

# Target 1995: Guinea worm eradication

by Dr Donald R. Hopkins

**The complete eradication of Guinea worm is finally in sight. Currently, it is estimated that there are 10 million sufferers each year, mainly living in India, Pakistan and 19 African countries. Donald Hopkins discusses the different ways to control, and ultimately wipe out this debilitating and painful disease.**

SHORTLY AFTER opening the second African Regional Conference on Dracunculiasis (Guinea worm disease) in Accra, Ghana in March 1988, former American President Jimmy Carter visited the villages of Denchira and Elevanyo near Accra. Both villages were highly affected at the height of the local Guinea worm season, and within an hour, Mr Carter, who is the chairman of Global 2000, Inc., a non-profit organization at the Carter Presidential Center in Atlanta, Georgia had seen dozens of people suffering from the disease. Perhaps the most graphic was a young woman who had a Guinea worm emerging from her breast. These two villages with a combined population of less than 1,500, experienced over 400 cases of the disease in 1988.

Control measures, including educating the villagers to use cloths to filter their drinking-water, and use of temephos (Abate) donated by the American Cyanamid Company for these two villages (to kill the intermediate host of the parasite in the water), began soon after President Carter's visit. Three borehole wells were completed in the villages by January 1989, courtesy of Global 2000/ BCCI, the Bank of Credit and Commerce (Ghana) Ltd., and UNICEF. By the end of 1988 Denchira and Elevanyo should be free, or almost free, of the disease.

The day before seeing his first actual cases of the disease near Accra, the former US President had signed a

Memorandum of Understanding in Lagos, Nigeria with the Federal Minister of Health of Nigeria, and a representative of the Bank of Credit and Commerce International (BCCI) to begin assisting a national Guinea Worm Eradication Programme in Nigeria. The agreement with Nigeria, which apparently has more Guinea worm than any other endemic country, was similar to those for national programmes that Global 2000 and BCCI were already assisting in Pakistan since 1986, and in Ghana since December 1987.

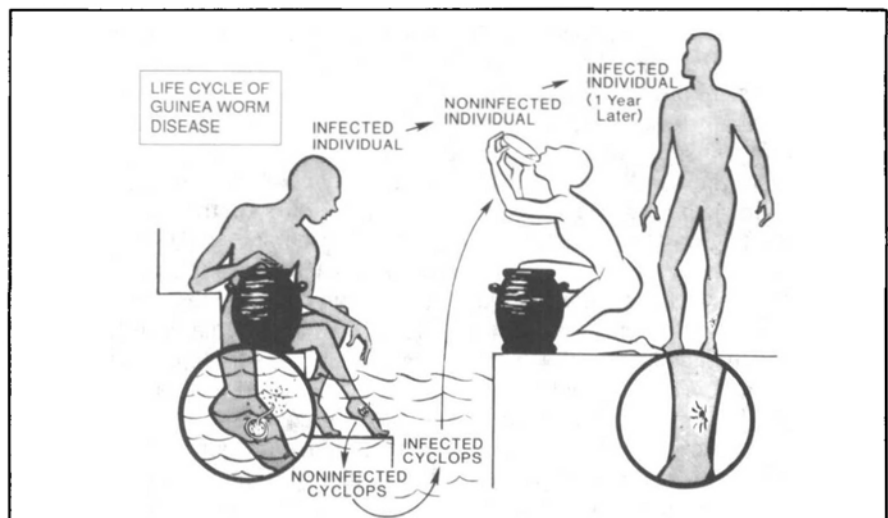
## Guinea worm prevalence

About 10 million people are estimated to suffer each year from Guinea worm disease, which is only contracted by drinking contaminated water. Over 100 million are at risk from the disease, in rural endemic areas of India, Pakistan, and about 19 African countries. In Nigeria, Ghana and Burkina Faso, Guinea worm occurs

throughout the country. The disease appears a year after the unfortunate victims have drunk contaminated water, when adult worms, which measure two to three feet long, begin emerging through the painful blisters and ulcers they create, usually on the leg or foot, though the worms sometimes emerge through the skin on any part of the body. There is no cure for the infection, but the disease is usually resolved after a few weeks or months, when the worm has finished emerging. Victims do not become immune to the infection.

Much of the significance of dracunculiasis derives from the fact that the disease cripples working-age adults as well as children, for periods averaging one to three months, in large numbers (up to 30 per cent or more of a village's population), at the most critical time of the agricultural year (planting or harvest, or both, depending on the local epidemiology and the crops grown). For example, a recent study funded by UNICEF in an area of 1.6 million people in south-eastern Nigeria showed that the losses in profits from rice production alone, due to the incapacitation of local farmers by Guinea worm, exceed \$20 million dollars annually. School absenteeism may be more than 50 per cent during the 'Guinea worm season' in such areas. Few deaths are caused by Guinea worm directly, but it sometimes kills because many worms emerge in a person simultaneously, or they emerge through a critical organ such as the spinal cord, or because of secondary infection like tetanus in the open wound caused by the worm.

Unlike some other equally horrible



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infections, Guinea worm can be completely prevented by using information and technology which is already available. The best way to prevent Guinea worm is to promote the availability and use of safe water for drinking in affected villages. This is the most expensive intervention, but has the advantage of being a permanent solution to the problem, and of preventing other important diseases besides Guinea worm. A UNICEF-assisted rural water supply project in Kwara State, Nigeria reduced the average prevalence rates of dracunculiasis in 20 villages from 59.6 per cent in 1983-4, to 11.3 per cent in 1986-7; the rates in three of the villages were reduced to zero in the same period, from 62.0 per cent, 52.7 per cent, and 44.8 per cent. There are now many other such examples of the impact of rural water supplies on Guinea worm.

### Priority to Guinea worm villages

The case for giving priority to villages with Guinea worm for new sources of safe drinking-water is compelling. Because villages with Guinea worm suffer all the other negative consequences of not having safe water, such as increased incidence of diarrhoeal diseases, for example, in addition to having Guinea worm, they are by definition worse off, on average, than all other villages that do not have safe drinking-water. Secondly, villages with Guinea worm are a small minority of all villages without safe water, and thus it is practically feasible to provide water to them first, or early in the process of reaching out to all unserved villages. In Nigeria, for example, the Global 2000-assisted programme has shown that of the estimated 90,000 villages without safe water, only about 6,000 have Guinea worm. Finally, because of the unique opportunity they present to improve rapidly health, agriculture, and school attendance, by eliminating Guinea worm, the endemic villages offer the best return on investment in the rural water supply sector. It is possible, for example, that Nigeria could recover the total cost of its Guinea Worm Eradication Programme with a year after eradication is achieved from the resulting increases in its agricultural yields alone.

So far, only India and Nigeria have established a national policy of priority to villages suffering from Guinea worm for provision of safe

water supplies. Like India and Pakistan, Nigeria also recently completed a highly successful national village-by-village search for cases, which found over 650,000 cases of the disease in that country. Health authorities there now know which villages have the infection, and will provide that information to the rural water supply agencies to help them to implement the new policy. In the meantime, efforts are now under way to train people in Nigeria's endemic villages in other ways to prevent Guinea worm.

Even before safe water can be provided to all affected villages, residents can still be helped to eliminate Guinea Worm through health education. Villagers in affected areas need first to understand that they are getting the infection from their contaminated drinking-water, and that they themselves can prevent the infection by keeping people with emerging worms from entering the drinking-water source to contaminate it in the first place, or by boiling their water (if they can afford to) or filtering it through a fine cloth. By such means alone three villages in Burkina Faso reduced the annual incidence of dracunculiasis from 54 per cent, to 37 per cent and 24 per cent, respectively, to zero in only two transmission seasons. Use of (temephos) Abate applied in concentrations of one part per million at four to six-week intervals to kill the intermediate cyclops vector in stagnant open sources of drinking-water is a third way to control the infection.

### Mobilizing villages

Another recent example of the efficacy of mobilizing villagers to act against this infection is the village of Kati, in Togo. With the assistance of World Neighbors, an American NGO, villagers in Kati (population about 3,000) were gradually helped with health education, and with the construction of six wells. From a total of 928 cases in 1981, Guinea worm was reduced to 263 cases in 1983, seven cases in 1985, and no cases in 1988.

National health education efforts in Ghana's Guinea Worm Eradication Programme received an impressive inauguration in June 1988, when the head of state, Flight Lieutenant Jerry Rawlings, spent eight days visiting 21 endemic villages in the highly affected Northern Region teaching villagers how to prevent the disease. 'Guinea worm,' he said 'is a disease of

underdevelopment.' Improvements in the surveillance of the disease in Ghana is seen in its statistics: while the country reported 4,717 of dracunculiasis to the World Health Organization in 1986, 18,398 were reported in 1987, and 71,767 cases in 1988.

Soon, the two villages visited by President Carter in Ghana will also be free of Guinea worm. Others elsewhere will be, too, if political, health and water supply authorities act quickly and rationally to give priority to such villages in rural water supply projects. In the meantime, however, suffering villagers should be helped to recognize that they can attack this problem themselves, by not contaminating their drinking-water supplies when they have Guinea worm, and by discouraging their neighbours from doing so; by filtering or boiling all potentially contaminated drinking-water; by co-operating to build or raise money to construct a safe source of drinking-water; by using safe water for drinking when it is provided; and by spreading the word, to tell their neighbours and friends where this disease comes from, and how to avoid getting it.

The Ghanaian Guinea Worm Eradication Programme has set itself the goal of eliminating the disease from Ghana by 1993. The target year for its elimination in Nigeria is 1995. India and Pakistan intend to eradicate it by 1990. There is no reason why this disease could not be eradicated globally by December 1995. It ought to have been eradicated before now. ☉



*Ghanaian woman sufferer.*

Hilda Paqui / UNDP