



Pipe filters in Guinea worm eradication in Uganda

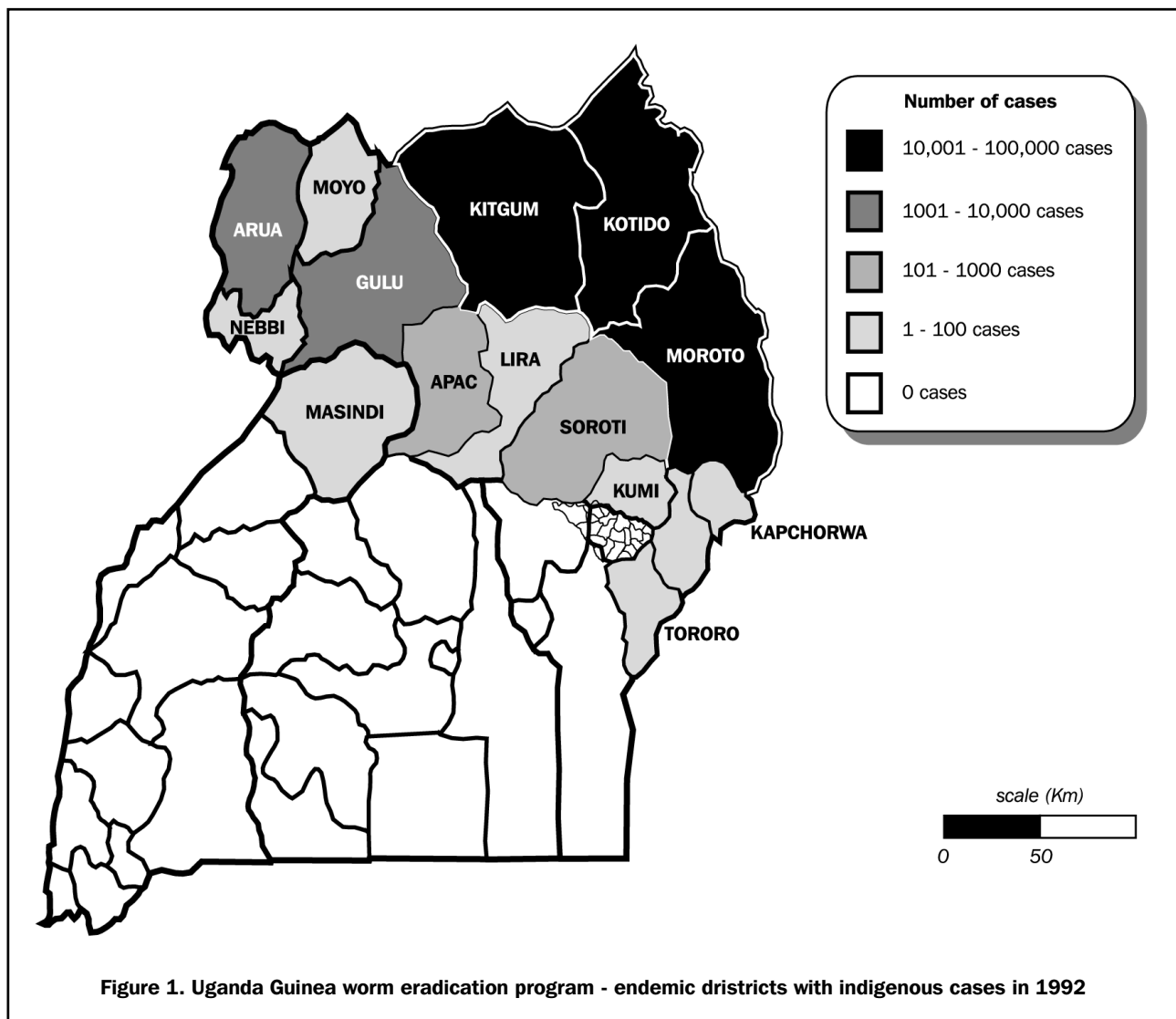
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THE GUINEA WORM is the largest of the roundworms and Guinea Worm disease (*Dracunculiasis*), has affected human beings for centuries. It is transmitted by drinking water that contains a small crustacean (*Cyclop*) which serves as the intermediate host to the worm. The larvae of the worm become infective to humans while still in the *Cyclops* (commonly known as water flea). Once ingested from contaminated water, the worm gestates for about one year and reaches a length of about 1 metre. It then migrates to a point in the body (usually the foot or lower leg) and emerges out of the victim's leg over a period of several weeks.

A water source becomes contaminated when a person with an emerging guinea worm places the infected foot area into the pond water. Guinea worm disease can only be passed from one person to another through drinking water contaminated with the guinea worm larvae.

The guinea worm case search effort in 1991/92 identified 126,369 cases. It was endemic in 2,677 villages from 16 districts, indicated on the map in figure 1.

The Uganda Guinea Worm Eradication Programme (UGWEP) began in 1991/92 with support from Global 2000 and the UNICEF-Government of Uganda Water and Sanitation (WATSAN) Programme. UGWEP identified



and is using the following strategies to interrupt transmission of guinea worm. The cycle of transmission/infection is broken by preventing the consumption of contaminated water through the provision of safe water sources such as boreholes that cannot be contaminated.

In Kotido, Moroto and Kitgum these strategies have been implemented in all the villages where guinea worm disease is endemic. Health education is conducted so that people infected with an emerging worm do not step into the water and contaminate it. Furthermore, filtering pond water, both at the water source and at home, before drinking it eliminates the Cyclops that are likely to be carrying the worm larvae. We also chemically treat contaminated and/or suspect water sources with abate chemical to kill the Cyclops. In 1999 other strategies were adopted by the Programme to pursue the final assault to guinea worm. Of the many strategies formulated, two are being seriously pursued by UGWEP. These include the introduction of a reward system in Kalamoja (Kotido and Moroto) region and selection and deployment of pondwater caretakers together with the use of abate chemicals.

The reward system gives 50,000 shillings (\$28) to everyone who has an emerging worm and to any one who reports to the responsible health workers, (village volunteers [VV]) a confirmed guinea worm case. The report is made to the district health team member who will be responsible for confirming the case. The reward system contributes to

increased and early case detection and containment thus preventing further transmission.

The second strategy in the eradication of the guinea worm is the selection and deployment of pond water caretakers in all affected villages. These are volunteers, normally old men, who are given training in how and why to filter the pond water. They receive a token payment of Ugsh. 5,200/= (\$3) a month from the Programme. The main roles of these caretakers are to prevent everyone with an emerging worm from contaminating the water, and ensuring that, everyone fetching water filters it at source or, if drinking at the source, uses pipe filters. They also protect communal filters which are installed at ponds and mobilise water users to fence the ponds to ensure a single water collection point thus making it possible to enforce water filtering at source.

The third strategy consists of abate application to treat water ponds in the villages where the disease is endemic. Abate is a non-toxic chemical that kills the Cyclops.

The discussion that follows focuses on a fourth strategy which promotes the use of pipe/straw filters in Moroto and Kotido Districts. The pipe filters are made from PVC pipes 152.4 mm in length and 12.7 mm in diameter. The cup that houses the nylon cloth filter is also PVC of 16mm diameter and about 16mm length.

At the time of the national case search 1991-92, there were 126,369 cases found in 16 districts in Northern

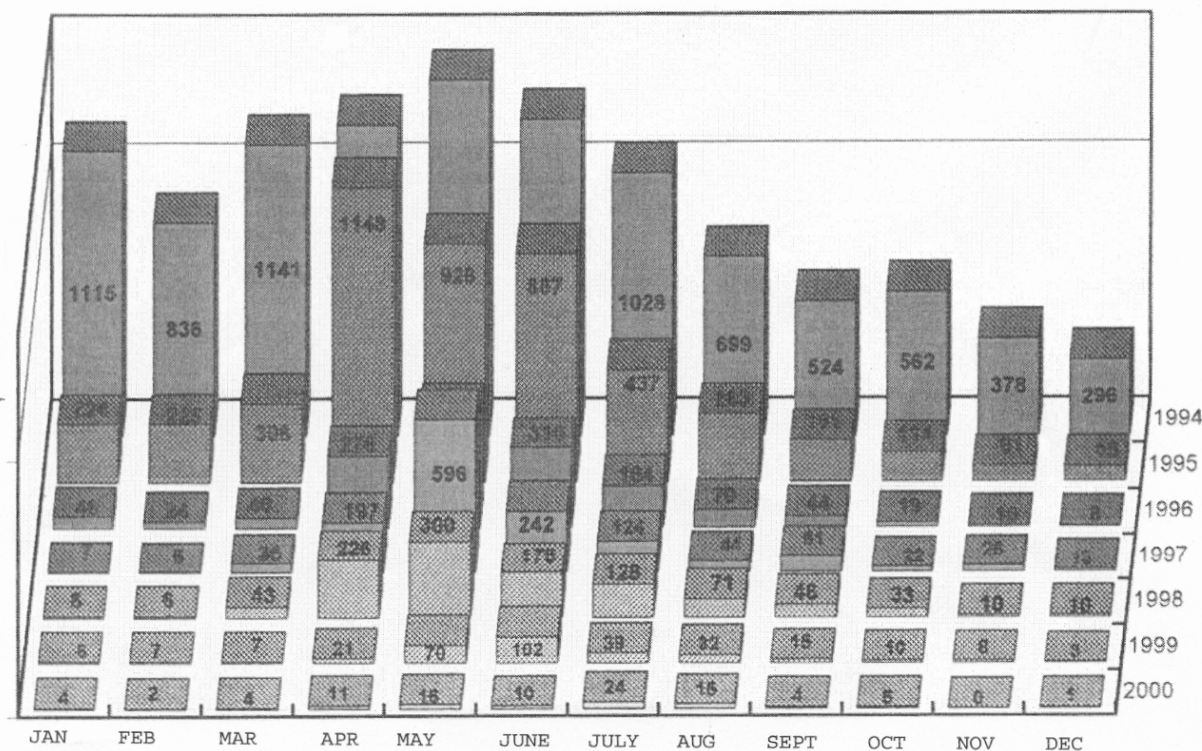


Figure 2. Uganda Guinea worm eradication program - number of cases of Dracunculiasis reported by month, 1994-2000

Uganda, making her the second in the world amongst countries where the disease is endemic. Moroto and Kotido Districts, the home of herdsmen, contributed 20% and 15% respectively of the total caseload in Uganda.

Moroto and Kotido districts lie in a semi-dry belt with little surface water. The people and their domestic animals depend on rainwater that collects in dug valley dams/ponds. Transmission of the disease takes place in these ponds, which fill and hold water for several months during the rainy season from April to August. These ponds, also

locally know as “attapar”, are used by both humans and animals who step in to fetch and drink the water.

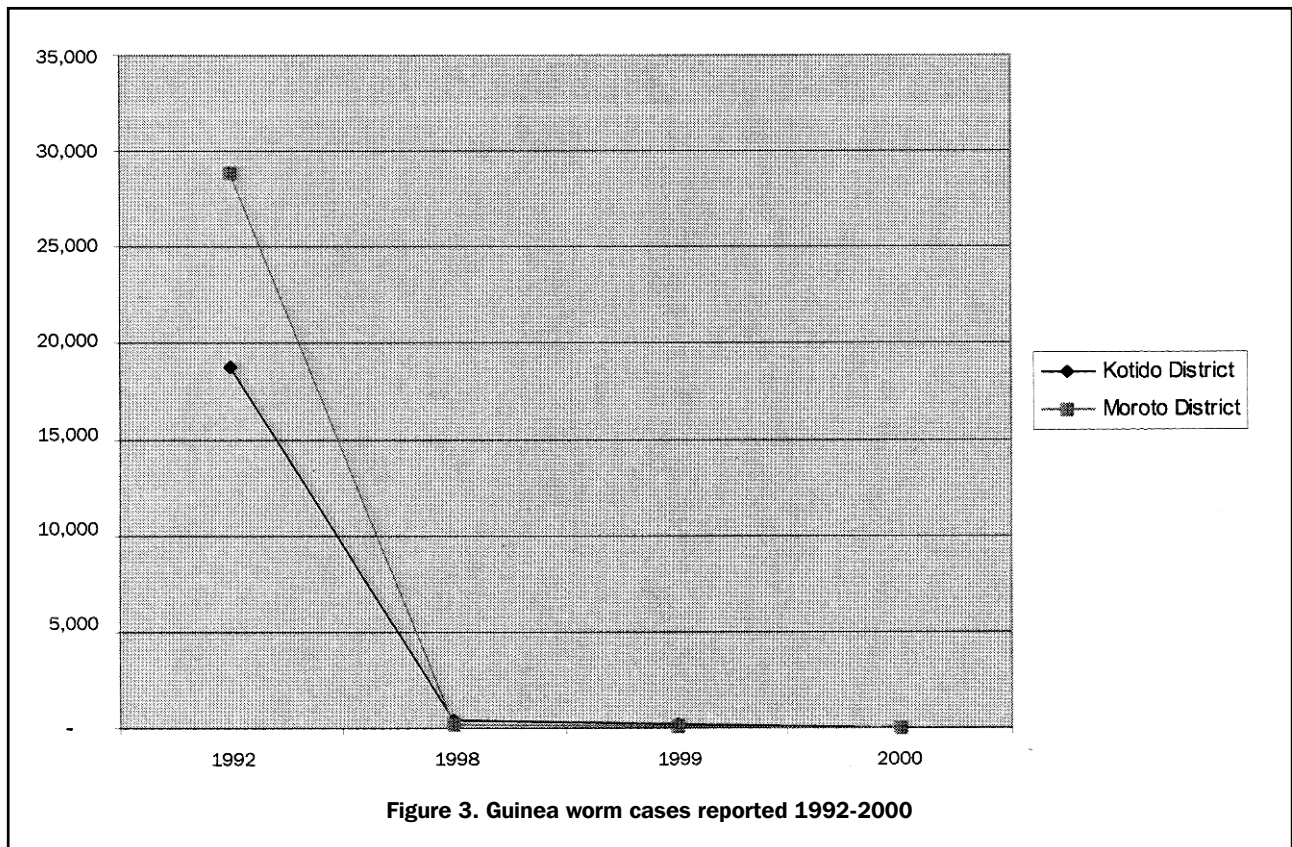
In 1998 it was recognised that nomadic Karamajong herdsmen, whose mobility is high, were walking away with the cloth filters meant for women and children at home. The Water and Environmental Sanitation (WES) Programme introduced pipe or pipe filters in January 1999 to avoid this. Both women and men accepted the idea of using pipe filters, when in the gardens cultivating and in fields looking after cattle.



Herd-boys (left) with pipe filter around neck



Boys using pipe filters to drink water from source



This ensures that herdsmen and boys who drink from unsafe water sources are able to drink filtered water. This protects them from the Guinea worm disease, though it does not protect them against other infections that are likely to come from drinking unsafe water.

Pipe filters were initiated in Moroto and Kotido Districts and were designed to drape around the necks of herdsmen for convenience. Over 30,000 pipe filters have been distributed in Moroto and Kotido Districts since January 1999. The older herdsmen have found a dual purpose for the pipe filters, some have been using them to store tobacco and enjoy a favourite past time.

This strategy has contributed to the remarkable reductions of guinea worm cases shown in the chart in figure 3.

The strategy is combined with mobile village volunteers (MVVs) who conduct health education among the nomadic herdsmen. This ensures that wherever, the herdsmen go to hunt for pastures and water for their cows, the volunteers remind them, amongst other things, to filter the water. The clusters of herdsmen select the mobile village volunteers who will accompany them during the dry spells while they hunt for water and pastures. The MVVs are supplied with pipe filters and taught how to train herdsmen to correctly use them both at the water source (pond) and at home. In addition, the MVVs carry communal pipe filters to ensure availability of the filters as well as providing back-up filters for those who may not have them. These MVVs, who train new pond caretakers, report growing

worm and health education on the use of pipe filters. Their information is fed into the main monthly monitoring system.

The constraints include:

- Inconsistency in the use of filters due to the nomadic nature of the Kalamajong and the engagement in armed cattle rustling. During the struggle to grab/regain as many head of cattle as possible, water filtering is not a priority;
- We have trained “mobile” village volunteers to provide health education to these mobile herdsmen, but their motivation to continuously conduct health education is poor; and
- Filtering pond water is sometimes not done especially by children and herd-boys while away looking after herds of animals, especially those that use the filters for storing tobacco.

In conclusion, UGWEP employed innovative strategies that contribute to the interruption of transmission of the guinea worm. The pipe filter was one of the most important strategies that contributed to ensuring that the nomadic cattle keepers keep the worm from their bodies. In April 2001, the districts reported 6 cases. Although we are still in the peak transmission period, we are hoping to have less than 100 cases in 2001.

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