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ERADICATING GUINEA-WORM DISEASE

World Health Organization
Division of Control of Tropical Diseases

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The Last Painful Steps

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Ancient history

1550BC	Egypt. The disease and treatment of dracunculiasis were mentioned in the "Turin Papyrus".
1300BC	India. Closing verses in the Sanskrit book Rig-Veda, attributed to Vasistha, allude to the guinea worm.
1000AD	Iran. Abu Ali ibn Sina (Avicena) described the disease, its treatment, evolution and complications arising from the worm not being fully extracted. He thought the phenomenon was caused by an ulcerated nerve, so painful was the disease which was rampant at this time in Persia.
1758AD	Sweden. Carolus Linnaeus gives the worm its scientific name.
1871AD	Russia. Alexei Fedchenko identifies the life-cycle of the *Dracunculus medinensis* and the water flea, cyclops, as its intermediate host.

ERADICATION IN SIGHT

The eradication of dracunculiasis or Guinea-worm disease has come within sight. The Dracunculiasis Eradication Programme started in 1982. In 1991, the World Health Assembly declared its goal to eradicate Guinea-worm. Civil war in the worst affected countries, combined with the inaccessibility of the endemic villages, has however, delayed its complete achievement.

In 1994, the Dracunculiasis Eradication Unit (DRA) in the WHO Division of Control of Tropical Diseases (CTD) in Geneva was created to provide a framework for operational activities: to interrupt dracunculiasis transmission in endemic countries and to achieve world-wide certification of eradication of the disease. With success within view, endemic countries are showing a new determination to be rid of such a painful and disabling disease and there is heightened interest in eradication among donors and technical organizations.

The disease can be stopped by keeping people with the disease out of water sources, filtering drinking water to avoid ingesting the vector and, where possible, treating water chemically, with *temephos*, to kill the vector. To be really effective, these measures must be implemented concurrently to stop transmission and avoid the emergence of new cases. Accurate and regular reporting is necessary, not only for case-by-case treatment, but as proof that a country is in a position to be considered free of Guinea-worm.

By February 1998, 109 countries and territories had been certified free of Guinea-worm

WHO has collaborated very widely - with other international organizations such as UNICEF, UNDP, and The World Bank. It works closely with the national governments and donor agencies of supporting countries. It co-operates with many non-governmental organizations, including The Carter Foundation's Global 2000 programme and draws on the resources of its Collaborating Centre at the Centers for Disease Control and Prevention (CDC) in Atlanta, for research, training and eradication efforts.

Steps to eradication

- Improve water supply systems
- Distribute filter materials
- Intensify case containment
- Establish community-based surveillance systems
- Identify all infected villages
- Monitor the epidemiological situation
- Intensify health education for social mobilization
- Verify the absence of disease
- Certify eradication

Guinea-worm: The Parasite, The Disease

Dracunculiasis is caused by the parasitic worm *Dracunculus medinensis*, or Guinea-worm. The larvae of the parasite enter the body when a person drinks water contaminated by a water crustacean which contains *dracunculus* larvae. The crustaceans, which are roughly the size of a dust particle, are known as cyclops because of their one-eyed appearance. Once ingested, the cyclops are quickly killed by gastric juices. However, the larvae released from the digested cyclops, penetrate the stomach wall and into the connective tissues of the human abdomen and thorax where they remain

The worms emerging through the skin cause a painful swelling, a blister and then an ulcer. To relieve the terrible burning sensation caused by the emerging worm, the patient will step into the local water-hole. Upon contact with the cold water the emerging female worm will expel hundreds of thousands of embryos into the pool. These embryos are then ingested by cyclops, the intermediate host and the cycle begins again. Neither the emergence of the worm nor healing protects against getting the disease again. People can get infected repeatedly.

The worm will, and can, repeatedly have a debilitating effect. As it travels down the victim's body, it causes severe pain, especially around the joints. The intense pain is often accompanied by fever, nausea and vomiting. When it perforates the skin, it will handicap the patient. Partial or total disability can last several months: some victims may be permanently crippled. Typically, a worm emerging