

What is dracunculiasis (guinea-worm disease)?

Dracunculiasis is caused by *Dracunculus medinensis*, the largest tissue parasite in humans.



A volunteer using a stick to pull out two guinea worms from a Ghanaian girl

The transmission cycle begins in water sources. When an infected person with an emerging worm immerses that part of the body into water, the fertilized female, which can measure up to 1 metre long, releases a large number of 'baby worms' into the water. These larvae are then swallowed by tiny crustacea (called 'cyclops' because of their one-eyed appearance). When people drink water containing infected cyclops, the larvae are released and penetrate the stomach wall, migrating throughout the body as they mature and mate.

The fertilized females most often migrate to the lower limbs where they form a blister and emerge, piercing the skin, one year after the initial ingestion.

What are the facts about guinea-worm disease?

■ Guinea-worm disease may soon become the first parasitic disease to be eradicated because diagnosis is simple, the strategy for stopping its transmission is cheap and easy to apply, and human beings are the only final hosts.

■ Guinea-worm disease affects the poor in remote and inaccessible rural areas with unsafe water sources, low levels of education and/or knowledge about the disease.



An Ethiopian boy collecting drinking-water

■ No drugs or vaccines are available to treat guinea-worm disease or to prevent it.

However, it is possible to interrupt its transmission through the following simple measures:

- keeping people with emerging worm(s) from stepping into water sources;
- filtering unsafe drinking-water with cloth or nylon filters.

What is the burden of disease caused by guinea worm?

At the beginning of the 20th century guinea-worm disease was widespread. By the end of the year 2000, it was occurring in only 14 African countries.

WHO reported for the year 2000:

- 75 223 cases, all of them in Africa.
- 73% of these cases were in Sudan.
- 20% of the total cases were in Ghana and Nigeria, the highest number of cases after Sudan.

What is the impact of guinea-worm disease?

During the last stage of the disease (when the worm is preparing to emerge from the person's body), the worm debilitates the victim and causes him/her severe pain. Fever, nausea and vomiting may accompany the disease at this stage. Once the worm emerges from the skin, the resulting wound may disable the victim for several weeks or even months. Some sufferers can be permanently crippled. Men who are affected cannot grow or harvest their crops or do other work; women cannot take care of their home, and children cannot go to school.

What goal does WHO want to achieve?

In 1997, the World Health Assembly adopted a resolution reiterating its request that guinea-worm disease be eradicated as soon as possible given appropriate political, social and economic support.

What are the strategies for reaching this goal?

The eradication strategy adopted by WHO is based on three main components:

1. Interruption of transmission

- Raising awareness at village level on:
 - the transmission cycle of the disease and how to break it;
 - the optimal use of filters.



Filtering drinking-water using monofilament nylon filter

- Provision of safe drinking-water:
 - provision of filters;
 - digging of wells;
 - development of boreholes;
 - chemical treatment of contaminated sources of drinking-water.
- Containment of cases:
 - early detection of cases (within 24 hours after emergence of the worm);
 - cleaning, treatment and bandaging of wounds to facilitate the expulsion of the worm and avoid secondary infection;
 - providing health education to infected people, especially to keep them from stepping into water sources.

2. Surveillance

- Training and support of guinea worm village volunteers.
- Regular supervision and verification of cases at village level.
- Collection, analysis and dissemination of guinea-worm disease data.



A volunteer administering questionnaires to heads of households



Education and promotion on use of cloth filters to filter drinking-water

3. Verification and certification

- Verification of interruption of transmission.
- Certification of absence of transmission.

What are the key steps to eradicate guinea-worm disease?

- Increasing the awareness and active participation of decision-makers in eradication efforts at all levels of society.
- Intensifying social mobilization efforts to support Guinea Worm Eradication Programmes.
- Informing communities about the disease and prevention measures.
- Strengthening health surveillance in endemic and at-risk villages.

What action is being taken to eradicate guinea-worm disease?

WHO recommends that guinea-worm disease surveillance be carried out in conjunction with the surveillance of other diseases such as polio, leprosy and neonatal tetanus.

WHO advocates eradication of guinea-worm disease through guinea worm village volunteers, who provide the appropriate prevention measures and care for infected individuals.

WHO supports National Guinea Worm Eradication Programmes in implementing eradication measures and managing data collection. In this way, case containment can be accelerated and the interruption of transmission achieved.

WHO and UNICEF have developed software called Health-Map to monitor the progress of National Guinea Worm Eradication Programmes. Health-Map provides geographical information and mapping techniques for public health administrators to enhance their programmes and surveillance capability.



Sudanese villagers collecting drinking-water



Filtering of contaminated drinking-water is vital to combat guinea-worm disease

Further information from:

Dracunculiasis Eradication Programme
Strategy, Development and Monitoring for
Eradication and Elimination (CEE)
Tel: +(41) 22 791 4743; Fax: +(41) 22 791 4777
Department of Control, Prevention, and Eradication (CPE)
Communicable Diseases Cluster (CDS)
WHO, 1211 Geneva 27, Switzerland
<http://www.who.int/ctd/dracun/index.html>
E-mail: dracerad@who.int

Spokesperson's Office (SPO)
External Cooperation and Partnerships (ECP)
Tel: +(41) 22 791 2599; Fax: +(41) 22 791 4858
E-mail: inf@who.int

© World Health Organization, 2001

This document is not a formal publication of the World Health Organization (WHO), and all rights are reserved by the Organization. The document may, however, be freely reviewed, abstracted, reproduced or translated, in part or in whole, but not for sale or for use in conjunction with commercial purposes.

PROGRESS MADE SO FAR

During the past 10 years:

- Pakistan and India were certified free of guinea-worm disease in 1997 and 2000 respectively.
- Transmission was interrupted in Kenya in 1994 and in Cameroon and Senegal in 1997.

In the year 2000:

- 75 223 cases were reported worldwide, a dramatic decrease of 88% from 614 657 cases in 1990.
- Transmission has been interrupted in Yemen and Chad.
- In countries outside Sudan, there has been a 33% decrease in reported cases compared to 1999.
- In Ethiopia, a 78% decrease in cases was reported compared to 1999.
- In Nigeria, the country with the second highest number of cases after Sudan, a significant 41% reduction occurred in 2000 compared to 1999.

FLASH TIPS

Did you know that...

...immunity cannot be developed against guinea-worm disease? Therefore, a person who has contracted the disease can do so again as many times as they drink water containing infected cyclops.

...immersing an infected foot in a pond only once is enough to make a whole village ill with guinea-worm disease?

...several worms can emerge from one person simultaneously or over a short period of time?

...to avoid the disease, contaminated water must be filtered with cloth or nylon filters?

...to facilitate the process of eradication, WHO established the International Commission for the Certification of Dracunculiasis Eradication in 1995? The Commission evaluates guinea-worm disease status and recommends certification of countries that are free of the disease.

...the Commission has already met four times and recommended that the Director-General of WHO certify 152 countries as free of dracunculiasis?



WHO/CDS/CPE/SMT/2001.12

Guinea worm

