18th WEDC Conference KATHMANDU, Nepal 1992

WATER, ENVIRONMENT AND MANAGEMENT

Peace Corps' guinea worm programs

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BACKGROUND

Guinea worm disease (dracunculiasis) is a painful and debilitating disease which afflicts millions of people in Africa (with millions more at risk). Its consequences include decreased agricultural and economic productivity and school attendance.

Life Cycle of the Guinea Worm

The life cycle of the Guinea worm is depicted in Figure 1. People become infected with Guinea worms by drinking water containing certain fresh-water copepods (water fleas, or cyclops) that carry the infective larvae of the nematode parasite. The larvae penetrate the small intestine, develop into adult worms, and mate. The male worms die and the females migrate to a position under the victim's skin, usually on the lower leg or foot, but potentially anywhere on the body. Approximately 12 months after the contaminated water was ingested, a painful blister appears at the site of each worm. The skin of the blister sloughs off, exposing the anterior end of the worm. The worm, which is about one meter in length, then slowly emerges. Open sores from emerging worms frequently become infected, and tetanus or abscesses sometimes develop. The infected individual often submerges the sore limb in a nearby pond or spring. The blister breaks and hundreds of thousands of larvae are released into the water. These larvae are then ingested by copepods. When people drink the water containing infected copepods, the cycle is repeated. People can be re-infected with Guinea worms each year; they do not develop immunity to the parasite. There is currently no drug to cure the disease.

Endemic Areas

Guinea worm is endemic in sixteen African countries plus India and Pakistan. While Pakistan had as few as 106 cases of Guinea worm in 1991, Nigeria had the highest reported incidence that year with 281,937 cases. Ghana was the second highest West African country with 66,697 cases and Uganda the highest East African country with 120,259 cases.

Targetted for Eradication

The World Health Assembly has targetted Guinea worm disease for eradication by 1995. To achieve eradication, interventions, in the form of providing uncontaminated water supplies and health education to change disease-perpetuating behaviors, must be implemented at the village level in endemic countries. Working together with WHO in this global eradication campaign are national ministries, Global 2000, Centers for Disease Control (CDC), UNICEF, United States Agency for International Development (AID), Peace Corps, CARE, OXFAM, OCCGE, World Vision, Pharmiciens sans Frontieres and numerous Non-Governmental Organizations.

PEACE CORPS' INVOLVEMENT IN THE ERADICATION EFFORT

In 1989, the Peace Corps received a three-year grant from the Africa bureau of the United States Agency for International Development (AID) to provide technical, financial, and material resources for Peace Corps staff and Volunteers to initiate and implement Guinea worm eradication (GWE) programs in countries with Peace Corps programs. Programs were phased in as follows:

1990 - Benin, Cameroon, Ghana, Togo

1991 - Mali, Mauritania, Nigeria

1992 - CAR, Chad, Côte d'Ivoire, Niger

Accomplishments of the Peace Corps GWE Program

By the end of the three-year program in 1992, there were 74 Peace Corps Volunteers (PCVs) working on GWE at the primary, secondary, or add-on level. Collaborative efforts involving Peace Corps resulted in:

346 wells dug (310 in Benin)
20 wells capped (Mali)
172 wells repaired (150 in Benin)
316 pumps installed (310 in Benin)

GWE education reaching 1,340 communities, each averaging over 1,000 residents

In six countries where PCVs distributed filter fabrics to strain copepods (the GW intermediate host), distribution has covered 688 sites for a total of 6,367 households.

Health education in 6 countries (Benin, Cameroon, Ghana, Mauritania, Nigeria, Togo) resulted in:

1,250 Communities served

104 Primary schools receiving training

11 Secondary schools receiving training

264 Teachers trained

950 Community workers trained

In addition to the above health education trainings, 5,600 village volunteers were trained in 5,100 endemic villages of Ghana through a collaborative effort of Peace Corps and Global 2000.

Other trainings conducted as part of the Peace Corps GWE Program (GWEP) include:

80 Pre-service trainings of Volunteers

62 In-service trainings of Volunteers

11 Trainings of trainers

Seven annual GWE workshops and 31 community-level workshops were conducted.

Financial assistance to Benin's GWE program made possible such public awareness events as song contests and theatre productions concerning the disease.

In addition to working at the village level, some PCVs have worked with government officials at the national level, to assist national GWE programs. For example, a GW Volunteer with an M.P.H. degree was posted with the Ministry of Health in Cameroon. Her tasks included managing a computerized data base of national GW statistics. In Mali, a third-year GW PCV works alongside that country's newly appointed national coordinator. Similarly, a GW Volunteer works full-time with Global 2000 in Ghana to organize trainings, promote interventions, and develop strategies for the national GWEP.

Lessons Learned

The major weakness of the Peace Corps GWE program during the past three years is that Guinea worm Volunteers have been combatting a disease with a relatively brief transmission season in areas where diarrheal diseases, malaria, and infant malnutrition have been identified as the greatest health problems. Proposed future GWE programming will utilize GW Volunteers to conduct and teach/reinforce GW interventions during the transmission season, and utilize their skills during the remainder of the year to combat other debilitating and life-threatening diseases.

Proposed Peace Corps GWE Program: 1993-1995

Future GWE programming will focus on increasing the effectiveness of GW Volunteers. A few highly skilled Volunteers specializing in Guinea worm will continue to be recruited each year, and be posted strategically, such as with national Ministries of Health.

Rather than recruiting Volunteers solely for GWE activities, future GWE programming (which is contingent on renewed funding) will utilize all Volunteers in Guinea worm-endemic areas. For example, PCV educators and their host country national counterparts will receive training in how to incorporate GWE strategies into their science or English lessons. Education PCVs will also work outside of schools in a Nonformal Education capacity to help adult community members learn about Guinea worm and determine appropriate courses of action for their own communities.

The next phase of the Peace Corps GWEP will stress sustainability by promoting and reinforcing disease-preventing behaviors and systems. The GWEP will increase its targetting of women by conducting trainings within village women's committees and other existing women's associations. Peace Corps will facilitate communication between collaborators (Peace Corps, Global 2000, USAID, UNICEF) and provide mechanisms for two-way communication between village-level program implementers and national/international program planners.

The Peace Corps plan of training Volunteers working in all sectors in endemic areas to promote GWE has several advantages. First, this strategy will assure that a large cross-section of the population is reached. The number of Volunteers involved in GWE will be increased three-fold. Finally, the new emphasis on GWE as a secondary activity for education Volunteers

will take advantage of the availability of skilled trainers.

Peace Corps' plan for economic sustainability of the GWEP includes assisting with the establishment of small businesses. Several Guinea worm-endemic countries are striving to standardize the brand of handpumps used. However, in Benin, for example, approximately 30% of all handpumps are not functioning for need of repair. Peace Corps hopes to work with the national governments and interested potential business people to set up shops which will carry parts for the widely used handpumps. Shopkeepers will be trained in how to operate small businesses. Peace Corps will also work with communities to identify and train pump maintenance people.

Finally, the next phase of Peace Corps' GWE program will train traditional health and water/sanitation Volunteers to conduct a comprehensive health program with Guinea worm eradication as a key component. In addition to training in the use and benefits of filtering water through fabrics, these Volunteers will stress rehabilitation of existing potable water sources and development of new clean water supplies. A large number of GWE Volunteers will conduct health education campaigns on the benefits of using the potable water supply and of proper hygiene. This integrated approach will not only decrease the number of Guinea worm cases, but will also impact the incidences of diarrheal diseases and increase water quantity in drought-stricken areas, such as northern Benin.

CONCLUSIONS

Progress is being made in eradicating Guinea worm. The number of incidences is declining yearly, most dramatically in Ghana and Nigeria, the most highly-endemic West African countries. (Nigeria went from 653,492 cases in 1988 to 281,937 in 1991 and Ghana from 179,556 to 66,697 in the same period.) Whereas the decrease in dracunculiasis is due to the collaborative efforts of international agencies and African governments, Peace Corps is a crucial component of that campaign because it has in place an efficient mechanism for combatting the disease. As team members in the collaborative effort, Peace Corps Volunteers will continue to work at the village, district/zonal, and national levels to eradicate the disease.

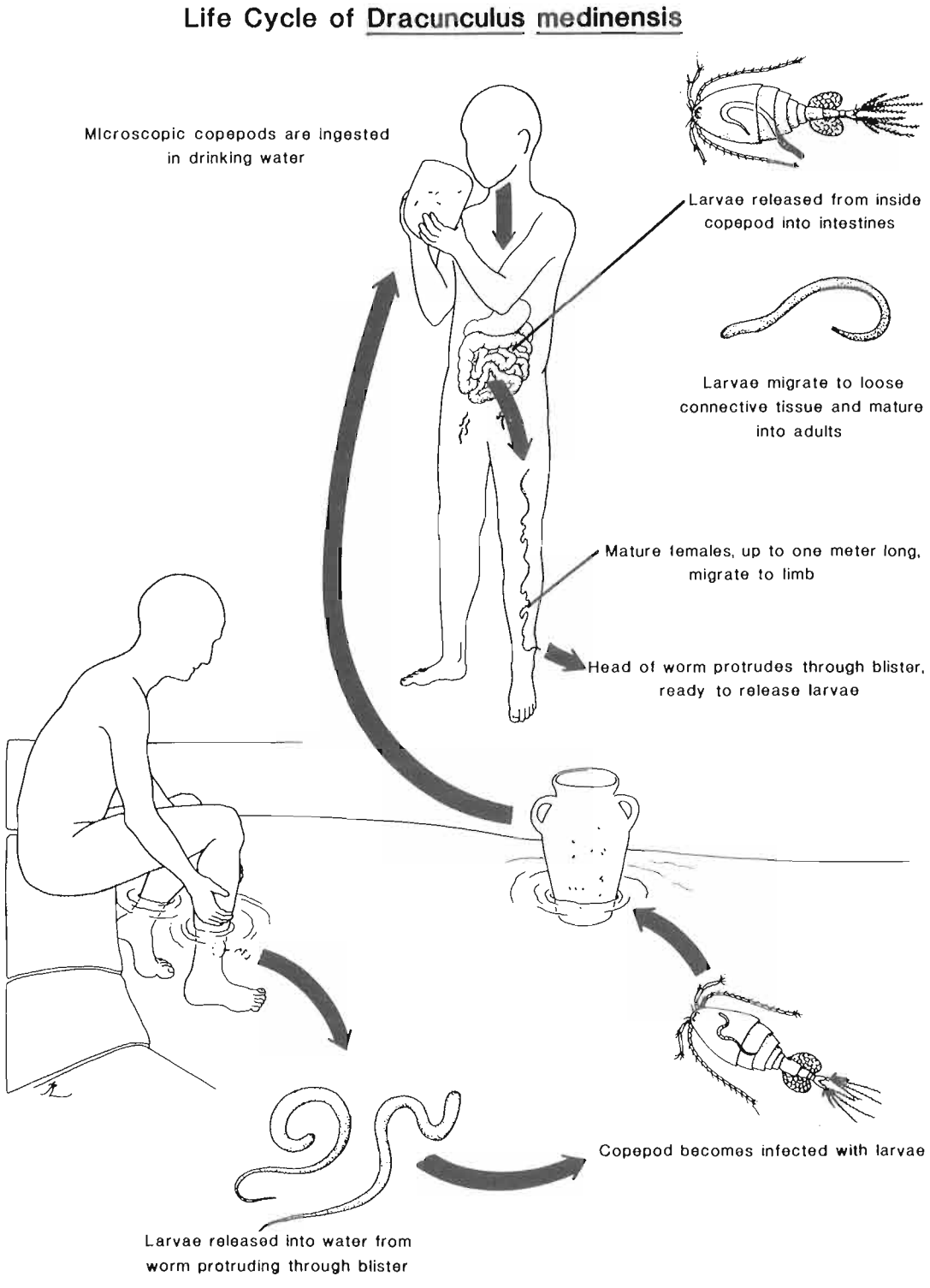

Figure 1. Life cycle of the Guinea worm. (Illustration by Taina Litwak.)