




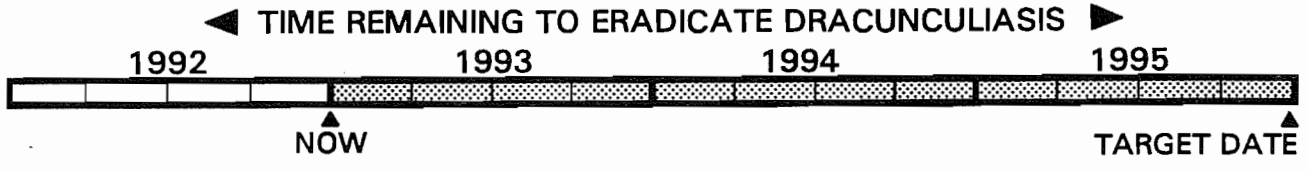
# Memorandum

Date January 20, 1993

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

Subject GUINEA WORM WRAP UP #38

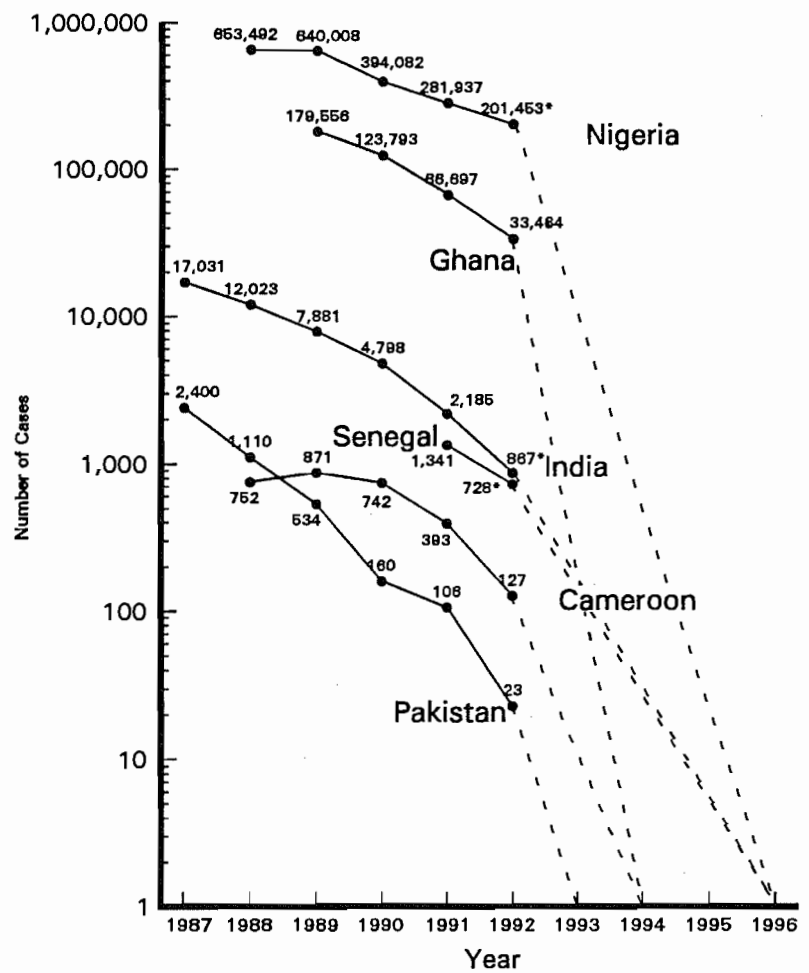
To Addressees



### EDITORIAL: THREE YEARS TO DECEMBER 1995

As we enter the final three years before the target date of December 1995 for eradicating dracunculiasis, it is appropriate to reassess the state of the global campaign. Progress is manifest in the significant reductions in incidence that are now evident in Cameroon, Ghana, India, Nigeria, and Pakistan (figure 1) especially. The dramatic decline in formerly heavily-endemic Ghana (figure 3), as well as its documentation by nationwide monthly reporting, is particularly remarkable. Nigeria's transition to a similar system of intervention and monthly reporting by trained village-based health workers, the completion of Uganda's search for cases (now the second-most highly endemic country known), former U.S. President Carter's visit in September to five endemic francophone countries, the

Fig. 1. DECLINE OF DRACUNCULIASIS CASES: 1987-1992



\* Provisional total  
Dotted lines denote projected decline.

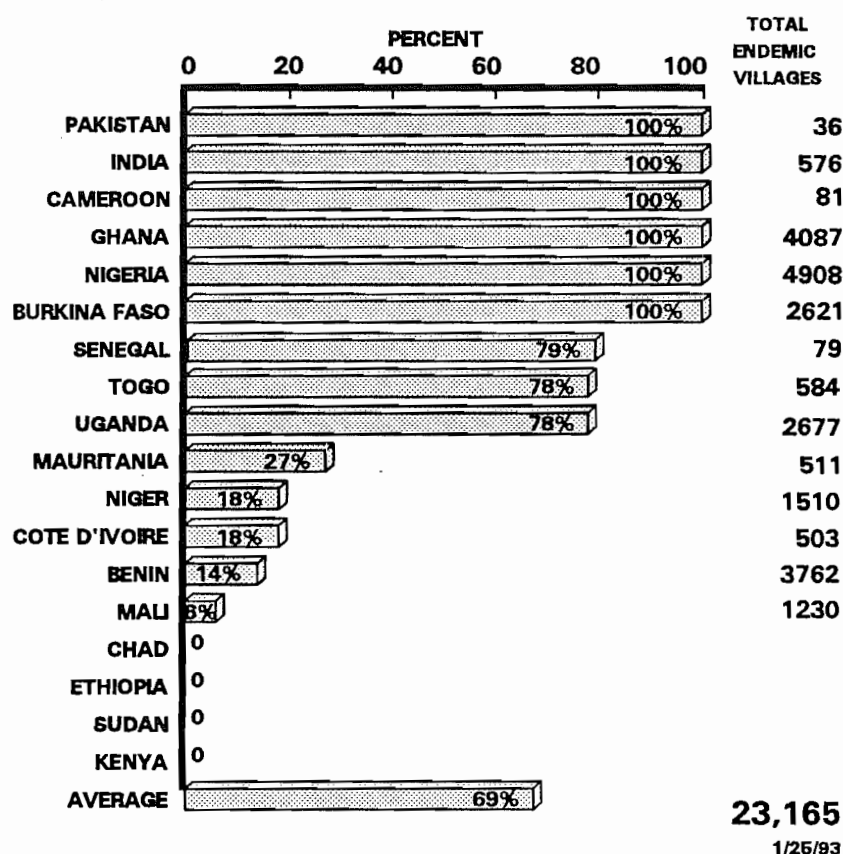
entry of former Malian head of state General A.T. Toure into the eradication battle, last April's Guinea Worm Summit and the OCCGE-wide National Guinea Worm Eradication Day on April 30, additional support provided to some countries by UNICEF, establishment of the new Interagency Technical Team by WHO and UNICEF at Ouagadougou, the new documentary film ("Guinea Worm: the End of the Road"), manufacture of a special "Guinea Worm cloth" by the Burkinabe firm Faso Fani, and the conduct of Program Reviews of all endemic francophone countries for the first time over the past year are all causes for satisfaction.

While most of the known endemic villages are now engaged in control measures, too many known endemic villages are not yet doing so (figure 2). Searches are still underway in Chad, Ethiopia, and Sudan; and Kenya has still not yet begun to search its known and suspected endemic areas. Mali is off to a particularly fast start of its program with the new support of that government (see below), and Togo's program made significant progress in 1992.

Several priority challenges for 1993 can be identified. First priority must be to extend village-based health education and community mobilization, and monthly surveillance, to all known endemic villages immediately. For Burkina Faso, Chad, Mali, Mauritania, and Niger, this means before their next peak transmission season begins in May/June, 1993. The second annual celebration of a common national Guinea Worm Eradication Day by the eight countries of the OCCGE on April 30, 1993 will be a good opportunity to greatly increase public awareness about the campaign in those countries. Massive publicizing of national efforts are needed in all endemic countries, comparable to what has been done already in Ghana and Nigeria.

Pakistan should have seen its last case in 1992. Cameroon, India, and Senegal should be able to interrupt transmission in 1993. In these countries and in the lesser endemic parts of all other endemic countries, a "case containment" approach to rapidly eliminate cases of the disease remaining in those areas is now indicated.

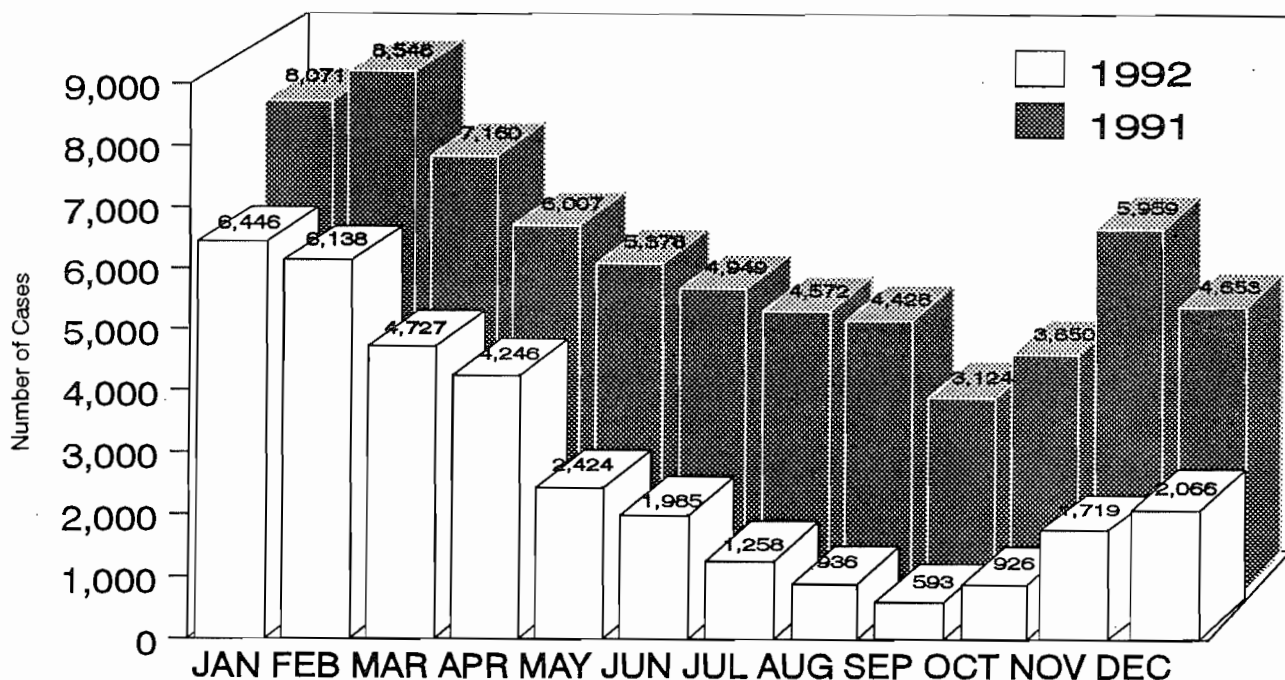
Fig. 2. PERCENTAGE OF VILLAGES WITH ENDEMIC DRACUNCULIASIS HAVING ONE OR MORE CONTROL INTERVENTIONS (DECEMBER 31, 1992)



**GHANA: 70% DECLINES IN INCIDENCE CONTINUE**

Through the end of December 1992, Ghana reported a cumulative total of 33,464 cases of dracunculiasis in 3,185 endemic villages. This compares to 66,697 cases and 3,718 endemic villages in 1991 (see figure 3). The percentage declines in monthly cases from July to December 1992, as compared to the same month the year before, were: 72.5%, 78.9%, 81.0%, 75.9%, 71.2%, and 55.6%. The percent endemic villages that reported on time in August-December were: 93.3%, 93.8%, 94.5%, 97%, and 97.2%. During 1992, over 33,000 cases of dracunculiasis were prevented.

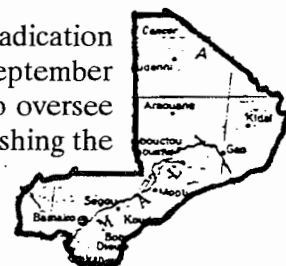
**Fig. 3. GHANA GUINEA WORM ERADICATION PROGRAM  
NUMBER OF CASES OF DRACUNCULIASIS REPORTED BY MONTH**



On December 4, Mr. William Marfo, the Regional Guinea Worm Coordinator for Brong Ahafo Region, was awarded one of Ghana's National Farmer's Day Awards, in recognition of his program's contributions to the improvement of agricultural production.

**MALI ACCELERATES ERADICATION PROGRAM**

The Government of Mali is moving swiftly to accelerate its Guinea Worm Eradication Program, in follow up to its decision during the visit of President Carter in September (see previous issue) for former head of state General A. Toumani Toure to oversee its campaign. On October 7, the government issued a decree officially establishing the national Intersectoral Committee for Eradication of Guinea Worm and naming General Toure as the president of the Intersectoral Committee. The committee held its first meeting under General Toure's leadership in



Bamako on October 12 in a blaze of coverage by the mass media. Attending were at least four ministers and other representatives of the ministries of health; hydraulics, mines, and energy; rural development; national education; communication; territorial administration and security; and economy, finance, and planning. Also present were representatives of all major donor organizations in Mali, the national director-general of health, and the National Program Coordinator Dr. Issa Degoga, who described the current status of the program. In his remarks at the inaugural meeting, General Toure indicated his support for Dr. Degoga, and said that "As a military officer, it is a pleasure for me to be involved in planning the strategy and tactics of a campaign designed not to kill people, but to heal them."

From November 30 to December 4, the Malian GWEP convened a two-day National Conference on Dracunculiasis to discuss results of the national search, followed immediately by a three-day workshop in which medical, military, and political leaders from each of the four regions searched so far (Segou, Kayes, Mopti, Koulikoro) prepared regional plans of action. Both national meetings were held under the presidency of General Toure, who spoke at opening and closing ceremonies. The Intersectoral Committee met again on January 8, 1993. Sikasso Region is scheduled to be searched in January, and the remaining two regions (Gao and Timbuktu) will also be searched early in 1993. The program is preparing an all-out assault on Guinea worm in the country in 1993, including extensive public mobilization and health education (which has already begun), use of nylon cloth filters, targeting of rural water supplies, monthly surveillance by village-based health workers, and vector control in selected areas. UNICEF, USAID, Peace Corps, and Global 2000 have each agreed to provide new or increased assistance.

#### **GENERAL TOURE VISITS USA FOR BRIEFINGS ON GUINEA WORM, & ABIDJIAN**

General and Mrs. A. T. Toure of Mali visited Atlanta, New York, and Washington November 8-20, 1992 for briefings on dracunculiasis and the eradication campaign, at the invitation of Global 2000 chairman former U.S. President Jimmy Carter. The briefings were conducted at Global 2000 headquarters of the Carter Center by Global 2000 and the WHO Collaborating Center for Research, Training and Eradication of Dracunculiasis at the Centers for Disease Control and Prevention (CDC). General Toure also met with Dr. D. Barakamfitye of AFRO/WHO and with the Consul General of Japan while in Atlanta. In New York, he visited headquarters offices of UNDP (where he met with UNDP Assistant Administrator and Regional Director for Africa Ellen Johnson-Sirleaf), UNICEF, and C.A.R.E. In Washington, he visited officials at the World Bank, the Agency for International Development, and Peace Corps. General Toure was interviewed by Cable News Network International (CNN) while in Washington and, on November 20, General Toure and Global 2000 senior consultant Dr. Donald Hopkins were featured guests in a televised one-hour World Net broadcast in which they answered questions from participants in Benin, Cote d'Ivoire, and Mali. (Dr. Hopkins was the guest in a similar World Net broadcast on October 16 with participants from Burkina Faso, Mali, Niger, and Togo, in follow-up to President Carter's visit to those countries in September 1992.)

In January 1993, General Toure attended the Program Review in Abidjian, Cote d'Ivoire (see below) where he also met with President Felix Houphouet-Boigny and his cabinet to discuss dracunculiasis eradication. General Toure's visit to Abidjian was supported by Global 2000.

**PROGRAM REVIEWS: ENTEBBE, BAMAKO, OUGADOUGOU, & ABIDJAN**

Working in collaboration with WHO, UNICEF, and UNDP, the WHO Collaborating Center for Research, Training and Eradication of Dracunculiasis at the Centers for Disease Control and Prevention (CDC) and Global 2000 have completed the first annual series of Program Reviews in October 1992-January 1993. The purposes of these reviews, the first of which was held in Atlanta for the Ghana and Nigeria programs in July 1991 and in Cotonou for Togo and Benin in February 1992, are to review the current status of dracunculiasis and of the eradication program in each country; to identify impediments and problems in program implementation; to suggest ways to increase the effectiveness of the programs; and to promote collaboration among the programs represented. Such reviews will be held annually until 1995.

The 1992 Program Review for the Guinea Worm Eradication Programs of Ghana, Nigeria, and Uganda was held in Entebbe, Uganda on 28-31 October. This was the second review for Ghana and Nigeria and the first for Uganda. Brief reports were also made at this meeting by the national program coordinators from Ethiopia and Sudan, whose attendance was supported by UNICEF. The first Program Reviews for the GWEPs of Mali, Mauritania, and Senegal was held in Bamako, Mali on 3-5 December, and for Burkina Faso, Cameroon, and Niger in Ouagadougou, Burkina Faso on 7-9 December. These two reviews were arranged by the joint WHO/UNICEF Interagency Technical Assistance Team (ITECH), with the help of CDC, Global 2000, and UNDP. A representative of the OCCGE participated in the two reviews held in Bamako and Ouagadougou. The Program Review for Benin, Chad, Cote d'Ivoire, and Togo was held in Abidjan, Cote d'Ivoire on January 12-15, 1993. This was the first such review for the GWEPs of Chad and Cote d'Ivoire. Reports of each of these Reviews are available in English and French from Global 2000, thanks to funding provided by UNDP.

**PAKISTAN: CASE CONTAINMENT STATUS FOR ALL 23 CASES REPORTED IN 1992**

Guinea worm eradicators have a minimum of 10 days after an adult worm emerges from a patient in which to prevent transmission to another person. That is the minimal period required for the larvae to enter fresh water, be ingested by a copepod (Cyclops), and mature to the stage which is infective to humans. Either delayed reporting of an emergent worm or delays in implementation of effective control measures can permit such continued transmission. The following line listing of the cases found in Pakistan's case containment operations in 1992 illustrate the timing of reporting and control measures by that program. Their ultimate success can only be judged by whether any case occurs in 1993.

A summary table on the status of case containment for dracunculiasis in Pakistan in 1992 is given on the following pages. The names of the patients have been deleted from this summary.

PAKISTAN GUINEA WORM ERADICATION PROGRAMME  
STATUS OF CASE CONTAINMENT: SUMMARY TABLE FOR REGIONAL DIRECTORS

SERIAL NO.	AGE/SEX	VILLAGE	PROVINCE	DATE				PROBABLE SOURCE OF INFECTION (NAME OF THIS VILLAGE, OTHER VILLAGE, OTHER COUNTRY)	AMOUNT OF REWARD GIVEN (RUPEES)	CONTROL MEASURES		
				WORM EMERGED	VILLAGE HEALTH WORKER BEGAN CONTROL	CASE REPORTED TO REGIONAL MGR.	COMPLETE EMERGENCE OR EXTRACTION			ALL HOUSEHOLDS GIVEN FILTERS AND HEALTH ED.	DATE ABATE APPLIED	PROVISION OF SAFE WATER
1	23/F	GANJU	NWFP	23 JUNE 92	24 JUNE 92	27 JUNE 92	3 AUG. 92	GANJU	1,000	YES	29 JUNE 92	YES
2	18/M	J.MACHIAN	NWFP	23 JUNE 92	24 JUNE 92	27 JUNE 92	2 AUG. 92	MACHIAN/GANJU	1,000	YES	26 JUNE 92	?
3	23/M	GANJU	NWFP	1 JULY 92	1 JULY 92	3 JULY 92	2 SEPT. 92	GANJU	1,000	YES	29 JUNE 92	YES
4	20/M	SARA GARA	NWFP	1 JULY 92	1 JULY 92	4 JULY 92	18 JULY 92	SARA GARA	2,000	YES	25 JUNE 92	?
5	12/F	GANJU	NWFP	6 JULY 92	6 JULY 92	6 JULY 92	10 AUG. 92	GANJU	1,000	YES	29 JUNE 92	YES
6	30/M	GANJU	NWFP	16 JULY 92	16 JULY 92	16 JULY 92	18 JULY 92	GANJU	2,000	YES	29 JUNE 92	YES
7	40/M	GANJU	NWFP	27 JULY 92	27 JULY 92	27 JULY 92	27 JULY 92	GANJU	2,000	YES	29 JUNE 92	YES
8	17/F	GANJU	NWFP	27 JULY 92	27 JULY 92	27 JULY 92	26 AUG. 92	GANJU	2,000	YES	29 JUNE 92	YES
9	6/M	GANJU	NWFP	28 JULY 92	28 JULY 92	28 JULY 92	17 AUG. 92	GANJU	2,000	YES	29 JUNE 92	YES
10	9/F	GANJU	NWFP	17 AUG. 92	17 AUG. 92	17 JULY 92	16 SEPT. 92	GANJU	1,000	YES	21 JULY 92	YES
11	30/F	GANJU	NWFP	18 AUG. 92	18 AUG. 92	18 JULY 92	19 SEPT. 92	GANJU	1,000	YES	21 JULY 92	YES
12	10/F	GANJU	NWFP	23 AUG. 92	23 AUG. 92	23 AUG. 92	25 SEPT. 92	GANJU	2,000	YES	21 AUG. 92	YES
13	24/M	GANJU	NWFP	2 SEPT. 92	2 SEPT. 92	2 SEPT. 92	27 SEPT. 92	GANJU	2,000	YES	21 AUG. 92	YES
14 <sup>1</sup>	7/F	GANJU	NWFP	6 SEPT. 92	7 SEPT. 92	7 & 13 SEPT	22 SEPT. 92	GANJU	1,000	YES	NO	YES
15	4/M	GANJU	NWFP	7 SEPT. 92	7 SEPT. 92	8 SEPT. 92	22 SEPT. 92	GANJU	1,000	YES	21 AUG. 92	YES
16	10/M	KOT MUSA	NWFP	11 SEPT. 92	16 SEPT. 92	16 SEPT. 92	23 SEPT. 92	KOT MUSA	2,000	YES	NO	NO
17 <sup>2</sup>	8/M	BHUJBAR	SINDH	23 JULY 92	14 JULY 92	14 JULY 92	30 JULY 92	BHUJBAR	2,000	YES	24 JULY 92	NO
18	15/M	BEKNAR	SINDH	8 AUG. 92	9 AUG. 92	9 AUG. 92	24 AUG. 92	BEKNAR?	2,000	YES	25 JULY 92	NO
19	13/M	BHUJBAR	SINDH	2 SEPT. 92	2 SEPT. 92	2 SEPT. 92	19 SEPT. 92	BHUJBAR	2,000	YES	25 AUG. 92	NO
20	23/M	BINDAR	NWFP	27 SEPT. 92	27 SEPT. 92	27 SEPT. 92	1 OCT. 92	BINDAR	1,000	YES	28 SEPT. 92	NO

PAKISTAN GUINEA WORM ERADICATION PROGRAMME  
STATUS OF CASE CONTAINMENT: SUMMARY TABLE FOR REGIONAL DIRECTORS

SERIAL NO.	AGE/SEX	VILLAGE	PROVINCE	DATE				PROBABLE SOURCE OF INFECTION (NAME OF THIS VILLAGE, OTHER VILLAGE, OTHER COUNTRY)	AMOUNT OF REWARD GIVEN (RUPEES)	CONTROL MEASURES		
				WORM EMERGED	VILLAGE HEALTH WORKER BEGAN CONTROL	CASE REPORTED TO REGIONAL MGR.	COMPLETE EMERGENCY OR EXTRACTION			ALL HOUSEHOLDS GIVEN FILTERS AND HEALTH ED.	DATE ABATE APPLIED	PROVISION OF SAFE WATER
21	26/M	GANJU	NWFP	12 OCT. 92	12 OCT. 92	12 OCT. 92	15 OCT. 92	1,000	YES	24 SEPT. 92	YES	
22	23/F	GANJU	NWFP	15 OCT. 92	15 OCT. 92	15 OCT. 92	15 OCT. 92	1,000	YES	24 SEPT. 92	YES	
23	37/M	BHUBBAR	SINDH	16 OCT. 92	17 OCT. 92	16 OCT. 92	?	2,000	YES	28 SEPT. 92	NO	

AWARDS: 1,000 RUPEES TO EACH PATIENT WITH CONFIRMED AS A CASE; PLUS ANOTHER 1,000 RUPEES IF THE PATIENT COMPLIES FULLY WITH CONTAINMENT PROCESS.

1 REPORTED FROM A VILLAGE WITHOUT PONDS ON 7 SEPT. BUT, RETURNED TO GANJU ON 13 SEPT.

2 CASE CONTAINMENT BEGAN WHEN WORM WAS PRE-EMERGENT.

**NIGERIA: ALL STATES REPORTING MONTHLY; INCIDENCE DECLINES**



The Nigerian GWEP (NIGEP) has completed its transition to monthly reporting of cases by village-based health workers, a process which began in the second half of 1991. The percentage of endemic villages reporting every month increased from 50% in July-September 1991 to 78% in April-June 1992. The provisional total number of cases reported for the entire country for July 1991 to June 1992 is now 201,453 cases, a decline of 29% over the previous 12-month period (figure 1). The actual number of endemic villages remaining is less than 4500. Nigeria will mark its National Guinea Worm Eradication Day again on March 20.

NIGEP has now deployed 94 Nigerian National Youth Service Corps (NYSC) workers, 12 U.S. Peace Corps Volunteers, and 2 Canadian Cooperants in the 86 most highly endemic Local Government Areas (LGAs) (out of 589 LGAs), which account for over 91% of all cases. Over 6200 trained village-based health workers are currently working in all endemic villages. As of the end of October, more than 70% of endemic villages had partial or total coverage with nylon cloth filters, including about 41% that had 100% coverage of households with filters. Increased assistance for rural water supply projects targeted to endemic villages is being provided by Nigeria's own DFRRI, UNICEF, CIDA, and JICA. In a preliminary study of the impact of 150 borehole wells provided by JICA in 135 villages in Enugu State in 1989/90, Dr. Eka Braide has found a 62.5% decline in incidence of dracunculiasis between 1989/90 and 1990/91, as compared to an increase of 6.8% in incidence in villages that were not covered by the water project. School absenteeism declined 50%, and enrollment increased 12%. The impact on agriculture is still being studied.

Chief Patrick McConnon, the Bassegun of Akoko N.W. LGA of Ondo State, and Global 2000's resident advisor to the Nigerian GWEP for the past two years, has returned to the CDC in Atlanta. He has been succeeded by Mr. Michael Street, who assumed his post in December.

**TOGO: INCREASING INTERVENTIONS**



Towards the end of 1992, Togo began intensifying its interventions in endemic villages, starting in the southern part of the country. Their strategy for implementing control measures in the south first recognizes that transmission rises in that part of the country starting in October, whereas the next peak transmission season in the north will not begin until next May or June. Thus, some 28,000 nylon cloth filters were distributed since September 1992, mainly in the south. Additional filters will be distributed in the north in January-February 1993. The other strategy employed in Togo was to first distribute nylon filters in endemic villages which were without any source of safe drinking water. This program appears to have achieved a better degree of coordination with its rural water supply sector than any other Guinea worm eradication program in Africa so far.

Togo held a National Guinea Worm Week in December 1992. It is preparing a commemorative postage stamp, and is distributing school notebooks with a Guinea worm prevention message on the cover. The country will celebrate a National Guinea Worm Eradication Day on April 30, 1993.



**IN BRIEF**

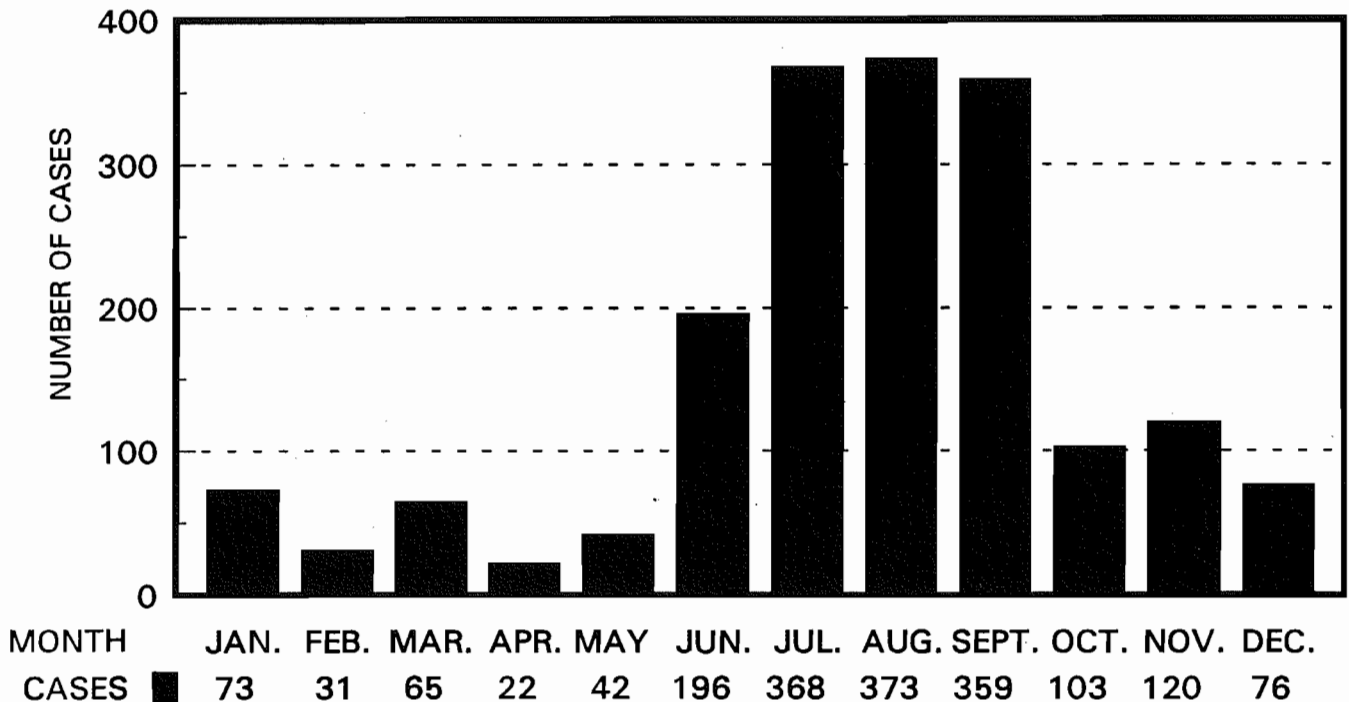
Chad: Chad conducted a pilot case search in 394 (88%) of the 449 villages of Kelo District in December 1992. No cases of dracunculiasis were confirmed as having occurred in 1991 or 1992, but the teams reported 40 suspect cases, based on the history of clinical appearances. The national search is to be completed before the end of March 1993.

Cote d'Ivoire: The national Guinea Worm Eradication Program was officially launched on January 7, 1993, in a ceremony opened by the Minister of Public Health and Social Protection, Prof. Alain Ekra. The results of the national search were presented by Dr. Adama Coulibaly, and the national Plan of Action was presented by the National Program Coordinator, Dr. Henri Boualou. Attending the ceremony were representatives of WHO, UNICEF, UNDP, USAID, US Peace Corps, World Bank, African Development Bank, and the Embassy of Japan.

**SEASONALITY OF DRACUNCULIASIS TRANSMISSION IN THE SAHEL**

The following graph showing the distribution of dracunculiasis cases by month in Mauritania is from data reported by Dr. Dah Ould Cheikh from Hodh El Chargui, Gorgol, and Guidimaka Regions during 1985. Although it confirms that the period of peak transmission occurs in June-September, it also suggests that significant transmission occurs year-round. This finding, if true, means that the Guinea worm eradication programs of countries in the Sahel need to begin interventions as soon as possible in 1993, and prepare to maintain them throughout the year.

**MAURITANIA GUINEA WORM ERADICATION PROGRAM  
DISTRIBUTION OF DRACUNCULIASIS CASES BY MONTH, 1985**



## INTERAGENCY TECHNICAL TEAM ESTABLISHED BY WHO, UNICEF



WHO and UNICEF have established an Interagency Technical Team (ITECH) at Ouagadougou, Burkina Faso. The team became operational in October with the arrival of two professional staff: Dr. Sandy Cairncross of UNICEF, an engineer from the London School of Tropical Medicine and Hygiene; and Dr. Alhousseini Maiga of WHO, a physician public health specialist who assisted eradication programs in the West African subregion for the past three years while posted in Bamako. The mission of the ITECH is to assist Guinea Worm Eradication Programs in francophone West Africa. ITECH may be contacted at (mailing address): 01 B.P. 3420, Ougadougou 01, BURKINA FASO; (telephone): 313652; (telefax): 314779.

## CERTIFICATION OF ERADICATION: WHO BEGINS CONSULTATIONS



The Islamic Republic of Iran and Pakistan were the objects of the first consultations in connection with certification of eradication of dracunculiasis. They were visited by Dr. Philippe Ranque of WHO headquarters for about two weeks each in October and November 1992, respectively. In Iran, Dr. Ranque visited Lar in Fars Province, the last known endemic area of the country, where the disease last occurred 10-15 years ago. In Pakistan, Dr. Ranque was joined by Drs. Nikolai Neouimine of WHO's Eastern Mediterranean Regional Office, Dr. Karl Kappus of the Collaborating Center at CDC, and Dr. M. Ayub, Regional Manager in Sindh. In their evaluation conducted just after what may have been the final transmission season in Pakistan, Drs. Neouimine and Kappus visited Punjab and NWFP, while Drs. Ranque and Ayub visited 37 villages in Sindh Province. Dr. Ranque also plans to visit Yemen in February 1993.

Meanwhile, UNICEF has funded consultations to the Republic of Guinea, The Gambia, and Central African Republic by the EpiCentre group from Paris in support of improving surveillance of several diseases, including dracunculiasis, in formerly endemic countries to facilitate documentation needed for eventual certification. In The Gambia, the team found 1 recently imported case, apparently from Senegal. In addition, 1 or 2 recent sporadic cases were alleged, but were not confirmed, in Guinea. A one-day informal consultation on certification of eradication of dracunculiasis will be held immediately after the meeting of National Program Coordinators in Cotonou, Benin on March 26.

## MEETINGS

### MEETING OF NATIONAL PROGRAM COORDINATORS

The venue for the Second Meeting of National Program Coordinators of Guinea Worm Eradication Programs has been changed from Lome, Togo to Cotonou, Benin. The dates remain the same: 23-26 March, 1993. These dates include a one-day meeting on certification of eradication, to be held just after the main meeting.

### **TST MEETING AT OUAGADOUGOU**

The 5th meeting of UNICEF's Technical Support Team (TST) was held in Ouagadougou, Burkina Faso during December 14-17, 1992. The principal topics of discussion were: 1) specifications for an integrated village-based surveillance system for dracunculiasis, vaccine-preventable diseases, natality, and mortality; 2) mapping the location of villages and developing geographical information systems for water, sanitation, and disease control in Africa; and 3) the agenda of the Program Coordinators Meeting in Cotonou, Benin during March 23-26, 1993.

### **NEW GUINEA WORM MOVIE TO BE SHOWN ON MIAMI TELEVISION**



A 30-minute version of the new film produced by director Sharon Baker of Teleducation Associates, "Guinea Worm: The End of the Road", will be televised on the Public Broadcasting station WPBT-TV (Channel 2) in Miami, Florida on 7 February 1993, at 3:30 pm.



### **RECENT PUBLICATIONS**

Anonymous, 1992. Guinea worm: Good news from Ghana. *Lancet*, Nov. 28, 340(8831):1322-1323.

Ayotamuno MJ, Sridhar MKC, Brieger WR, Sangodoyin AY, Vyne PN, 1992. Shallow drum-lined wells for Guinea worm eradication. *Waterlines*, 11:30-32.

Chippaux JP, Larsson RW, 1991. [School absenteeism due to dracunculosis in Benin.] *Bull Soc Pathol Exot Filiales*, 84:775-782.

In this study, five sentinel villages in the most endemic region of Benin were studied for four years, using questionnaires and school attendance records. In the villages studied, "17.7% of school age children suffered from Guinea worm annually. The average duration of the disease was 104 days, of which they were bed-ridden for 32 days."

Edungbola LD, Withers PC, Braide EI, Kale OO, Sadiq LO, Nwobi BC, Alakija T, McConnon P, Hopkins DR, 1992. Mobilization strategy for Guinea worm eradication in Nigeria. *Am J Trop Med Hyg*, 47:529-538.

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Kliks MM, 1992. Dracunculiasis (guinea-worm disease). *Medicine International*, 108:4558-4559.

Kotelnikov GA, 1992. [F. Efremov - a Bukhara slave and traveler of the 18th century - author of a helminthological treatise on dracunculosis.] *Med Parazitol (Mosk)*, 4:61-62.

Kumar A, Biswas G, Kaul SM, Joshi GC, Verghese T, 1992. Towards Guineaworm eradication: coordination between health and public health engineering (PHE) functionaries. *Communicable Diseases Bull*, 8:28-33.

Muller R, 1992. Guinea worm eradication: four more years to go. *Parasitol Today*, 8:387-390.

Ogunniyi TA, Simaren JO, Amusan GO, 1992. Prevalence of dracunculiasis among Nigerian school children as an index of prevalence in their communities of origin. *Ann Trop Med Parasitol*, 86:407-412.

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Vahlensleck M, 1992. [Characteristic soft tissue calcifications in dracunculosis]. *Rofo Fortschr Geb Rontgenstr Nauen Bildgeb Verfahr*, 156:604-605.

WHO, 1992. Fourth African Regional Conference on the Eradication of Dracunculiasis. Final Report. Brazzaville: WHO Regional Office for Africa.

\* \* \* \* \*

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CDC is the WHO Collaborating Center for Research, Training, and Eradication of Dracunculiasis.