

WATER, SANITATION, ENVIRONMENT and DEVELOPMENT

Community-based surveillance in GWEP - Ghana

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Introduction

Guinea Worm disease (Dracunculiasis) infects man through ingestion of contaminated water. It is therefore a good indicator of the non-availability of safe water supply to rural dwellers in endemic areas. Not much was known of the extent of the Guinea Worm problem in Ghana until a sample survey was conducted in the Northern Region of the country in 1987 and a National Case search in 1989. (Ghana GWEP, 1989) Both surveys demonstrated that passive surveillance was recording less than 5% of cases occurring.

A national effort towards the eradication of dracunculiasis (Guinea Worm Disease) began in 1988 with assistance from Global 2000 Inc.-Cater Presidential Center. A plan of action (POA) was made which set 1993 as the target date for eliminating transmission of Dracunculiasis in the country. This paper describes briefly our experience in improving surveillance of Guinea Worm disease in Ghana.

Passive surveillance 1960 - 1986

As early as the 17th century, European explorers reported seeing cases of Guinea Worm disease along the coast of what is now Ghana.

Studies by various medical scientists, beginning with Dr B.B. Waddy in 1956 (Waddy, 1956), established that the disease was widely distributed throughout the country and that it had a significant adverse impact on agricultural productivity. (Belcher et al, 1975).

Guinea Worm disease began to be included in the routine monthly reports from peripheral health units throughout the country to the Ministry of Health in 1960. Most of these cases reported by health institutions were individuals seeking medical care because of secondary infection, cellulitis resulting from the worm braking within the tissues and arthritis. The absence of effective treatment for the disease certainly did not encourage patients to seek specific treatment at health care facilities.

In 1981 the author estimated that <30% of the cases actually occurring in the Northern Region of Ghana were reported through the health facilities (Bugri, 1981). More recent information suggests that in fact less than 5% were being reported. Up to 1986, these routine reports averaged a total of about 4, 000 cases annually for the entire country. (Fig.1) These early data did confirm that Guinea worm disease was occurring throughout Ghana,

but gave only a vague indication of geographic priorities among the ten regions, and even that sense of priorities turned out to be significantly flawed, when compared with the results of the national case search conducted later.

Active surveillance (1987-1992)

In 1987, a sample survey of Guinea worm disease was conducted in the Northern Region of the Country. The results of this survey were largely responsible for the increase in officially reported cases that year to 18, 398 (Figure 1). In 1988, all Regional Directors of Health Services were instructed to mount active control and surveillance measures for the disease. A sample survey of villages was also conducted in Eastern Region (WHO, 1989). These efforts did not cover all endemic villages, nor did they record all cases. Following the 2nd African Conference on Dracunculiasis in Accra March 1988, extensive publicity and education through the news media and by health workers resulted in increased reports of "outbreaks" of Guinea Worm by villagers. Health workers supported by Global 2000 GWEP visited many such villages in response to these reports, to count cases, give some first aid, and begin educating the population about the disease. Thus the number of officially reported cases in 1988 rose to over 70, 000.

Guinea worm disease is basically a disease of the rural dweller invariably living in small settlements far away from health facilities.

For the purpose of eradication a more sensitive system of surveillance had to be developed. (Richards, Hopkins, 1989). Community/village based data collection was thought to be the best source of information. In 1989, we began to train district and zonal Guinea worm programme coordinators (each district is divided into zones consisting of a number of villages), who in turn identified village volunteers (VV), one in each endemic village, to report cases of Guinea worm disease from their villages monthly.

The training covered the life cycle of the disease, preventive measures and the education messages to be propagated. They were taught how to fill the surveillance forms and if they were illiterate they got a school boy to do the writing of the names. The village volunteers who are the key people in this programme were carefully selected by the community. He/she had to be self employed and a respected member of the community, such that they would accept educational advice from him/her. The

District Coordinators are health workers but the zonal and village level workers are volunteers. 6,515 endemic villages were identified during the national Case Search.

The surveillance system is outlined in the flow chart.

The national case search

At the time of writing the Plan of Action the actual endemicity and geographic distribution of cases was not known. A National Case Search was therefore conducted at the end of 1989 to ascertain the true extent of the problem.

The National Case Search was a massive mobilization exercise, involving over 12000 people and lasting 60 working days. Field investigators were selected at district and zonal level for their knowledge of the area and the language, and trained specifically for the case search. A total of 19,759 villages or 92% of all villages in Ghana were visited, and a questionnaire administered to a reliable resident(s) such as the village chief, head teacher, pastor, chairman of the local village development committee, etc. The screening questions asked on these visits were whether the respondent(s) knew what Guinea Worm was, and whether there had been any cases of the disease there within the past year. A village was classified as endemic if one or more cases of Guinea worm was seen in that village within the past year and if the village was using surface water for drinking. If a village was classified as endemic a suitable volunteer was identified and coached on how to use a booklet provided by the programme to do house to house interviews to record the names of all inhabitants who had Guinea worm disease during the past year. These volunteers were given one or two days to complete the search, depending on the size and spread of the village, and they were monetarily rewarded for their work. Respondents were also asked whether blood in urine was common in the village - a rough indicator of urinary schistosomiasis.

This national case search, which cost approximately US\$ 50,000 (provided to the Ministry of Health by the USAID mission to Ghana and Global 2000), revealed the location and incidence of Guinea worm disease in Ghana for the first time (Fig.2). We were no longer looking at the tip of the iceberg and imagining what was below the surface. We now had the whole mountain before us, and what huge mountain it was.

Monthly surveillance: 1991, 92, 93,

Since 1991 the progress of the programme has been monitored by the monthly surveillance results. The reporting rate has improved from an average of 67% in 1991 to over 94% by the end of 1992. Some regions are receiving reports from 100% of all known endemic villages. (Fig.4)

The monthly reporting system allows us to monitor progress month by month comparing figures with the same period the year before.

We are able to see the effects of stepped up interventions of the previous year reflected in the following year. The monthly surveillance also gives a clear picture of the seasonality of the disease. (Fig.5)

The National pattern is greatly influenced or dominated by the figures from the Northern Region which contributes >50% of cases.

The monthly surveillance coverage does not only provide incidence of cases it is also an indicator of the amount of education reaching the affected areas. Each time the VV visits a house to collect information on cases he also gives education on preventive measures and inspects and replaces their cloth filters.

Discussion

The main challenge in the programme now as far as surveillance is concerned is to make the village based monthly reporting achieve 100% coverage every month and to change from monthly reporting to daily reporting or at least within 48 hours. In the case containment mode all cases must be managed individually and on time.

- 1 If a case is detected before the worm emerges, the worm must be surgically extracted - the know how and the ability is available in all health facilities in endemic areas.
- 2 If a case is detected after the worm has emerged, controlled emersion and occlusive bandaging is advised.
- 3 Vector control using Temephos is routine but if a case is reported from a village, it can be assumed to have infected cyclopods in the ponds of the village with guinea worm larvae which would mature to infective stage in 10 days. Temephose is applied to the ponds to knock out the infected cyclopoids.

Currently plans are being made to make full use of the experienced village based workers to improve surveillance on other indicators and improve broader Primary Health Care services in these villages.

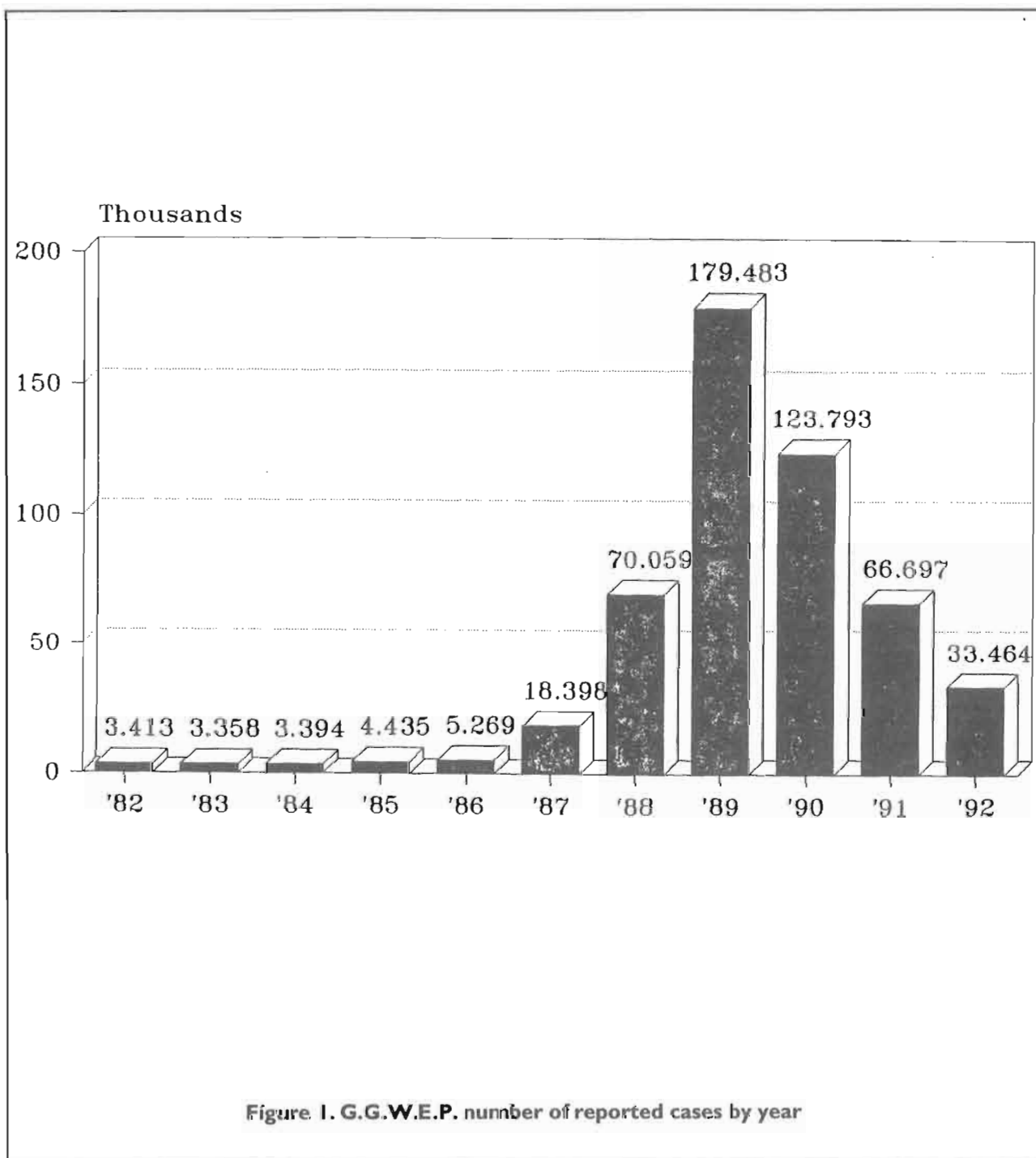
The effectiveness of this programme in Ghana has benefited greatly from the awareness and enthusiasm generated by the head of state, FI-Lt J.J.Rawlings.

As a sign of his personal interest and support, he spent 8 days in June 1988 visiting 21 endemic villages in six districts of the Northern Region, teaching villagers about the disease and demonstrating how to filter drinking water through a clean cloth. The two visits to Ghana by former U.S President Jimmy Carter have also helped to focus attention on the disease.

We do not see a substitute for complete surveillance in Guinea worm eradication programme. Already in January this year we could see from the monthly returns that we are likely to see cases in 1994. If we had relied on annual case count/search, this will not be revealed until 1994.

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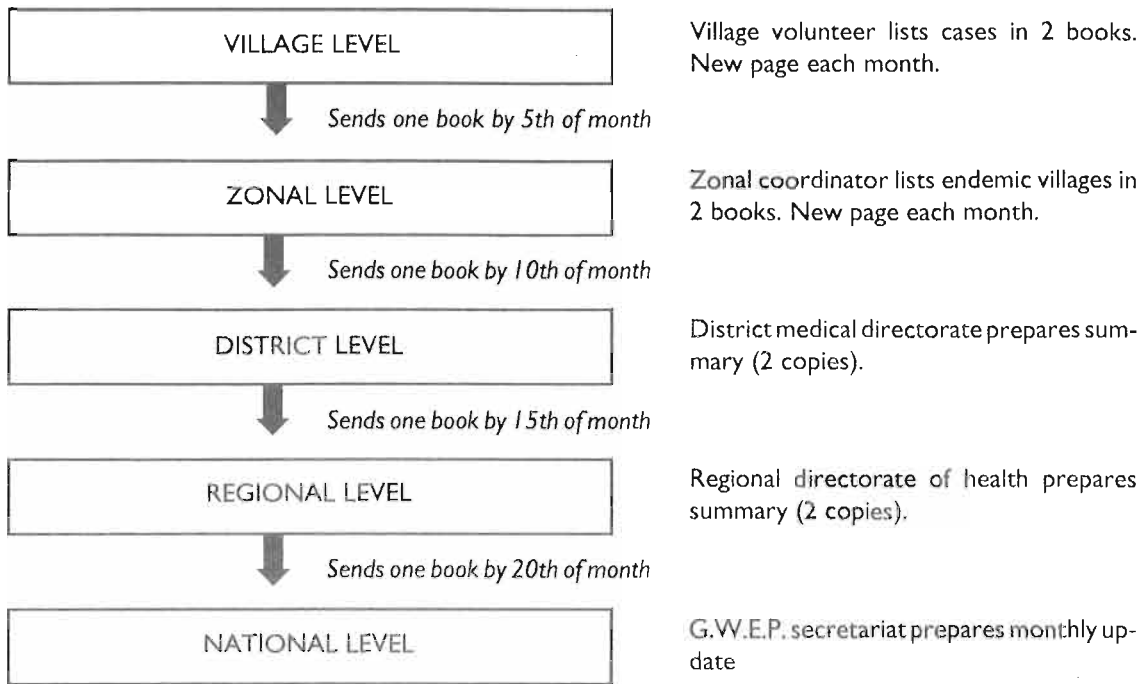


Figure 2. Ghana guinea worm disease eradication program village - based monthly surveillance system

REGION	POPULATION	DISTRICT					ZONES					VILLAGES					CASES			
		TOTAL	#	#	#	#	TOTAL	#	#	#	#	TOTAL	#	#	#	#	#	#	#	
		#	1989	1990	1991	1992	#	1989	1990	1991	1992	#	1989	1990	1991	1992	1989	1990	1991	1992
1. WESTERN	1,316,800	11	7	7	6	8	122	40	29	20	19	1,829	142	64	40	20	563	728	618	380
2. CENTRAL	1,279,500	12	11	11	11	11	93	59	52	53	43	1,603	260	263	232	150	7,576	7,770	6,351	2,635
3. EASTERN	1,892,000	15	14	13	11	11	84	56	41	41	41	3,055	386	190	184	146	3,751	3,091	1,901	1,638
4. CT. ACCRA	1,701,300	5	4	2	1	1	27	11	6	4	6	851	167	119	119	92	1,553	1,267	1,105	895
5. VOLTA	1,347,500	12	12	12	10	9	110	93	76	61	54	5,086	1,818	1,414	783	612	41,265	36,182	12,296	7,452
6. ASHANTI	2,425,000	18	16	10	12	11	190	68	39	38	43	1,918	187	127	105	92	982	1,521	639	456
7. BRONG ARAFO	1,403,600	13	13	13	13	13	151	123	99	101	85	2,143	675	511	464	261	18,043	11,979	5,078	1,808
8. NORTHERN	1,462,500	13	13	13	13	13	204	194	197	199	204	3,169	2,488	2,136	1,630	1,659	101,524	57,934	37,181	17,140
9. UPPER WEST	491,900	5	5	5	5	5	37	30	28	21	21	728	224	209	134	66	3,174	2,918	1,416	831
10. UPPER EAST	714,300	6	6	5	3	1	40	28	15	5	2	951	173	80	7	2	1,052	403	112	209
GHANA	14,034,400	110	101	91	85	83	1,058	702	582	543	518	21,343	6,515	5,111	3,718	3,100	179,483	123,793	66,697	33,464

Figure 3. National (endemicity and number of cases 1989-1992) by region, district, zone, village

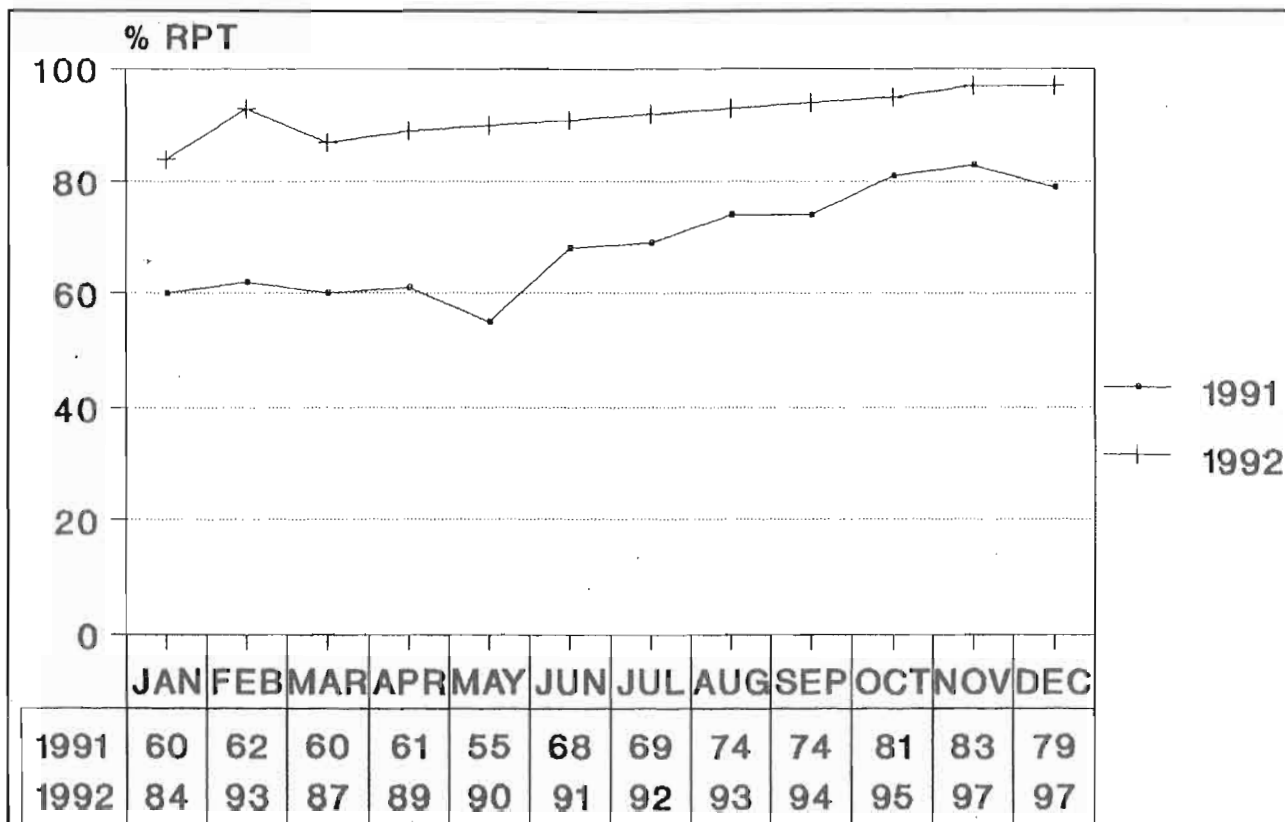
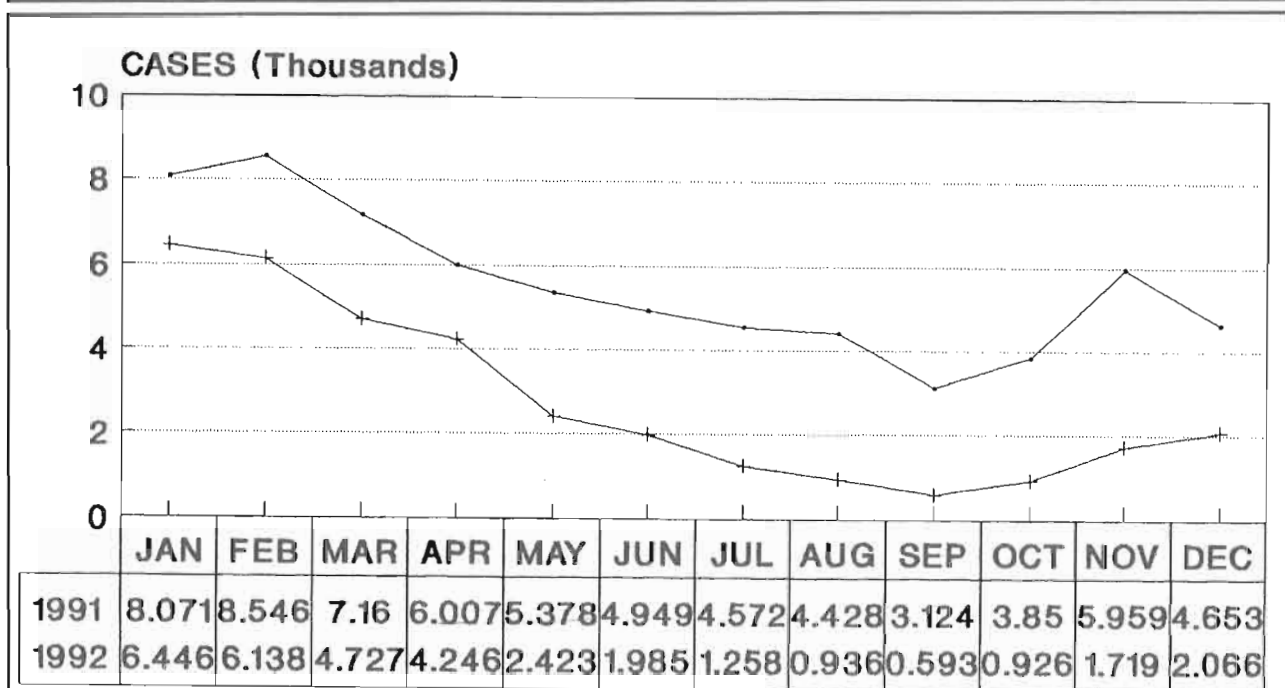


Figure 4. G.W.E.P. % of end. vill. rpt. monthly 91 & 92



—●— 1991 —+— 1992

Figure 5. G.W.E.P. 1991 & 92 reported cases