immunisation Programmes (EPI)—very little attention

Handout 7.1

is paid to the school-age child. The only education the school age child (five through sixteen years) receives at his/her level on communicable diseases is in biology, health science, or hygiene courses. Health education is not offered as a subject.

At the secondary school level, the biology curriculum focuses more on the physiology and anatomy of living things than on diseases or health-related needs. Where diseases are mentioned, they are usually treated in relation to entomology and zoology under such headings as arthropods, multicellular animals, and disease vectors without any bearing to the local health problems and diseases to which the students are susceptible [6].

Many studies have highlighted the need to include health education in the school curriculum but the call has always not been heeded by the school authorities [7,8]. This experience calls for a need to develop alternative strategies that will by-pass the school curriculum in order to incorporate health education into the activities of the school. The present study describes an extra-curricular approach to the introduction of health education in secondary schools in Nigeria. The aim of this study is to assess how effective secondary school teachers could be as informal change agents in the school environment if exposed to health education strategies in which they acquire specific skills, techniques, and learning experiences which are relevant to the health needs of the school child.

METHODOLOGY

The study was carried out in five randomly selected rural secondary schools created in 1979. Four endemic tropical diseases prevalent in the area of study and targetted by the World Health Organization special program on the control of tropical diseases (TDR) were the main focus. These include malaria, schistosomiasis, onchocerciasis, and dracontiasis (guinea worm) with prevalence rates of 56 percent, 5 percent, 20 percent and 34 percent respectively.

For the purpose of teaching, second year students were chosen as the target population. Baseline data on the knowledge of the four diseases were collected from teachers and their students. Methods of data collection included a self-administered questionnaire, informal interviews, and personal observation. The questionnaire for teachers was designed to provide information on their knowledge of school health education, broadly classified into healthful school living, health instruction, and school health services. The questionnaire was pretested in a school similar to those being used for validity and reliability.

Based on the results obtained from teachers and students, a curriculum which laid emphasis on experiential learning was designed for the students. After seeking the consent of the Ministry of Education, a four-day workshop on the use of the curriculum was held for teachers. Method of instruction was facilitated by the use of demonstration, lectures, story telling, role playing, and

the use of visual-aid materials. Progress evaluation was initiated two weeks after the workshop, while the final evaluation followed about seven months later. This period of time allowed the teachers involved sufficient time to teach and implement the various activities required of them.

Results of Baseline Data for Teachers and Their Students

Responses were obtained from fifty teachers. The teachers displayed very little knowledge of causes, prevention, and treatment of schistosomiasis (4%) and onchocerciasis (2%), a fair knowledge of guinea worm (63%) and a good knowledge of malaria (81%). Analysis of the teachers' background revealed that most of them have had little or no formal preparation in the methodology of health education as a subject.

Data were collected from 632 students. They portrayed little knowledge on the causes, prevention, and treatment of onchocerciasis, (0%), schistosomiasis (5%), and guinea worm (34%) and only 25 percent had some knowledge of malaria.

INTERVENTION

The workshop for teachers was held at the rural health center and lasted four days. The purpose of the workshop was to introduce the teachers to the methodology of teaching school health education, using the four endemic diseases as examples. The participants were the seven biology and health science teachers in the five schools. The limitation on attendance was imposed by the Ministry of Education to prevent significant disruption of classes. An attempt to hold the workshop after school hours in order to include more teachers a few months earlier had failed. Teachers apparently were not willing to spare their free hours for what they considered an inservice training. Two of the seven teachers were university graduates, while the others were products of colleges of education and polytechnics. There was only one female teacher (an expectant mother) in the group.

Before the formal presentation of the diseases to teachers, there was a session on school health, which included materials and method in the teaching of school health education. The following was the format of presentation:

Stage I

(a) Presentation of educational and behavioral objectives relevant to each disease. The facilitator describes the mode of transmission of each disease, the symptoms, control and treatment, and then relates it to local conditions. Teaching materials and methods used included role playing, story telling, demonstrations, and visual aids (drawings, slides, and posters).

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(b) Teachers make sketches of selected visual aids which they will reproduce at home and use for their health education projects when they return to their schools.

Stage II

(a) Teachers discuss the local beliefs, attitudes, and practices which contribute to the spread of the four diseases and other diseases of interest.
(b) Teachers discuss control measures for the disease, especially those that are feasible within the school environment.

Stage III

(a) Teachers suggest and discuss appropriate strategies to change or influence the beliefs, attitudes, and practices of the school children to control the diseases.
(b) With the guidance of the facilitator, teachers list and discuss the specific disease control activities they will carry out when they get back to their schools.
(c) Review and evaluation.

Teachers' Performance at the Workshop

The teachers contributed and participated fully in all discussions on the four diseases. They were particularly active during discussions on traditional medicine, local beliefs about the four diseases, and predisposing habits of the community. Other health issues of interest to the teachers were sex education in schools, hypertension, and stress in the society. The teachers were very concerned about the poor living conditions in the community.

Of the four diseases, onchocerciasis appeared to capture their interest most. Only one of the teachers (a Ghanaian) was familiar with the disease. They were excited to have a skin snip test at the laboratory in the health center during their field visit. The teachers were proud to display the teaching aid materials which they prepared during the workshop.

Evaluation of teachers indicated significant increase in the knowledge of the four diseases after the workshop. The teachers involved indicated a desire for: 1) more of their colleagues to be involved, 2) films to be produced on the four diseases to enrich workshops in future, and 3) the facilitator and other members of the health team to visit schools to give health talks to the pupils.

At the end of the workshop, incentives comprising information pamphlets and booklets on the diseases studied and copies of the book *Where there is no Doctor* were given to the seven teachers and their principals.

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Before departing, the teachers agreed that their immediate assignment for the next few weeks would be to:

1. Provide leadership in the formation of a school health committee with the cooperation of their principals;
2. Organize methods and materials for teaching the four diseases;
3. Work on the improvement of the environmental conditions within the school with assistance from the Parent-Teacher Association (PTA) and technical advisers; and
4. Ensure both the adequate supply of potable water and the provision of toilet facilities in their respective schools.

EVALUATION OF TEACHERS' POST-WORKSHOP ACTIVITIES

School 1 — Okedere High School

The teacher who participated in the workshop from this school is a biology graduate with eight years teaching experience. Of all the teachers, he made the most significant contributions in class during the workshop. After the workshop he was able to incorporate lessons on the four diseases into his biology lectures for several classes apart from the target group. The diseases were used as topics of debate during weekly extra-curriculum activities. Examples of topics for such debates included: "Should we demand that the government grant us regular water supply from the taps or should we dig wells or bore holes?" This kind of topic according to him, was with relevance to causes of guinea worm infection. On malaria treatment, the topic was: "Should we practice self-medication or should we rely on the dispensary for drugs?" The school has a pit latrine. They have a standing pipe which is broken. Water does not flow regularly in Idere town, so the urgency for repairs is lacking. The PTA is aware of the project in the school. They contributed to the full equipment of the first aid box. As much as they appreciated the need for a well, there were more pressing issues (i.e., the building of more classrooms and temporary walls for students who are presently studying under trees and temporary sheds). A school health committee has been formed. The students were organized to take turns in taking care of the toilets and in the maintenance of a clean compound. The school maintains a clean environment with beautiful flower gardens. Until a well is sunk, the students are instructed to bring drinking water from home in small containers and to ensure that the water is cyclop-free through boiling and filtering.

School 2 — Ayelogun Grammar School

The teacher from this school is a graduate of a technical college with a public health engineering background who has been teaching for only eighteen months.

The principal of the school has been supportive of the project from its inception. At the end of the workshop, the principal asked the teacher to share his experiences with members of staff during one of their staff meetings. It was the principal's hope that the teachers would incorporate the four diseases in their teaching.

At the time of the final evaluation, the PTA had pit latrines half-completed and were in the process of digging a well. Funds are major constraint in these projects. The PTA is responsible for completing and equipping blocks of classrooms and equipping the school science laboratory. The teacher in charge had completed imparting knowledge of the diseases to the students concerned. According to the principal, the students no longer go to nearby streams for washing and drinking after school meals. It was guinea worm season and those affected were being sent to the health center daily. Only 18 cases of guinea worm were reported at the time of data collection. This number, according to the principal, is small compared to the previous year when guinea worm accounted for 50 percent of absenteeism in the school. The school has no immediate plans to erect a pipe-borne water tap because of funding difficulties. The compound is neat and tidy with beautiful gardens.

School 3 — Lajorun High School

The teacher from this school is a graduate of physical and health education with twenty-two years of teaching experience behind him. He was the acting vice-principal of the school.

This teacher began his activities in the school after the workshop by giving short health talks during morning assemblies. On World Health Day, he used the opportunity to speak on onchocerciasis to the whole school. His achievements included the teaching of the four diseases to the target group.

The school had no well and so students relied on nearby streams for washing. After the workshop, the teacher requested technical assistance in the siting of a well. Since then, a geologist and an environmental health expert visited them but the school still is without funds to sink a well. Meanwhile the PTA donated a tank for storing of water supplied weekly by the water corporation. The teacher made arrangements for the provision of plastic pot containers in each class with funds contributed by students. Each class gets its daily supply of water from the tank eliminating the need for the students to visit the nearby streams. At the moment, arrangements for the regular supply of water from the water corporation in town is being hampered by lack of funds to pay for the services. The school is in dire need of funds to run the school. They have intensified their agricultural project in order to generate funds from the sales of farm produce. The school has employed the services of an agricultural extension superintendent to assist with the farm. All the schools in the rural areas have large corn fields. There are no good toilet facilities but the school authority is

now working with the PTA development committee to construct pit latrines. The teacher has completed the teaching of the diseases to the target group and a school health committee has been formed.

School 4 — Isale Oba Grammar School

Two science teachers, each with about five years teaching experience, participated in the workshop from this school. These teachers started implementing programs before the other five teachers. During our visit, the teachers demanded that we should have a brief session with their students. The responses from the students on the knowledge of the four diseases were encouraging. During our brief interaction with the students, six children informed us that they had experienced blood in their urine (schistosomiasis), and one boy mentioned that he had blurred vision. They were all referred to the health center. Other achievements in the school included the formation of an active health committee, the construction of urinals, and half-completed pit latrines (with student labor). The completion of the latrines and the construction of a well are on the PTA agenda as priorities as soon as the tasks of equipping science laboratories and finishing uncompleted classroom blocks were accomplished. There is no well in the school compound, so students were asked to bring drinking water from home in small jerry cans on a rotational basis because the tank donated by the PTA a few months earlier was rarely filled with water. According to the school authorities, only one case of guinea worm was reported so far. The compound is kept clean by students and the flowers are well tended. Sometimes during visits students can be seen busily working on the school farms which the school authorities looked to as a source for funding school projects.

School 5 — Lasogba High School

The teacher from this school was a young expectant mother and the only woman in the project. She is a graduate of the National College of Education and has been teaching for ten years. She was the last to begin executing the workshop assignments due to ill-health. The principal, a keen supporter of the project was disappointed that their school's progress was slow compared with other schools. At the time of our visit, funds had been provided for the purchase of materials for the first aid box. The principal requested other staff members to work with her in the formation of a health committee. Water has always been a major problem since the school is not close to any flowing streams and is some distance from the community. The school has a shallow well which dries up during the dry season, and it has been found that the topography of the area is an obstacle in the siting of deep wells. The school requested technical assistance in siting another well. One unique example of the workshop's impact was the display of drawings of the life-cycle of the four diseases prepared by the science teachers during the workshop on the walls of the school laboratory. Another

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innovation was the provision of plastic buckets for storage of water for school and students' use. According to the principal there are plans to construct pit latrines in addition to the well and the PTA was eager to render assistance.

The school environment is kept tidy by students. The achievements of this school were made possible through pressure exerted from the principal on the science teacher.

DISCUSSION

The job of each teacher after the workshop was to organize the teaching of the diseases to certain groups of students, to provide leadership in the formation of a school health committee, and the working on the improvement of the environmental conditions within the school environment, with the cooperation of the PTA where necessary. From the findings all teachers attempted to accomplish all of these at their own pace. They all showed a high level of interest during the post-workshop intervention. One example was their ability to accommodate the project at a time when Military Government announced a change of currency as one of the measures to arrest the country's battered economy and foreign exchange. Every citizen had to queue endlessly in the banks for long periods in order to have their old currencies exchanged for new ones within two weeks deadline. There was difficulty in generating funds for the implementation of activities due to the general economic recession which transferred additional responsibilities from the government to parents and the community. Government directives were that the PTA should handle all the unfinished projects by the last civilian regime. This implied that funds contributed by the PTA to improve the schools' environmental conditions were diverted to the equipment of science laboratories and for completing blocks of classrooms in readiness for the new entrants the following session.

Despite all the difficulties encountered by the teachers either within the school system or without, the findings show that health education can be successfully introduced into schools through an-extra-curricular approach thus by-passing the educational policy. This alternate approach has made significant contributions to areas of school health which were hitherto neglected in the schools concerned:

1) It has increased the level of awareness on the control of tropical diseases through adequate health education, among school personnel and students.
2) It has created the need to improve conditions in the school through the organized efforts of school personnel, PTA, and students without relying solely on the government—especially when funds are inadequate.
3) Since health education is not catered for on the time table, this extra-curricular approach has afforded students the opportunity to gain knowledge of prevalent diseases in their environment through various learning experiences.

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CONCLUSION

Reports from the involved teachers indicate the children seemed to enjoy the brief sessions of health education. According to them "the students wanted more but there was no time." The project demonstrated that in the absence of health education on the curriculum or time table, the present approach can be adopted to effect positive change in the school environment. Finally school authorities recognize the need to improve the health status of the school child through health education, but the educational policies were sometimes, inadvertently militating against the implementation of health education activities.

Presently the country has just introduced a new educational system with health education termed health science in the secondary school curriculum [9]. The execution of the subject on this new curriculum will remain a problem for some time since professional training of teachers and production of school health text books will take a while.

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Session 8

EVALUATION AND CLOSING *30 minutes*

Overview

This session is designed to evaluate the workshop and do whatever closing is appropriate. The evaluation should measure the participants' feelings and observations about the workshop. The information gained from the evaluation can be used both to improve future workshops and to help the trainer conduct the next workshop better.

Procedures

1. **Introduction** ***5 minutes***

   Introduce the session by explaining that the evaluation is important to the trainers as a way of learning how the training has been received and for future planning purposes.

2. **Evaluation** ***20 minutes***

   Ask trainees to write down one or two "pluses" and one or two "wishes." Go around the room and note these on a flipchart divided into a "plus" column and a "wishes" column.

3. **Closure** ***5 minutes***

   Thank the participants for their participation and hard work during the workshop. Make any concluding remarks that you feel are appropriate.