



Memorandum

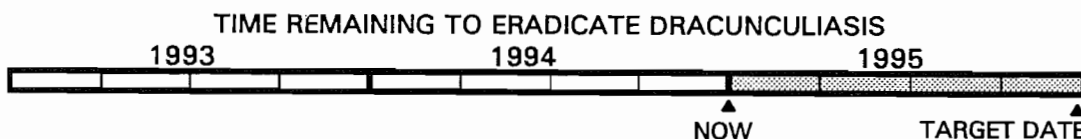
Date December 30, 1994



From WHO Collaborating Center for
Research, Training, and Eradication of Dracunculiasis

Subject GUINEA WORM WRAP-UP #46

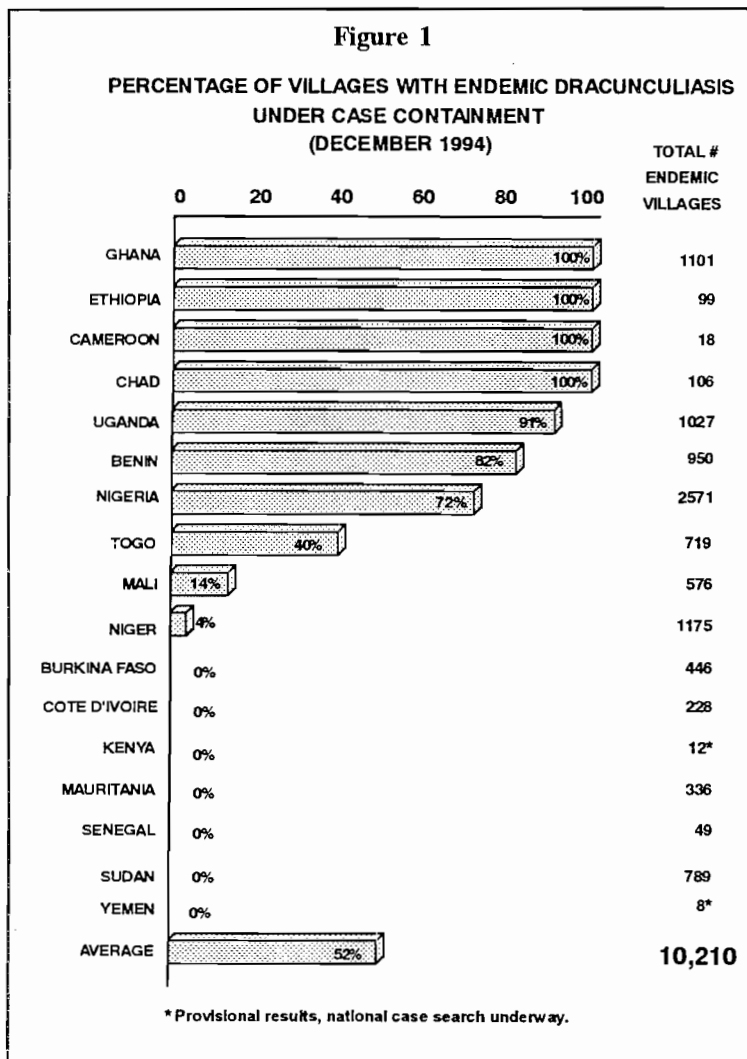
To Addressees



EDITORIAL

CASE CONTAINMENT: THE FASTEST WAY TO TARGET ZERO

We have finally arrived at the milestone of one year before the target date of December 31, 1995 for eradicating dracunculiasis. The two most salient features of the global campaign now are 1) the size and extent of the remaining endemicity in Sudan (see following story); and 2) the great progress that has been made in all other endemic countries: cases have been reduced from an estimated 3.5 million in 1986 to less than 100,000 in 1994 (excluding Sudan), the number of endemic villages has been reduced from over 23,000 at the beginning of 1993 to less than 10,000 at the beginning of 1995, and nearly all the remaining known endemic villages now have one or more control measures in place) (see Figures 3 & 4, pp. 4-5, 6).



All the experience that has been acquired to date in combatting dracunculiasis confirms that the most efficient way to stop all further transmission of dracunculiasis, as countries are now trying to do during 1995, is by applying the strategy of "case containment". Case containment means detecting every case within 24 hours of emergence of the worm, instituting all appropriate control measures within 24 hours of detecting the emerging worm, reporting each case promptly to the next level supervisor, and confirming each case by the next level supervisor within a week after it has been reported. The first steps in applying case containment are to train village-based health workers and their supervisors and provide them with the materials they need in order to apply the strategy, including supplies for at least minimal treatment of wounds caused by the emerging worm(s), for other interventions, and for reporting cases and monitoring interventions. This will require frequent and sustained supervision of village-based health workers to ensure that all cases are contained promptly and that appropriate surveillance is maintained. The goal in 1994 has been to put case containment in place in every endemic village by the end of the year. That is the best way to ensure that no further transmission of disease will occur in 1995. Figure 1 (p. 1) shows that at the end of 1994, approximately 52% of all endemic villages had begun case containment. Benin, Uganda, Chad, and Nigeria have worked especially hard to put this strategy in place in most of their endemic villages during the last quarter of 1994. Most endemic countries which are not already practicing case containment are scheduled to begin doing so in January or February 1995. Among the higher endemic countries which need to extend case containment with utmost urgency as we begin 1995 are Niger, Mali, and Sudan. All efforts should be directed towards attaining that level of program implementation immediately. Two important components of the case containment strategy, which deserve special emphasis and attention at this stage, are the need for all endemic countries to intensify social mobilization of affected populations, and to make maximal use of vector control as an additional intervention in appropriate areas (see Figure 5, p. 6).

**SUDAN:
A BIG PROBLEM
GETS BIGGER**

In its most recent progress report submitted to WHO, Sudan's Guinea Worm Eradication Program notes that 21 of the country's 26 states are endemic, with the most highly endemic states being Upper Nile, Eastern Equatoria, Bahr El-Jabal, Northern Bahr El-Ghazal, and Western Bahr El-Ghazal (Figure 2). The official tally for the period January - September 1994 is 25,607 cases, in 789 endemic villages, with a reporting rate of about 12%. More complete monthly reporting was scheduled to begin in the final quarter of 1994. Sudan now almost certainly has more cases of dracunculiasis remaining than any other country, including Nigeria (Table 1, p. 3).

Figure 2

**SUDAN GUINEA WORM ERADICATION PROGRAM
DISTRIBUTION OF 25,607 CASES OF DRACUNCULIASIS REPORTED: JAN. - SEPT. 1994**



A new national program coordinator, Dr. Nabil Aziz, was appointed in September. Approximately 55% of the known endemic villages have a trained village-based health worker, most of whom were deployed to the field in July-August, 1994. About 50,000 nylon filters have been distributed, although the precise percentage coverage of endemic villages or households by these is not yet known. Only 3% of endemic villages have a safe source of drinking water. Vector control and case containment measures have not yet begun. A detailed plan of action has been prepared for 1995. The head of state has agreed to preside at Sudan's first national conference on dracunculiasis, scheduled to be held on March 25, 1995.

Table 1

**Estimates of cases of dracunculiasis to be reported by country
and of numbers of endemic villages at end of 1994**

Country (cases reported in 1993)	Estimate of cases in 1994	Estimate of endemic villages at end of 1994
Sudan (2,984)	?????	900
Nigeria (75,752)	32,000	2,600
Niger (25,346)	20,000	800
Uganda (42,852)	11,000	1,000
Ghana (17,918)	8,000	1,200
Burkina Faso (8,281)	6,500	446
Mali (12,011)	6,000	600
Cote d'Ivoire (8,034)	5,000	228
Benin (16,344)	4,000	900
Togo (10,349)	3,500	500
Mauritania (4,408)	2,000	336
Ethiopia (1,120)	1,300	100
Chad (1,231)	600	100
India (755)	400	75
Senegal (815)	200	47
Yemen (0)	75	8
Kenya (35)	40	15
Cameroon (72)	30	18
Pakistan (2)	0	0
Total (228,299)	100,645	9,875

Figure 3 STATUS OF INTERVENTIONS: DECEMBER 1994

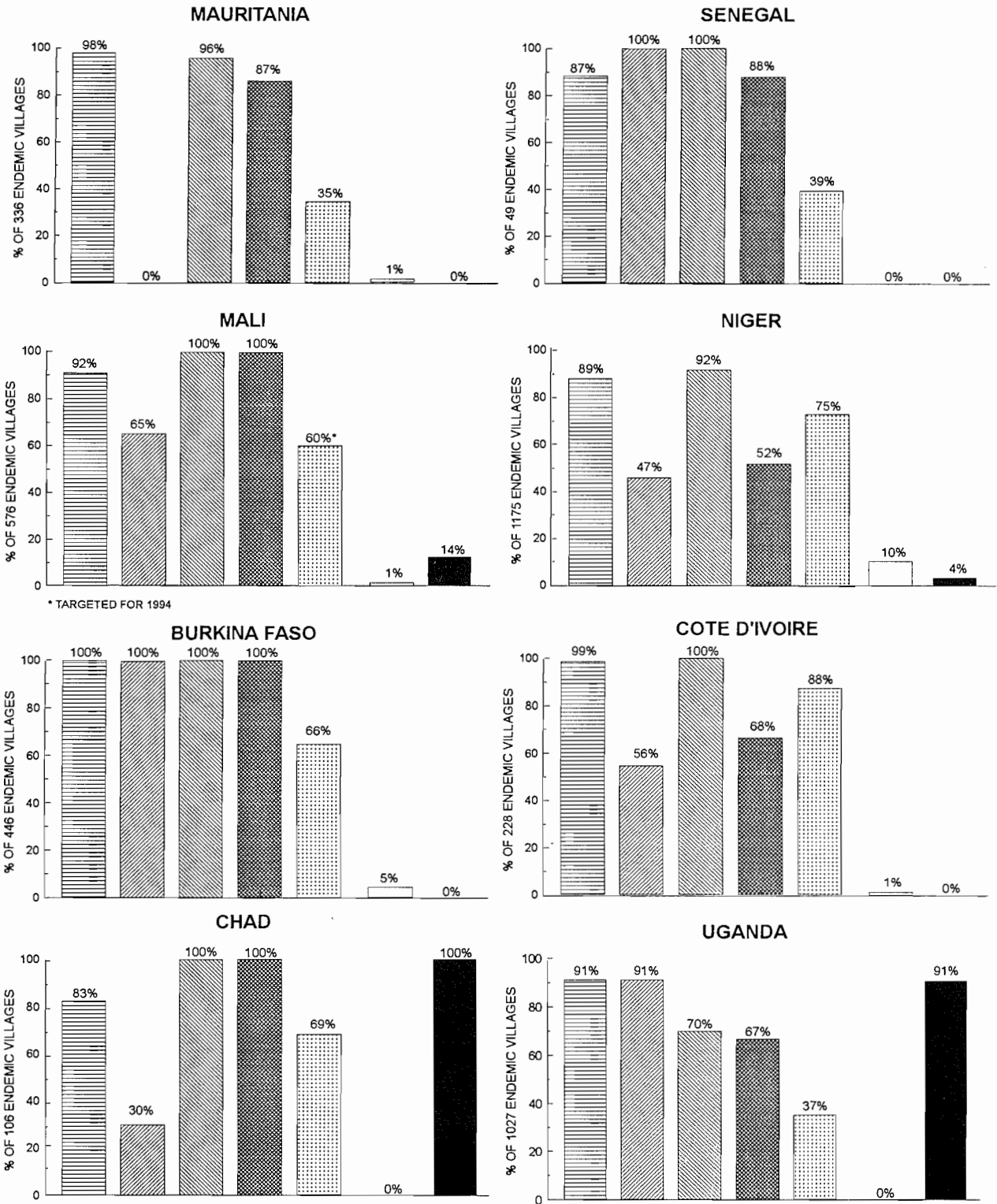
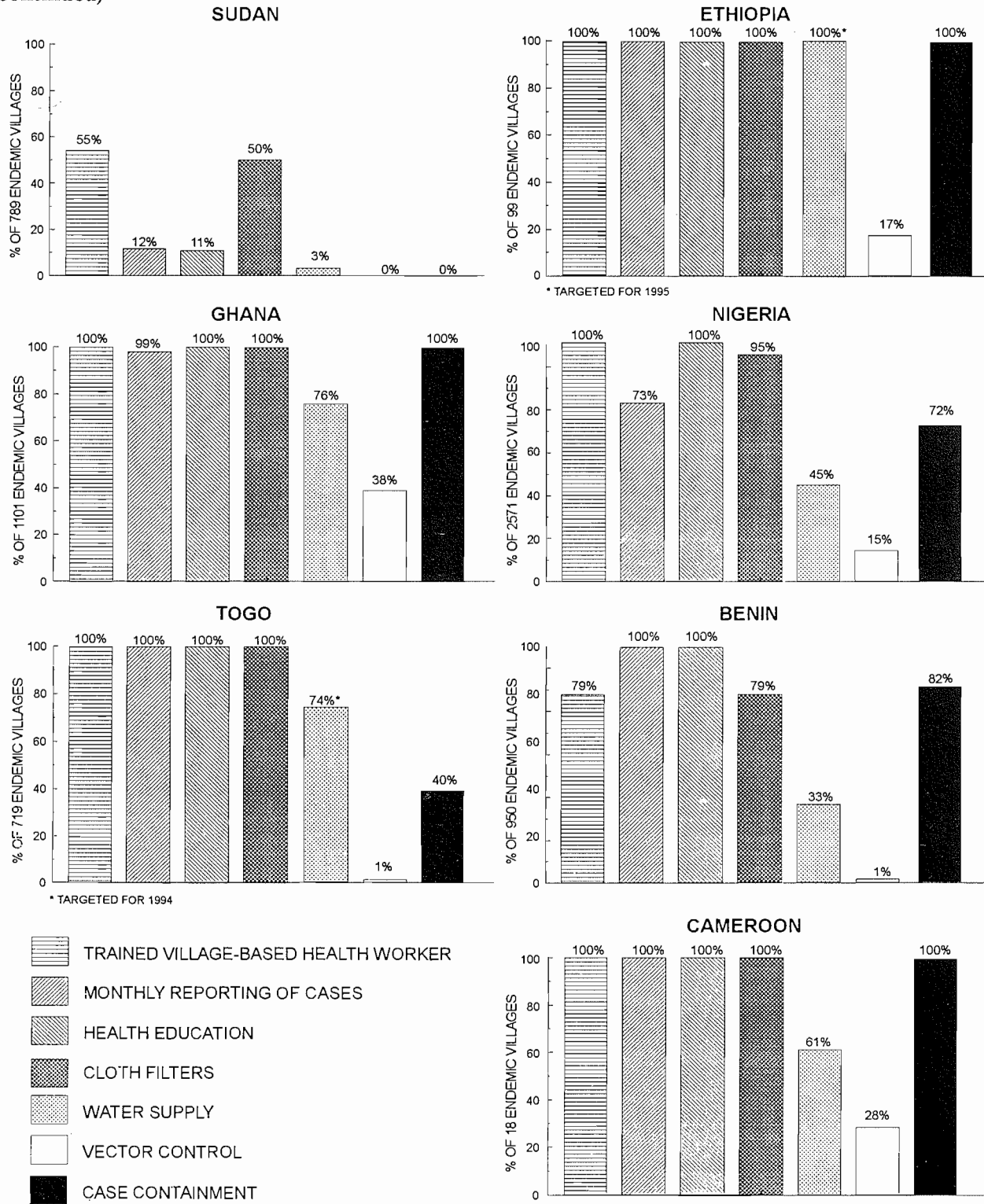
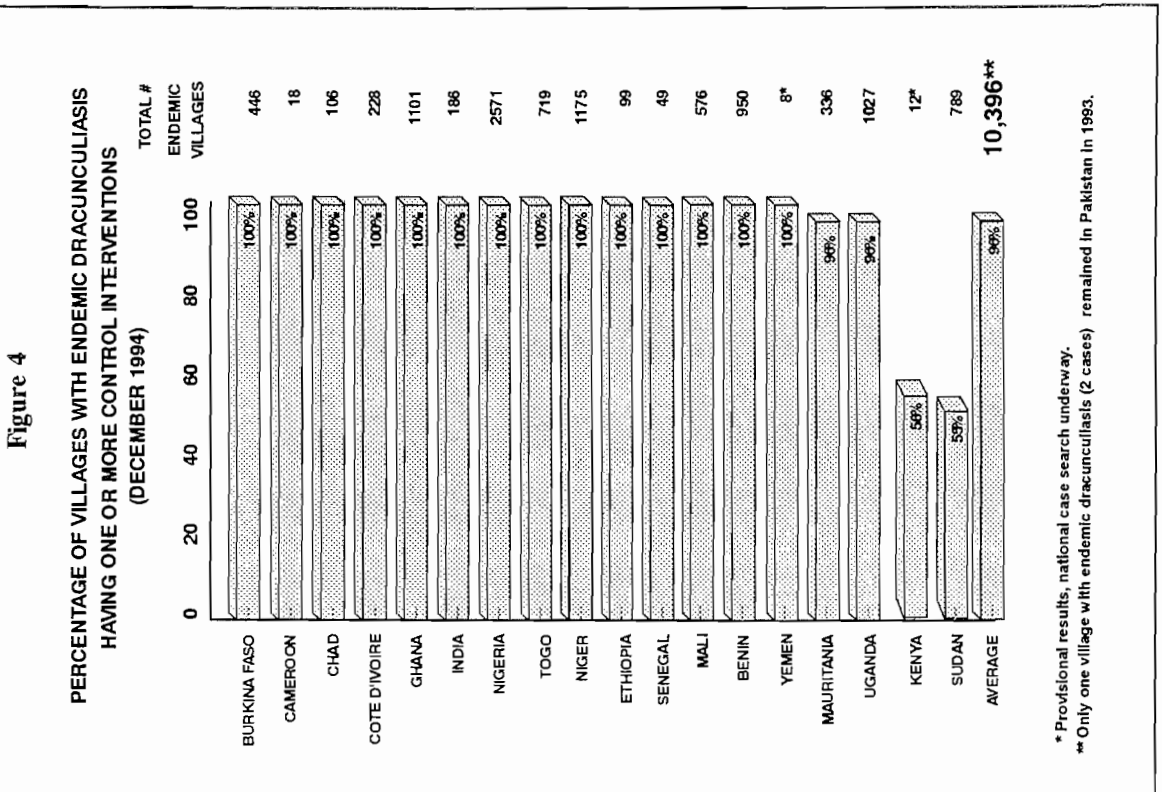
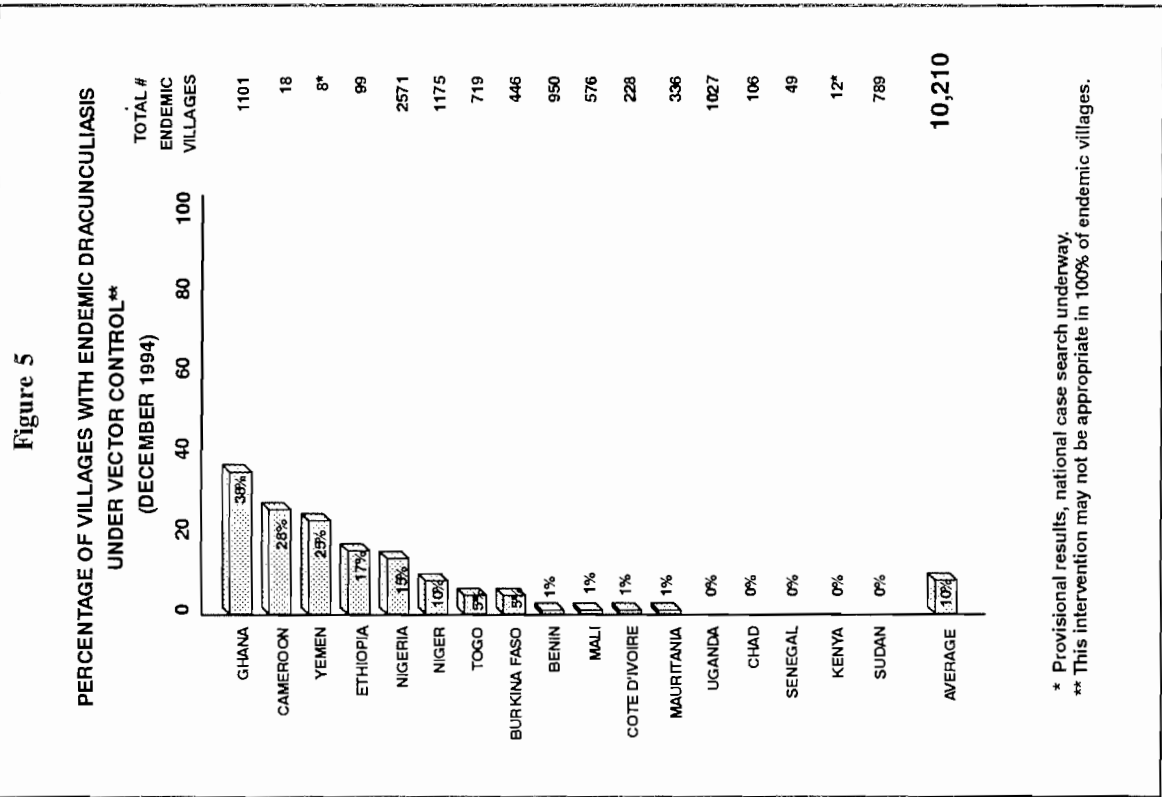


Figure 3 STATUS OF INTERVENTIONS: DECEMBER 1994
(continued)



1/09/95



YEMEN: OVER 70 CASES FOUND IN 8 VILLAGES

As a result of the persevering and energetic efforts of Dr. Abdul-Hakeem Al-Kohlani, the national program coordinator and newly designated director of Epidemiology and Disease Surveillance for the Ministry of Health, Yemen's search for cases has uncovered 74 cases of dracunculiasis in 8 endemic villages. Two of the endemic villages are located in Wesab District of Dhamar Governorate and the other 6 villages are in al-Sudah District of Sana'a Governorate, but several suspect areas still remain to be searched. Health education has been conducted in all 8 villages. In the first two villages where cases were found, Dr. Al-Kohlani and his colleagues immediately distributed cloth filters to all households, treated the wells with Abate (borrowed from the malaria program), trained village volunteers to record cases and maintain a village case register, provided medical care to all patients who had worms emerging, and arranged for engineers from the government's water supply agency to investigate whether the water supplies in these two villages could be improved. The only external help provided for the search and control measures in Yemen so far has been a technical consultation from CDC, a grant of \$2,000 from Health and Development International to permit the offering of rewards for reporting of cases, and a grant of \$10,000 and an emergency air shipment of 1,200 square yards of nylon filter material (donated by DuPont Corporation and Precision Fabrics Group) by Global 2000. More help is needed quickly, including \$23,000 to complete the case search. Dr. Trenton Ruebush of CDC will consult again with Dr. Al-Kohlani in Yemen in January. The next peak transmission season begins in April.

PAKISTAN: ZERO CASES IN 1994!

Pakistan has become the first of the countries which were endemic at the start of the global campaign to interrupt transmission of dracunculiasis for one year. No confirmed case was detected anywhere in the country in 1994, although several suspected cases and rumors were investigated and found not to be dracunculiasis. Only two cases were reported in Pakistan in 1993, one in June and the other in October. This program was the first to be assisted by Global 2000 of the Carter Center and by the Centers for Disease Control, beginning in November 1986. Of all the endemic countries, only India had a national Guinea Worm Eradication Program at that time. Several methods pioneered by the Pakistan program, such as use of village-based health workers, annual program reviews, and case containment, have been incorporated into all other Guinea Worm Eradication Programs. With assistance from WHO/EMRO, Pakistan's Guinea Worm Eradication Program continues to maintain surveillance activities in preparation for certification of eradication. The national program manager is Dr. Mohammad Azam.

CAMEROON: 30 CASES IN 1994, 8 OF THEM FROM NIGERIA

Cameroon has reported 30 cases in 18 villages during 1994, as compared to 72 cases in 19 villages in 1993. Eight of the 1994 cases were apparently imported from Nigeria's Borno State. Twenty of the first 29 cases (69%) reported were completely contained. Using additional funds provided by Health and Development International (HDI), the reward for reporting of cases will be increased from the equivalent of US\$4 in 1994 to \$30 in 1995. Dr. Anders Seim of HDI will visit Cameroon January 17-21, at the invitation of UNICEF/Cameroon. He will participate in the first joint meeting between national and district level Guinea worm eradication personnel from the adjoining endemic areas of Cameroon's Far North Province and Borno State, Nigeria.

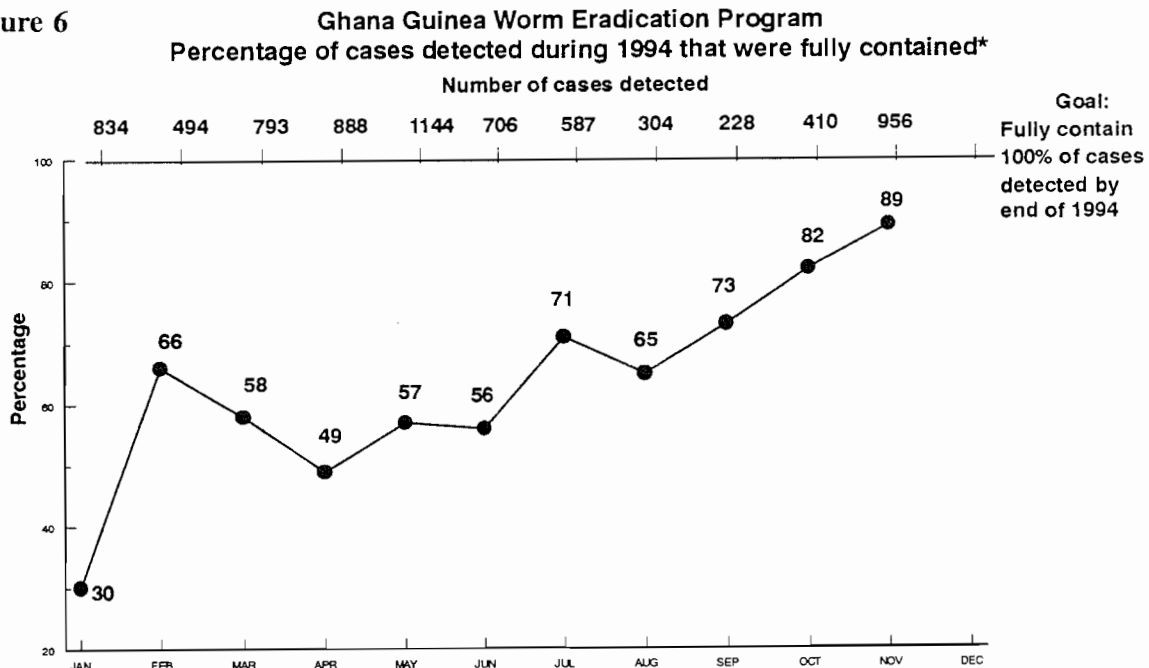
INDIA: 354 CASES THROUGH OCTOBER 1994

India has reported a provisional total of 354 cases of dracunculiasis through the end of October 1994 in 70 endemic villages. This is a reduction of 51% from the 725 cases reported during the first ten months of 1993, when 180 endemic villages were reported for the entire year (Figure 7, p. 11). The cases in 1994 were reported from 3 states: Rajasthan (331 cases, 63 endemic villages), Madhya Pradesh (13 cases, 5 villages), and Karnataka (10 cases, 2 villages). Dr. Ashok Kumar reports that most of the disease is now confined to the western, desert districts of Rajasthan, where the annual incidence occurs mainly during June-September. Four of the seven formerly endemic states are now free of dracunculiasis. The Sixth Independent Evaluation of the Guinea Worm Eradication Program in India is scheduled for January 1995.

GHANA: 89% OF CASES CONTAINED IN NOVEMBER

Ghana has reported a total of 7,354 cases through November 1994, in 1,101 villages. This is a reduction of 56.8% in the number of cases reported for January-November 1993 (Figure 7, p. 11). 98.8% of the 2,483 villages under surveillance reported on time for November. Overall, 4,487 (61%) of the cases reported in Ghana during the first 11 months of 1994 were contained, including 89% of the cases reported in November (Figure 6). Four of Ghana's 10 regions, all of which were endemic up to 1993, have reported no indigenous cases for at least four successive months (August-November) in 1994, and another region has had no indigenous case in October-November (Table 2). Seventy-six percent (76%) of the cases reported in November occurred in the Northern Region, which achieved "case containment" for 86% of its 730 cases that month. Mr. H.D. Mohan, the director of UNICHEM (Ghana) Ltd, a distributor of pharmaceuticals, has donated 200,000 cedis (about US\$2,000) to Ghana's GWEP, and has pledged a supply of medical supplies for bandaging wounds of Guinea worm patients as a part of case containment.

Figure 6



* A case is contained if the worm was extracted prior to emergence, or the individual received controlled immersion and/or occlusive bandaging until completely expelled, and 1) It has been verified that the case has not contaminated a drinking water source, and 2) the case has been verified within 7 days as contained by a supervisor from the zonal or district level or by a worm extractor.

Table 2

**GHANA GUINEA WORM ERADICATION PROGRAM
NUMBER OF CASES REPORTED BY REGION: 1994**

REGION	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
Western	16	17	3	8	18								62
Central *	77	75	55	36	60	8			21	7	61		401
Eastern	47	7	49	58	38	35	15	9	3	4	53		318
Greater Accra **		1	1										4
Volta	249	78	128	102	63	37	69	43	36	23	45		873
Ashanti	23	40	19	31	5	16	5	6	4				149
Brong Ahafo	53	46	61	34	11		21	16	23	23	67		355
Northern	364	205	457	560	900	583	445	227	138	351	730		4960
Upper West		9	4	53	45	18	23						152
Upper East ***	5	16	16	6	4	9	8						70
TOTAL ****	834	494	793	888	1,144	706	587	304	228	410	956	0	7,344

* Central Region reported 1 imported case in August.

** Greater Accra reported 1 imported case in July and 1 in September.

*** Upper East reported 2 imported cases in August, 2 in September, and 2 in October.

**** Totals include imported cases reported.

Denotes zero indigenous cases reported.

In the Volta Region, which is now the second most highly endemic region of the country, endemic villages have each formed a "water committee", to ensure that water collected for drinking is filtered. A barrel is placed at the pond, and the village's water is filtered into it each day. Individual villagers collect drinking water only from the barrel, not from the pond. The committee consists of the chief and 4 or 5 villagers, who are responsible for clearing weeds from around the water source, helping to measure the pond for Abate treatments, preventing persons with Guinea worm from entering the water, and assisting the village volunteer with other duties related to Guinea worm eradication.

BENIN: FEWER ENDEMIC VILLAGES, MORE CASE CONTAINMENT

Benin has reported a total of 3,421 cases of dracunculiasis through November 1994. A review of 1,010 formerly endemic villages ("localities") in three southern regions of the country (Atlantique, Mono, Oueme) has revealed that only 156 of them have reported one or more cases in 1994. A comparable reduction is expected as a result of similar reviews now being completed to determine the current levels of endemicity in the remaining departments of Zou, Atacora, and Borgou, which still are tracking 1,072, 187, and 37 presumed endemic villages ("localities"), respectively.

All village-based health workers (approximately 1,800) are scheduled to complete training in case containment by mid-January 1995. 82% of Benin's village-based health workers were trained in case containment by the end of December 1994. Only about half of the high risk households had received cloth filters as of November. Case containment forms, health education materials, bandages, T-shirts, and Faso Fani cloth with the Guinea worm logo and message are also being distributed urgently to the affected villages. Vector control began with the treatment of contaminated water sources in a small, highly endemic village in Mono Department on December 14.

UGANDA: CASES DOWN, CASE CONTAINMENT UP

Uganda has reported a provisional total of 9,973 cases, in 1,027 endemic villages, through the end of November 1994 (Table 3, p. 4), which is a reduction of 76.2% from the 41,901 cases reported in the first 11 months of 1993 (Figure 7, p. 11). In a determined, all-out effort to prepare for 1995, in November and December the program trained and supplied village-based health workers in over 90% of the endemic villages for case containment, with the assistance of three consultants provided by CDC and Global 2000: Mr. Larry Dodd, Dr. Karl Kappus, and Mr. David Nelson, and with additional support provided by UNICEF/Uganda. Use of Abate for vector control will begin in January. Uganda will mark its second Guinea Worm Eradication Day in June 1995. In December, Uganda cross-notified Sudan, through WHO, of 8 persons with dracunculiasis from a village (Lawiro) in southern Sudan who were detected in Atiak Sub-district of Gulu District.

NIGERIA: MORE CASE CONTAINMENT AND SOCIAL MOBILIZATION

As of the end of October, Nigeria's NIGEP reported 24,955 cases of dracunculiasis, in 2,571 endemic villages--a reduction of 65.0% from the 71,401 cases that were reported for the first 10 months of 1993 (Figure 7, p. 11). 73% of endemic villages reported on time for the month of October. At least 72% of currently endemic villages were under case containment at the end of December 1994. The 2,571 villages that have reported 1 or more cases from January through October 1994 represent a substantial reduction from the 4,593 villages that were still considered to be endemic in 1993, as well as from the 3,934 villages under surveillance during 1994. 7 of the 30 states and Federal Capital Territory (Abuja, Akwa Ibom, Anambra, Edo, Kogi, Kaduna, and Lagos) have reported zero cases through October.

The National Task Force on Guinea Worm Eradication met in Sokoto on November 17-18. Also attending were representatives from 45 of the most highly endemic LGAs, as well as the Honorable Federal Minister of Health and Human Services, Dr. Dalhatu Sarki Tafida. Special support for the Task Force meeting was provided by UNICEF/Nigeria, which will also provide approximately 11 million naira for the program in 1995 (official rate of exchange: 22 naira = US\$1). Two consultants provided by CDC and Global 2000, Mr. Steve Fitzgerald and Mr. Roger Follas, arrived in Nigeria in October for one-month and 2-month assignments, respectively. Both assisted in the intensification of control measures and case containment procedures in Enugu State.

An intensive six-month public awareness campaign is scheduled to begin in January 1995, using printed news media, radio, and television. The awareness campaign will include monthly press releases on various achievements and milestones of the program, as well as using the annual celebration of Nigeria's Guinea Worm Eradication Day on March 20, 1995 for a national "re-launching" of the eradication program. Jingles have been prepared for broadcast over radio in Hausa, Yoruba, Ibo, and Pidgin.

In November 1994, a child seen in Abakaliki was reported to have had 19 Guinea worms to have emerged successively over the past 11 months, so that he had been continually affected since about Christmas (December 25) 1993.

Figure 7 NUMBER OF CASES OF DRACUNCULIASIS REPORTED IN NIGERIA, UGANDA, GHANA, BURKINA FASO, TOGO, AND INDIA: 1993 - 1994

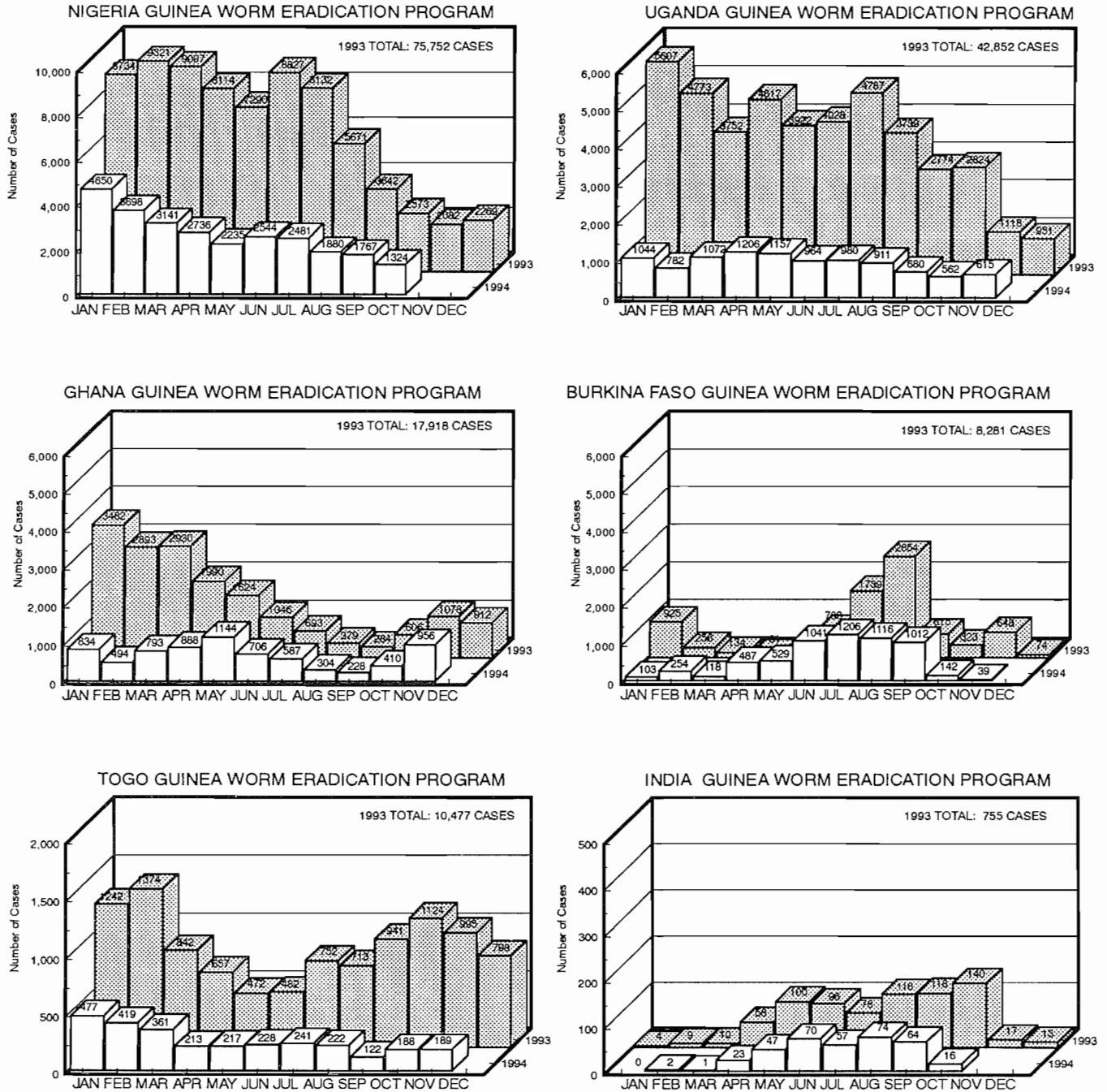


Table 3

MONTHLY REPORTING OF CASES OF DRACUNCULIASIS IN 1994
(COUNTRIES ARRANGED IN DECENDING ORDER OF INCIDENCE DURING 1993)

Updated: January 5, 1995

COUNTRY	ANNUAL INCIDENCE IN 1993	NUMBER OF CASES REPORTED DURING 1994												YEAR TO DATE TOTAL*			
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC				
NIGERIA	75,752	4650	3698	3141	2736	2235	2544	2481	1880	1767	1324						24955
UGANDA	42,852	1044	782	1072	1206	1157	964	980	911	680	562	615					9973
NIGER	25,346			306	639	2579	706	4953	6234	2732	1592	284					19319
GHANA	17,918	834	494	793	888	1144	706	587	304	228	410	956					7344
BENIN	16,334	467	499	304	181	118	90	72	96	231	577	786					3421
MALI	12,011	38	153	310	288	443	788	1052	1034	571	423	127					5227
TOGO	10,349	477	419	361	213	217	228	241	222	122	188	189					2877
BURKINA FASO	8,281	103	254	118	487	529	1041	1206	1116	1012	142	39					6047
COTE D'IVOIRE	8,034	538	582	452	773	517	615	308	140	206	60						4191
MAURITANIA	4,408	0	0				243*										243
SUDAN	2,984		136		169						25302*						25607
CHAD	1,231	67	5	0	1	3	124	89	37	100	103						529
ETHIOPIA	1,120	1	40	28	128	95	266	210	153	100	102	94					1217
SENEGAL	815	0	0	0	0	2	17	42	55	54	1						171
INDIA	755	0	2	1	23	47	70	57	74	64	16						354
CAMEROON	72	0	0	0	1	5	7	4	5	7	0	0	1				30
KENYA	35	3	20	0	0	2	6	0	0								31
PAKISTAN	2	0	0	0	0	0	0	0	0	0	0	0					0
YEMEN	0																74
TOTAL*	228,299	8222	7084	6580	7400	7153	10288	12282	12261	7874	30802	3142	23				113111

* NATIONAL CASE SEARCH UNDERWAY
• PROVISIONAL

BURKINA FASO: CASES AND ENDEMIC VILLAGES REDUCED

A validation survey conducted in a sample of endemic and non-endemic villages in October has confirmed, in general, the essential accuracy of the sharp reduction in endemic villages and cases reported since the national case search was completed in 1990. A total of 446 endemic villages reported at least one case through the end of September 1994, with a provisional total of 6,047 cases reported through November 1994. This is a reduction of 26.3% from the 8,207 cases reported in the first 11 months of 1993 (Figure 7, p. 11). The validation survey was assisted by ITECH. Materials for medical management of cases of dracunculiasis have been distributed in most endemic areas, but case containment has not yet begun. 66% of endemic villages have at least one source of drinking water now, and all of the remainder are scheduled to have a safe source by the end of 1995. Dr. Roger Hien, national program coordinator, has been promoted to Director-General of Health. He is expected to continue to oversee the activities of Burkina's Guinea Worm Eradication Program after a new national program coordinator is named. Congratulations to Dr. Hien!

IN BRIEF:

Central African Republic. A physician in a UNHCR-funded refugee camp at Mboki, in Region V, reports having seen two cases of dracunculiasis among Sudanese refugees there in the last four months of 1994.

Chad. According to a preliminary report, Chad has had at least 539 cases of dracunculiasis during 1994, with 80 villages reporting. Another 21 villages are believed to have had cases in 1994, in addition to the 106 endemic villages enumerated in the case search, giving a total of 127 villages now under surveillance. Of the 80 villages for which reports are available so far, 16 had no cases in 1994, including all four previously endemic villages in Chari Baguirmi Prefecture.

Côte d'Ivoire. Former Malian head of state General Amadou Toumani Toure visited Cote d'Ivoire in December, primarily for reasons other than dracunculiasis. While there, however, he met with the Ivoirian president, the Honorable Henry Konan Bedie, to discuss the Guinea Worm Eradication Program.

Ethiopia. As indicated in Figure 3, p. 5, case containment is underway in all known endemic villages, all of which are also scheduled to receive a source of safe drinking water by the end of 1995. At the end of November, 99 villages had had one or more cases in 1994. The first Quarterly Review Meeting for the Dracunculiasis Eradication Program was held in Addis Ababa on December 14.

Kenya. The case search has been completed in all suspected areas except Kitui District, where it will be completed in January. Provisional results indicate that very few cases have occurred in Kenya in 1994, including some cases imported from Sudan and possibly Uganda. 7 cases reported in five villages of Trans Nzoia were not confirmed, leaving known endemic areas only in northern Turkana (seven nomadic villages) and West Pokot (five villages). Training for interventions in West Pokot is scheduled for January.

Mali. The Japan International Cooperation Agency (JICA) delivered 50 motorcycles to the Guinea Worm Eradication Program in December. In November, the water supply project, funded by the

agency (see Guinea Worm Wrap-Up #45), began prospecting in endemic areas of four regions. Village-level training for case containment will be conducted in Mopti and Kayes Regions in January.

Niger. 19,319 cases were provisionally reported through November 1994, making Niger the third most highly endemic country remaining, after Sudan and Nigeria. An end-of-year evaluation revealed specific inadequacies in supervision, surveillance, and supply of materials, including filters. Corrective steps are being taken in the context of the need to extend implementation of the case containment strategy rapidly early in 1995.

Senegal. Senegal has reported a total of 171 cases, in 49 endemic villages, for 1994.

PAHO BEGINS CERTIFICATION PROCESS IN THE AMERICAS



At the meeting of the Inter-Agency Coordinating Group for Guinea Worm Eradication, which was held at World Bank headquarters in Washington, D.C. on December 7, Dr. Fernando A. Beltran, representing the Pan American Health Organization (the regional office of WHO for the Americas), reported that preparations have begun for certifying the absence of dracunculiasis in the western hemisphere. Thirteen countries of the Americas are known to have reported cases of dracunculiasis over a century ago, often in slaves imported from West Africa. PAHO will conduct an extensive review of the medical literature in selected libraries in Brazil, Cuba, and Mexico, to supplement previous bibliographic reviews that were conducted electronically by the WHO Collaborating Center for Research, Training, and Eradication of Dracunculiasis at the Centers for Disease Control and Prevention (CDC), and by Prof. Ralph Muller, formerly of the Commonwealth Institute of Parasitology. PAHO officials, who will send official notes to several countries, met informally in December with PAHO country representatives from Brazil and Cuba and with Dr. Trenton Ruebush of CDC on this issue. PAHO plans to present the results of the official and unofficial inquiries at the annual meeting of ministers of health of the Americas in September 1995. [It is hoped that no "surprises", such as the recent discovery of continued transmission in Yemen, await investigators in the Americas or in other formerly endemic countries of West Asia.]

DEFINITIONS

With the increased intensity of case containment and approaching eradication, more attention must be paid to the correct definitions of a case of dracunculiasis and of an endemic village.

Case of dracunculiasis (Guinea worm disease). The case definition adopted at the Second African Regional Conference on Dracunculiasis Eradication at Accra in March 1988 and which is still recommended by WHO and others for purposes of surveillance: "An individual exhibiting or having a recent (about one year) history of skin lesion with emergence of a guineaworm". Thus, individual patients are counted, not number of worms. A person with several worms emerging in a single Guinea worm season or year should be considered as one case. Obviously, each worm that emerges must be contained.

Endemic village. An endemic village is a collection of residences, usually sharing a single chief, where one or more case(s) of dracunculiasis has occurred in the past 12 months. At this stage of the

eradication effort (January 1995), it is recommended that national Guinea Worm Eradication Programs maintain surveillance and all appropriate interventions (e.g., cloth filters, case containment, Abate) by means of a trained village-based health worker in each village known to have had at least one case of the disease during 1994, plus any other villages which are found to have a case during 1995. All other "at risk" villages known to have had a case recently, but before 1994, should be kept under surveillance if possible, but without interventions (except perhaps social mobilization), unless a current case occurs.

As programs progress in 1995, priority in monitoring implementation should be given to tracking the following key indicators at least monthly: the cumulative number of villages which will have had one or more case(s) during calendar year 1995; the number of cases reported; the percentage of endemic villages reporting; the proportion of cases that were successfully contained, according to defined criteria (see Case containment strategy for eradication of dracunculiasis in Africa); and the proportion of endemic villages where vector control (Abate) is being used.

RESEARCH: TESTS SUGGEST THAT "STRAW" FILTERS ARE EFFECTIVE

A practical device for obtaining drinking water free of Guinea worms is a cylinder (a "straw"), fitted with a nylon cloth (100 micron mesh) filter at one end, through which an individual sucks to drink filtered water. These straw filters can be made from plastic tubing or from natural reeds, are easily portable, ideally suited for use by individuals, and require a minimal amount of filter material. However, the need to apply suction to raise the column of water through the filter cloth creates the concern that users might ingest copepod stages capable of carrying 3rd-stage infective larvae of *Dracunculus medinensis* that may be sucked through the filter cloth. Although introduced in Mauritania and now increasingly adopted in some other endemic countries, the efficacy of these filters has not been evaluated until now.

Preliminary tests at the U.S. Centers for Disease Control and Prevention (CDC, Atlanta, USA) suggest that straw filters do exclude the copepod stages that can potentially transmit dracunculiasis. Dr. James Sullivan and Mr. Henry Bishop conducted experiments with a straw filter provided by the Mauritania Dracunculiasis Eradication Program, consisting of a PVC tube (length 13 cm, inside diameter 1.3 cm) covered at one end by a single layer (diameter 6 cm) of nylon filter cloth (Precision Fabrics, Inc. and DuPont de Nemours Co.) held in place by a tightly fitting PVC ring. A mechanical aspiration of 60 mm Hg (corresponding to the pressure generated by human buccal suction through the tube) was applied to the mouth end, while its filter end was dipped into a colony of copepods in 1000 ml of water. A volume of 900 ml was aspirated through the straw filter into a flask, and the contents of the 900 ml filtered water and the 100 ml residue were examined with a microscope. In two experiments with the copepod species *Acanthocyclops vernalis*, all the late copepod stages (adults and copepodid stages 4 and 5) were excluded by the filter. The filtrate contained only younger copepod stages (nauplii and stage 1-3 copepodids) which, due to their small size, are essentially incapable of transmitting infective *Dracunculus* larvae. An additional experiment with another copepod species, *Mesocyclops aspericornis*, using a similar filter provided by the Uganda Dracunculiasis Eradication Program, gave similar results. These preliminary results are consistent with those of previous experiments which evaluated the efficacy of gravity filtration through the 100 micron mesh nylon cloth filter (Sullivan JJ, Long EG. Synthetic fibre filters for preventing dracunculiasis. *Trans Roy Soc Trop Med Hyg*, 82:465-466, 1988). Additional quantitative experiments are currently underway.

MEETINGS

- The 1994 Program Review for the programs of Burkina Faso, Cote d'Ivoire, Mali, Mauritania, and Senegal was held in Dakar, Senegal, on November 14-18. Former Malian head of state General Amadou Toumani Toure attended this Program Review, as well as the previous one held in N'Djamena, Chad in October. Reports of this and the two previous 1994 Program Reviews are available in English and French from Global 2000.
- The XXVIIIth Meeting of the Interagency Group for Guinea Worm Eradication met at the headquarters of the World Bank in Washington, under the chairmanship of Dr. Letitia Obeng, on December 7. Attending for the first time were Drs. Ralph Henderson, assistant director-general of WHO, and Kazem Behbehani, the newly-appointed director of WHO's Control of Tropical Diseases Division (CTD). Dr. Behbehani announced WHO's intention to appoint in 1995 a Commission for the Certification of Dracunculiasis Eradication.
- At a meeting with national Guinea worm program managers in early December at OCCGE headquarters, participants decided that the annual common National Guinea Worm Eradication Day for the affected French-speaking countries will be held on April 25, 1995.
- It is expected that the Third Meeting of National Program Managers of Guinea Worm Eradication Programs will be held in Lome, Togo on April 19-21, 1995.

RECENT PUBLICATIONS



Hours M, Cairncross S, 1994. Long-term disability due to guinea worm disease. *Trans Roy Soc Trop Med Hyg*, 88:559-560.

Watts S, 1994. Seasonality and dracunculiasis transmission: the relevance for global eradication. *Health Policy and Planning*, 9:279-287.

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