DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service
Centers for Disease Control
and Prevention (CDC)
Memorandum

Date: April 11, 2008

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

Subject: GUINEA WORM WRAP-UP #180

To: Addressees

Number of uncontained cases of dracunculiasis outside of Sudan so far in 2008: 39 in Ghana; Zero in Mali, Nigeria, and Niger)

PRESIDENTS CARTER & TOURE AND GENERAL GOWON INSPIRE 8TH REGIONAL CONFERENCE ON DRACUNCULIASIS ERADICATION AND CARTER CENTER AWARDS CEREMONY IN ABUJA

The Eighth Regional Conference on Dracunculiasis Eradication, which was convened at the Sheraton Hotel in Abuja, Nigeria on April 2-4, witnessed the first joint appearance ever by the three pre-eminent Guinea Worm Warriors, Former U.S. President Jimmy Carter, President Amadou Toumani Toure of Mali, and Former Nigerian Head of State General (Dr.) Yakubu Gowon (Figure 1).

The Secretary to the Government of the Federation (SGF), Ambassador Babagana Kingbe, opened the conference officially on behalf of the Nigerian president. Other prominent participants included Nigeria's foreign minister, Nigeria's Minister of Health Dr. Hassan Muhammad Lawal, the ministers of health of Sudan (Dr. Tabita Botors Shokai) and Southern Sudan (Dr. Joseph Monytuil Wejang), the governor of Niger's Tillaberi Region (Mr. Idder Adamou), a former minister of health of Togo, and WHO Assistant Director General Dr. Hiroki Nakatani. The SGF conveyed the Nigerian president's "warmest welcome" and expressed his appreciation for the help of President Carter and for the examples of President Toure and General Gowon. President Carter congratulated Burkina Faso, Cote d'Ivoire, Ethiopia and Togo as the four most recent countries to interrupt transmission of the disease, and warned the remaining endemic countries against over-confidence. President Toure pledged that Mali will do everything possible to stop transmission of the disease soon. Drs. Donald Hopkins of The Carter Center and Dirk Engels of the World Health Organization (WHO) summarized the current status of the global campaign and of processes to certify countries free of the disease, respectively. National program coordinators of the five remaining endemic countries and the four countries that reported zero indigenous cases for the first time in 2007 each made presentations during the conference, which was co-sponsored by the Government of Nigeria, The Carter Center, UNICEF and WHO. Key recommendations and summaries of the status of the disease in the five endemic countries remaining are reported below.

President and Mrs. Carter hosted the third ceremony to confer Carter Center Awards for Guinea Worm Eradication late on the first afternoon of the conference. Accepting the latest national awards were the Ambassador of Burkina Faso, Mr. Dramane Yameogo; the First Counselor of the Embassy of Cote d'Ivoire, Mr. Soro Kapieletien; the Ambassador of Ethiopia, Mr. Suleiman Dedefo Woshe; and the Former Minister of Health of Togo, Madame Suzanne Aho. Each country received two awards, one each for the head of state and the ministry of health, as well as certificates for each of the present and former national program coordinators and key assistants for the national campaigns. The Awards were designed by the artist Ms. Kim Griffin of Panama City, Florida, and funded by Mr. John Moores, the chairman of The Carter Center's Board of Trustees. President and Mrs. Carter also presented Jimmy and Rosalynn Carter Awards for Guinea Worm Eradication to President Amadou Toumani Toure of Mali "for his invaluable advocacy in support of the battle against Guinea worm disease in all of the endemic francophone countries in Africa since 1993", and to the director of the Southern Sudan Guinea Worm Eradication Program Mr. Makoy Samuel Yibi Logora, "in recognition of his dedicated, relentless and effective leadership since 2006 in the campaign to eradicate Guinea worm disease (dracunculiasis) from Southern Sudan". President Toure dedicated his award to his mother [who was expelled from school as a child because of Guinea worm disease], to all sufferers from the disease, to president and Mrs. Carter, The Carter Center, Dr. Alhousseini Maiga, and to the national coordinators from all of the endemic countries.

SUDAN. The Southern Sudan Guinea Worm Eradication Program (SSGWEP) has appointed Bishop (Emeritus) Paride Taban as eminent spokesperson and advocate for the program. UNICEF/Sudan sponsored Bishop Taban's attendance at the regional conference in Abuja. The newly appointed national program coordinator of Sudan's (Federal Ministry of Health) Guinea Worm Eradication Program, Dr. Rhama El Tijani, also participated in the conference.

The epidemiologic and intervention indices for Sudan, Ghana and Mali are given in **(Table 1)**. An internal review and adjustment of program data by the SSGWEP has reduced the number of dracunculiasis cases and endemic villages in 2006 from 20,581 to 15,539 and from 3137 to 1763, respectively, so that the adjusted rate of reduction in cases between 2006 and 2007 is now 60%, not 71%. A total of 22,322 villages were under active surveillance in southern Sudan in 2007, with over 28,000 village volunteers, supervisors and other health staff working on the program fulltime. The SSGWEP improved its reporting rate from 63% to 70% between 2006 and 2007, distributed 1,130,467 pipe filters and 490,626 cloth filters, and increased its application of ABATE® Larvicide to cover villages that included 37% of the program's caseload in 2007. The Guinea Worm Task Force remained active in 2007, and 106 wells were drilled in Guinea worm endemic villages of Eastern Equatoria State, mostly by UNICEF. A map showing the incomplete preliminary results of GPS mapping of endemic villages in southern Sudan is shown in (**Figure 2)**. Southern Sudan exported 3 cases to Ethiopia and 3 cases to Uganda in 2007.

Northern Sudan reported 4 alleged cases of Guinea worm disease presumably imported from Southern Sudan during 2007: 2 cases from Northern Bahr Al Ghazal State (1 to South Darfur and 1 to South Kordufan), and 1 case from Unity State. The fourth case was detected, confirmed and contained during an investigation of rumors; the origin of this case was not reported.

A team of twelve persons from the SSGWEP and Ethiopia's Dracunculiasis Eradication Program (EDEP) conducted a joint investigation of two cases reported in the Nasuat area on the border of Ethiopia and Sudan in June 2007, by visiting cattle grazing areas in Surma *Woreda* (district) of Ethiopia and Kapoeta East County of Southern Sudan on March 14-18, 2008. Hiking for over 90 kilometers among mainly Nyangatom and Toposa populations, they found no active cases of dracunculiasis, and no evidence of continued transmission of the disease in Ethiopia.

GHANA. The Ghana GWEP has reported an astonishing -91% reduction in cases of dracunculiasis during January-March 2008 (from 2215 cases in 2007 to 195 cases), which is the peak of the transmission period that began in October 2007. Moreover, the program has recorded no village with indigenous cases outside of the Northern Region so far this year, although 61 cases have been exported from the Northern Region to other regions of the country (**Figure 3**) Map of endemic vs. non-endemic villages). 81% of this year's cases have been reported as contained. The epidemiologic and intervention indices for 2007 are included in (**Table 1**). 59% of cases in the Northern Region are 15 years old or younger, while 87% belong to the Dagomba ethnic group. More than 10,000 volunteers are at work in the Northern Region. Forty Worm Weeks were conducted in 2007. Ghana exported 3 cases to Burkina Faso and 2 cases to Togo during 2007.

President and Mrs. Carter visited Accra, Ghana on March 31-April 1, where they met with President John Kufuor, Minister of Health Maj. Courage Quashigah (Rtd.), other government officials, donor representatives, and partner agencies involved in the fight against dracunculiasis in Ghana. At a joint Press Conference, the minister of health expressed his determination that Ghana should have no more cases of dracunculiasis by 2009. Themes repeated on all sides during the visit and at the Press Conference on April 1 were the importance of avoiding complacency, of establishing effective surveillance for dracunculiasis in the Guinea worm-free

areas of the country, and of completing the project for providing improved water supply to Tamale and Savelugu on time, by August 2008 as scheduled.

MALI. Four of Mali's regions (Kayes, Koulikoro, Segou, Sikasso) are now Guinea worm-free, while four others (Gao, Kidal, Mopti, Timbuktu) still have endemic transmission as of 2007 (**Figure 4**). The epidemiologic and intervention indices for Mali's GWEP are summarized in (**Table 1**). Case containment rates were particularly low in Tessalit/Kidal (86 cases; 0% containment), Ansongo/Gao (135; 47%), Gao/Gao (62; 42%), and Gourma Rharous/Timbuktu (16; 63%) Districts. Although the outbreak discovered in Ansongo District of Gao Region in 2007 as a result of follow up to cross notification from Niger's GWEP of an imported case from Mali last year was a surprise, neither insecurity nor lack of resources were limiting factors that might explain the dismal containment rates outside of Kidal, in Gao, Mopti and Timbuktu Regions in 2007. In a private meeting with President Carter in Abuja, President Amadou Toumani Toure of Mali stated his strong intention to intensify the GWEP and accelerate Mali's progress towards eradication. Mali exported 3 cases of dracunculiasis to Niger in 2007.

Table 1

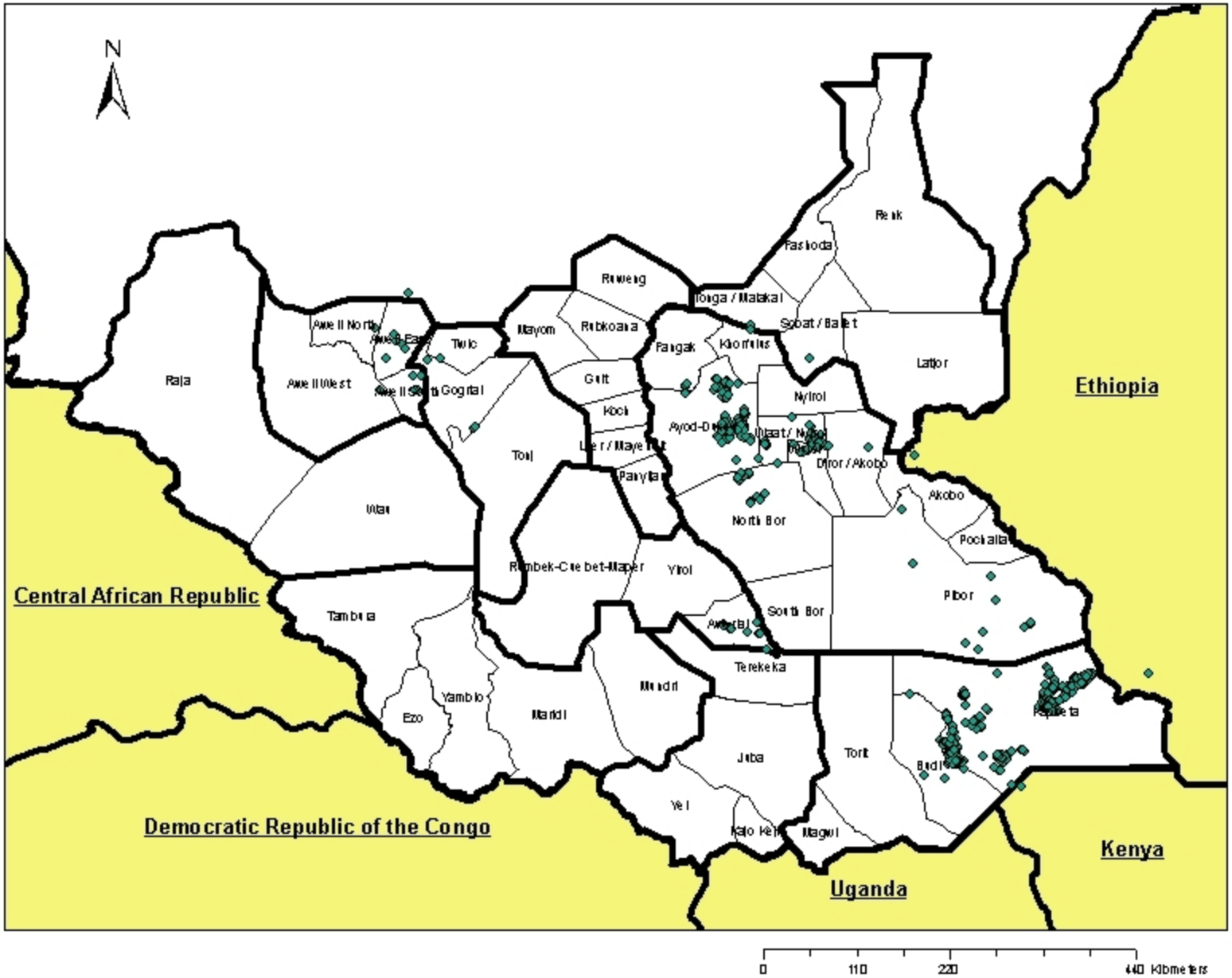
EPIDEMIOLOGIC AND INTERVENTION INDICES IN THREE GWEPs: 2007			
INDEX	SUDAN	GHANA	MALI
Case Containment rate	49%	84%	35%
Number of cases reported	5,815	3,358	313
Number of villages reporting indigenous cases	1,765	180	59
Number of endemic villages where program intervened in 2006 & 2007	3,023	386	113
Reduction in cases in Groups I & II villages (2006-2007)	82%	26%	71%
% of endemic villages receiving Health Education	93%	100%	100%
% of endemic villages with cloth filters in 100% of households	38%	70%	100%
% of endemic villages receiving pipe filters	38%	30%	NR.
% of endemic villages protected with ABATE	10%	65%	90%
% of endemic villages with 1+ sources of safe drinking water	16%	47%	27%
Monthly reporting rate	70%	98%	100%

Figure 2

Southern Sudan Guinea Worm Eradication Program
Villages with known geographic coordinates reporting one or more cases, Jan - Dec 2007*

1+ Villages with coordinates
County
State boundry

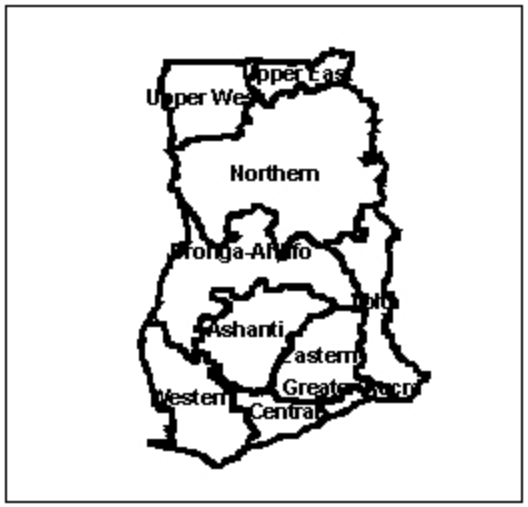
*733 villages (37%) with known geographic coordinates reporting 2,043 cases (35%) of Guinea worm disease reported during Jan-Dec, 2007

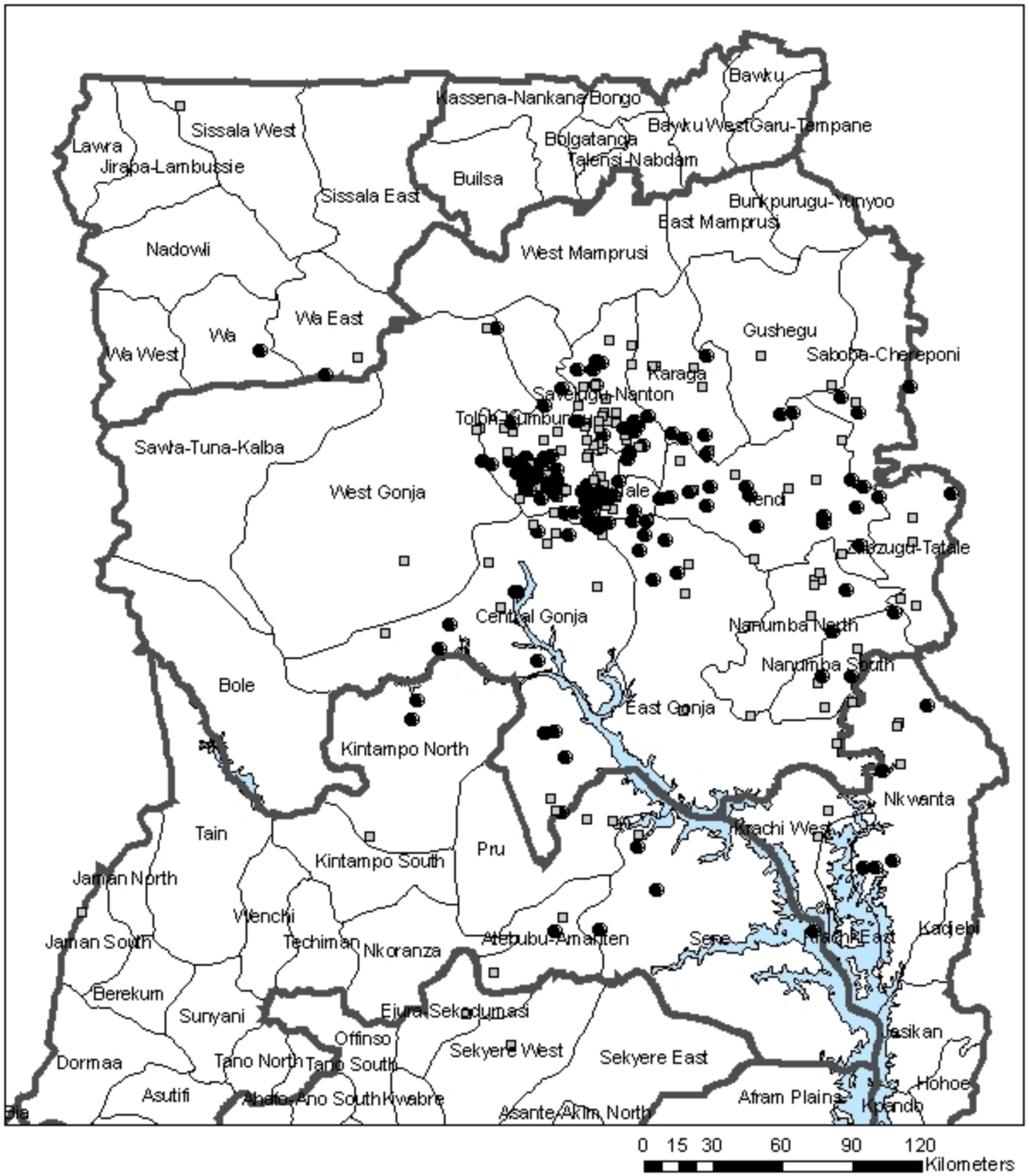


Note: This map is provisional and is not an authority on boundaries or roads or exact locations. This map was created for the purpose of the Guinea Worm Eradication Program.

Figure 3

Ghana Guinea Worm Eradication Program
Villages Reporting Cases of Dracunculiasis, Jan - Dec 2007*





1+ Villages 2007

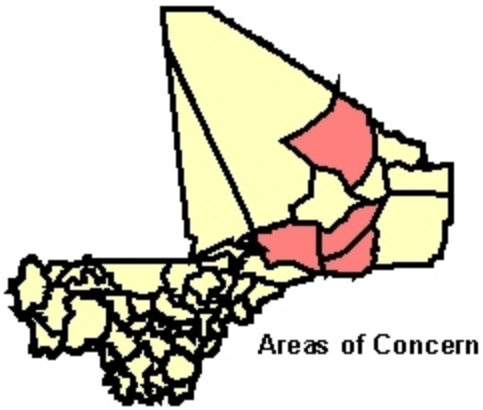
- Indigenous
- Imported Only
- District
- Region

* 287 1+ villages (71%) with known geographic coordinates reporting 3,116 cases (93%) of Guinea worm disease reported during Jan-Dec, 2007

Note: This map is provisional and is not an authority on boundaries or roads or exact locations. This map was created for the purpose of the Guinea Worm Eradication Program

Figure 4

Mali Guinea Worm Eradication Program
Villages reporting cases in 2007



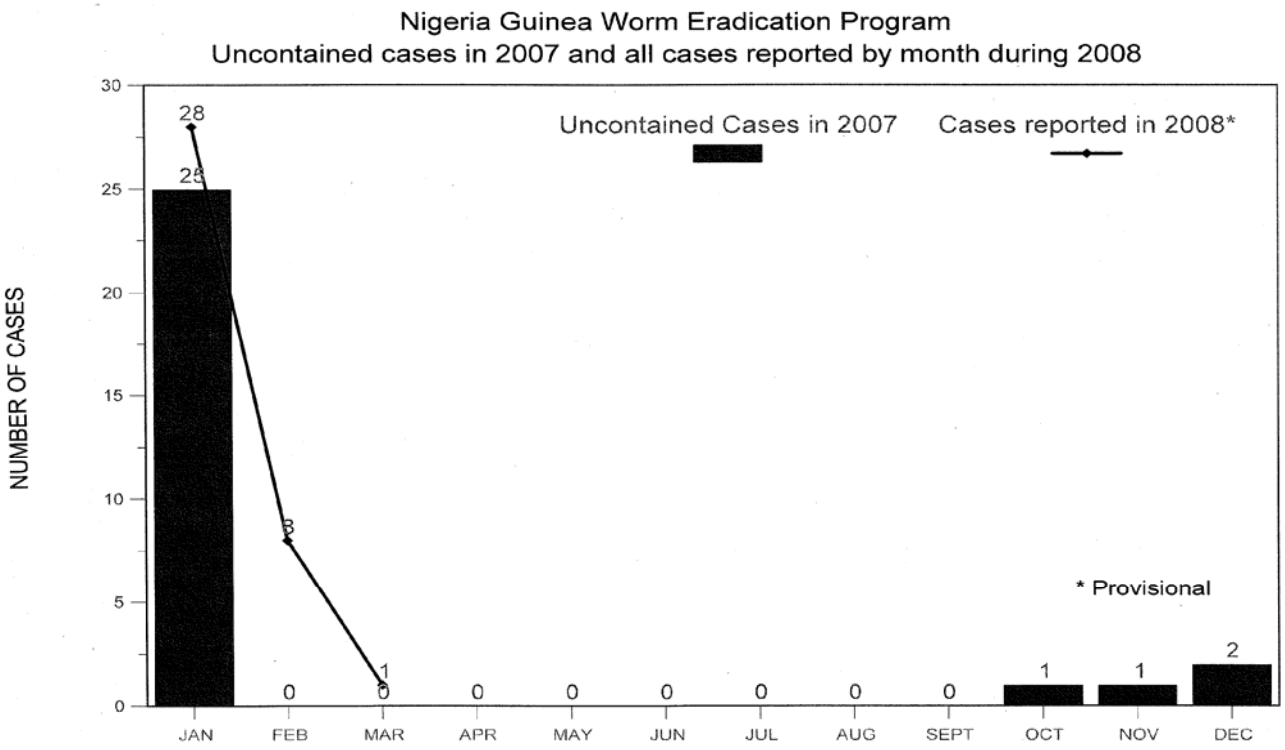
2007 Cases

- 1 - 5
- 6 - 50
- 50+

This map is provisional and is not an authority on boundaries or roads or exact locations. This map was created for the purpose of the Guinea Worm Eradication Program.

NIGERIA. The Nigerian GWEP reported 73 cases of dracunculiasis from four villages in three states (Enugu, Cross River, Ebonyi) in 2007, of which 44 cases (60%) were reportedly contained. In January-March 2008, Nigeria has reported 37 cases from 5 villages in Enugu and Ebonyi States, of which all were contained. Thirty (30) of the cases reported so far in 2008 occurred in Ezza Nkwubor village (Enugu State), and the other 7 cases were imported from that village (Figure 5).

Figure 5



NIGER. The Niger GWEP reported 14 cases from 6 villages during 2007, including 3 cases imported from Mali. All but one of the cases (93%) were contained. One case (contained) imported from Mali was reported in the first quarter of 2008.

Table 2

Number of Cases Contained and Number Reported by Month during 2007*
(Countries arranged in descending order of cases in 2006)

COUNTRIES REPORTING CASES	NUMBER OF CASES CONTAINED / NUMBER OF CASES REPORTED													%
	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL*	CONT.
SUDAN	28 / 192	34 / 146	70 / 208	271 / 503	621 / 1096	626 / 1397	465 / 1001	381 / 619	255 / 413	85 / 148	31 / 65	9 / 27	2876 / 5815	49
GHANA	812 / 1005	631 / 732	442 / 478	248 / 293	233 / 272	185 / 241	91 / 110	38 / 41	15 / 19	22 / 29	56 / 68	64 / 70	2837 / 3358	84
MALI	0 / 0	0 / 0	1 / 1	0 / 0	0 / 0	1 / 1	5 / 7	29 / 120	35 / 68	15 / 27	20 / 79	4 / 10	110 / 313	35
NIGER	3 / 3	0 / 0	0 / 0	0 / 0	1 / 1	0 / 0	1 / 1	0 / 0	2 / 3	4 / 4	2 / 2	0 / 0	13 / 14	93
NIGERIA	7 / 32	9 / 9	1 / 1	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 1	6 / 7	21 / 23	44 / 73	60
TOGO	0 / 0	1 / 1	0 / 0	0 / 1	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	1 / 2	50
BURKINA FASO	1 / 2	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 1	1 / 3	33
COTE D'IVOIRE	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0
ETHIOPIA	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	3 / 3	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	3 / 3	0
UGANDA	0 / 0	0 / 0	1 / 1	0 / 0	1 / 1	0 / 0	0 / 0	1 / 1	0 / 0	1 / 1	0 / 0	0 / 0	4 / 4	100
TOTAL*	851 / 1234	675 / 888	515 / 689	519 / 797	856 / 1370	815 / 1642	562 / 1119	449 / 781	307 / 503	127 / 210	115 / 221	98 / 131	5889 / 9585	61
% CONTAINED	69	76	75	65	62	50	50	57	61	60	52	75	61	
% CONT. OUTSIDE SUDAN	79	86	93	84	86	77	82	42	58	68	54	86	80	

* provisional

Shaded cells denote months when zero indigenous cases were reported. Numbers indicate how many imported cases were reported and contained that month.

Figure 6

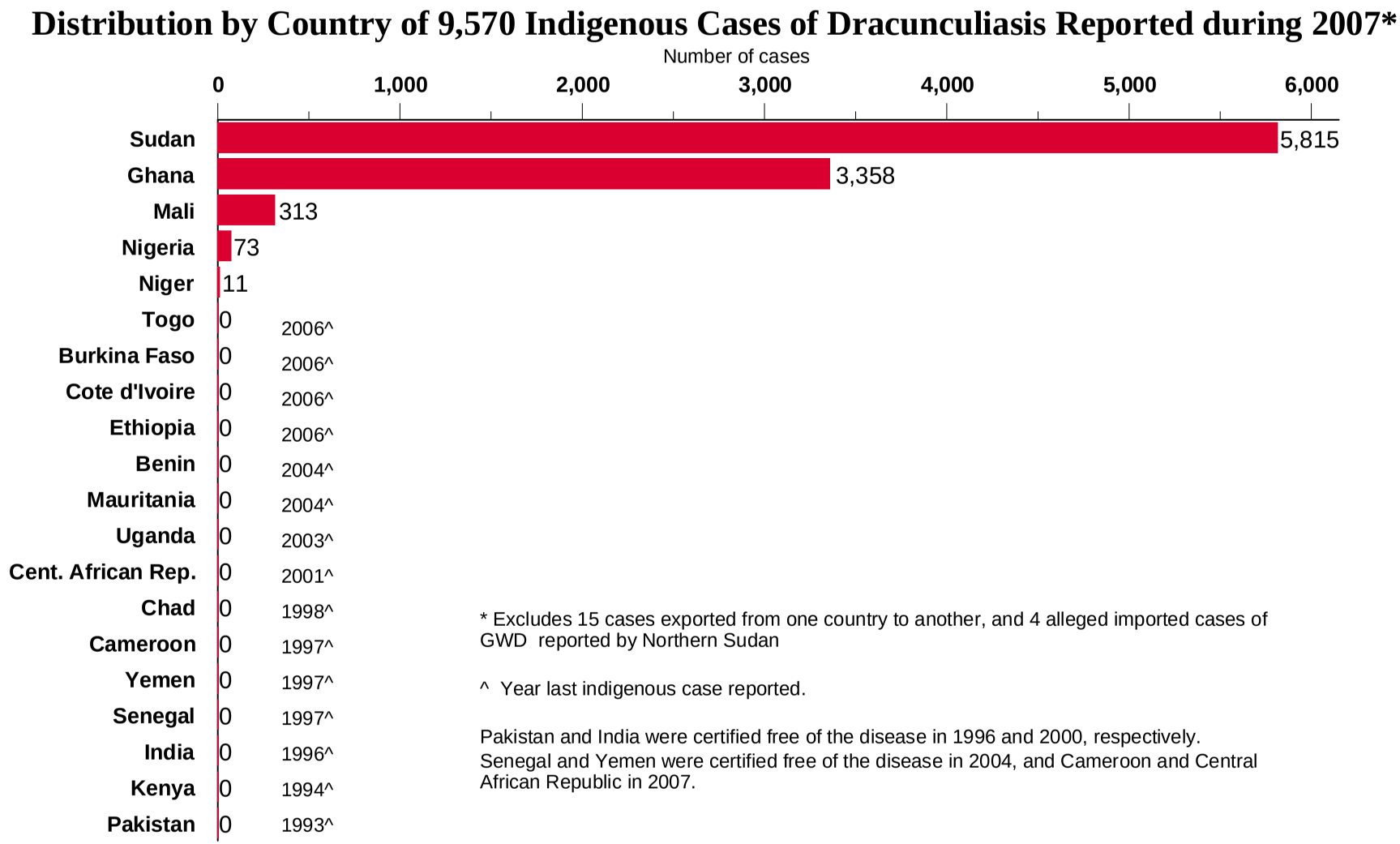
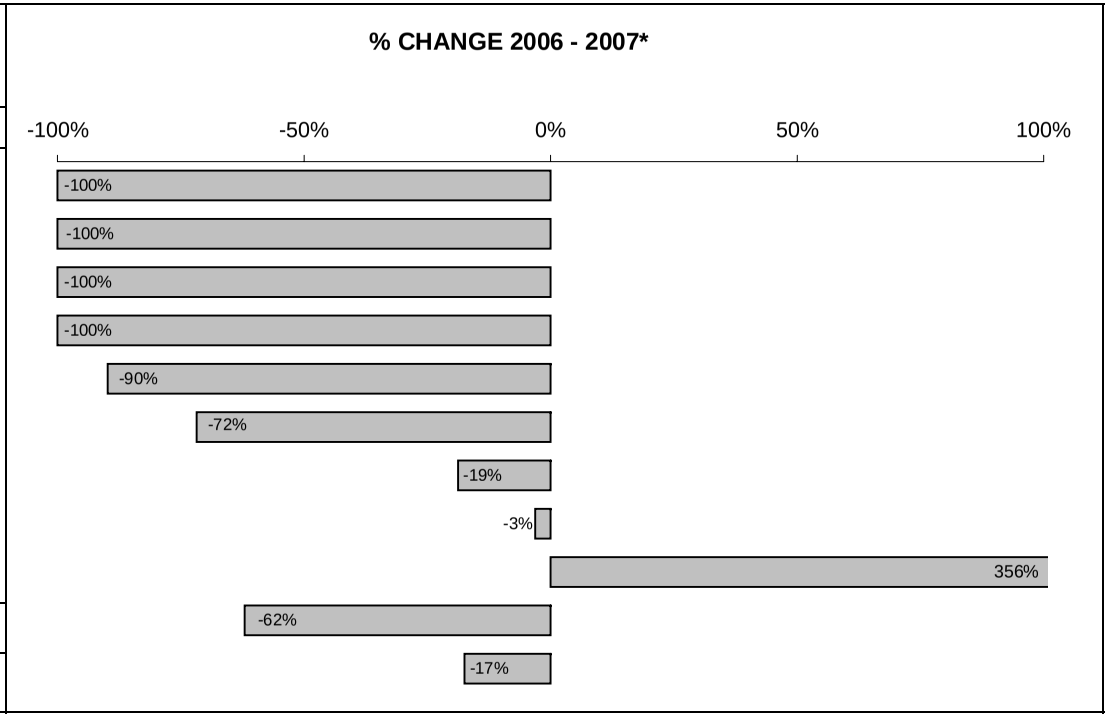

Distribution by Country of 9,570 Indigenous Cases of Dracunculiasis Reported during 2007*
Number of cases
0
1,000
2,000
3,000
4,000
5,000
6,000
Sudan 5,815
Ghana 3,358
Mali 313
Nigeria 73
Niger 11
Togo 0 2006^
Burkina Faso 0 2006^
Cote d'Ivoire 0 2006^
Ethiopia 0 2006^
Benin 0 2004^
Mauritania 0 2004^
Uganda 0 2003^
Cent. African Rep. 0 2001^
Chad 0 1998^
Cameroon 0 1997^
Yemen 0 1997^
Senegal 0 1997^
India 0 1996^
Kenya 0 1994^
Pakistan 0 1993^
* Excludes 15 cases exported from one country to another, and 4 alleged imported cases of GWD reported by Northern Sudan
^ Year last indigenous case reported.
Pakistan and India were certified free of the disease in 1996 and 2000, respectively.
Senegal and Yemen were certified free of the disease in 2004, and Cameroon and Central African Republic in 2007.

Figure 7

Updated----->4/9/2008

Number of Indigenous Cases Reported During the Specified Period in 2006 and 2007*, and Percent Change in Cases Reported

Country	Indigenous Cases Reported	
	2006	2007*
Togo	25	-
Cote d'Ivoire	5	-
Ethiopia	1	-
Burkina Faso	3	-
Niger	108	11
Sudan	20,582	5,815
Ghana	4,134	3,358
Mali	323	313
Nigeria	16	73
Total	25,197	9,570
All countries, Sudan and Ghana excluded	481	397



Overall % change outside of Sudan = -19%

* Excludes 15 cases exported from one country to another

Table 3

Number of Cases Contained and Number Reported by Month during 2008*
(Countries arranged in descending order of cases in 2007)

COUNTRIES REPORTING CASES	NUMBER OF CASES CONTAINED / NUMBER OF CASES REPORTED													%
	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL*	CONT.
SUDAN	2 / 23	3 / 6	5 / 16	/	/	/	/	/	/	/	/	/	10 / 45	
GHANA	67 / 73	63 / 80	31 / 47	/	/	/	/	/	/	/	/	/	161 / 200	81
MALI	1 / 1	0 / 0	0 / 0	/	/	/	/	/	/	/	/	/	1 / 1	100
NIGERIA	28 / 28	8 / 8	1 / 1	/	/	/	/	/	/	/	/	/	37 / 37	100
NIGER	0 / 0	1 / 1	0 / 0	/	/	/	/	/	/	/	/	/	1 / 1	100
TOTAL*	98 / 125	75 / 95	37 / 64	/	/	/	/	/	/	/	/	/	210 / 284	74
% CONTAINED	78	79	58										74	
% CONT. OUTSIDE SUDAN	94	81	67										84	

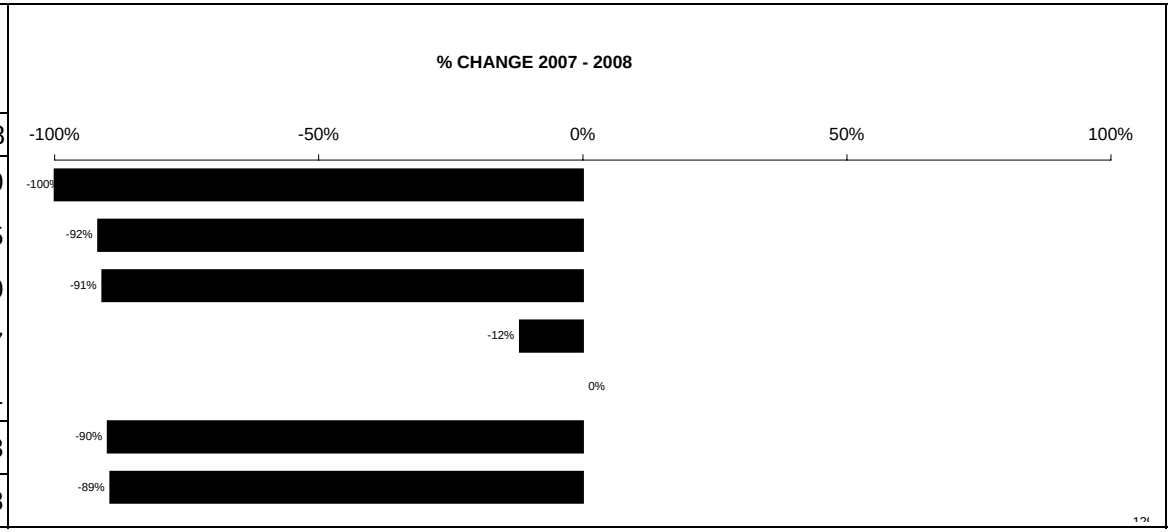
* provisional

Shaded cells denote months when zero indigenous cases were reported. Numbers indicate how many imported cases were reported and contained that month.
For other inported Cases see table of imported cases by month and by country

Figure 8

Number of Indigenous Cases Reported During the Specified Period in 2007 and 2008*, and Percent Change in Cases Reported

Country	Indigenous Cases Reported	
	2007	2008
Niger (3)	3	0
Sudan (3)	546	45
Ghana (3)	2215	200
Nigeria (3)	42	37
Mali (3)	1	1
Total	2807	283
All countries, excluding Sudan and Ghana	2261	238



Overall % change outside of Sudan = -19%

* Provisional: excludes 1 case exported from one country to another

RECOMMENDATIONS

1. **The programs should help prioritize the provision of safe water to Guinea worm areas.**
2. Ministries of Health should consider integrating Guinea worm, Polio and other surveillance systems in non-endemic areas after 2008 transmission season to ensure wide active surveillance of index cases of Guinea worm and other emergency notifiable diseases.
3. Countries which stopped guinea worm disease local transmission in 2006, namely, Burkina Faso, Cote d'Ivoire, Ethiopia and Togo, should organize a national Guinea worm disease eradication day to celebrate the event and launch officially the pre-certification activities.
4. **All remaining endemic and recently non-endemic countries should give the highest priority to reporting all cases and suspected cases of Guinea worm and other immediately notifiable diseases.**

Ghana

1. **The program needs to remain focused on all interventions, not just water.**
2. The program needs to continue efforts to improve its interaction with groups that resist changing behavior to prevent transmission.
3. **The program needs to focus on children (<16 years of age), a significant risk group.**
4. The program should review patient data for patterns linked to specific households.

Southern Sudan

1. **The program needs to focus all program activities (surveillance, intervention and supervision) on endemic villages in an effort to improve case containment rates.**
2. **The International Guinea Worm program partners should advocate to increase the provision of safe water in Southern Sudan.**

Mali

1. The water sector organizations need to explore or adopt the use of alternative technologies for providing water to endemic villages if the construction of boreholes is proving unsuccessful.
2. **Individual case investigations should provide detailed information about the source of infection for each case to determine the nature of the case (imported or indigenous) and status of village (endemic or import only).**
3. **The program should make an effort to target families and individuals that reported cases in 2007 for regular visits and intensified health education in 2008. In addition to village line lists develop a patient line list to monitor specific families/individuals that report cases in consecutive years.**
4. Partners in Mali should fund the Guinea worm weeks so that the National Programme can raise public awareness in order to reduce cases considerably.
5. **The program should implement, where possible, the immediate admitting into hospital of all GW cases.**
6. The program should study the possibility of involving all the partners, including the Army to handle the cases in the region of Kidal.

7. **The regional and local authorities in endemic areas should contribute more effectively in the national effort to eradicate Guinea worm disease, by 2009.**
8. **The program needs to improve supervisory capacity by increasing the number of supervisors and locating them closer to areas of transmission in an effort to improve case containment rates.**

Niger

1. **The water sector organizations need to explore or adopt the use of alternative technologies for providing water to endemic villages.**

RECENT PUBLICATIONS

Lodge M, 2008. A village woman's legacy: an encounter with the victim of an old scourge gave a former President a new worldview-and a mission. Time March 31; p62.

Molyneux DH, 2008. Combating the "other diseases" of MDG 6: changing the paradigm to achieve equity and poverty reduction? Trans R Soc Trop Med Hyg., April 5 *(In Press)*.

Inclusion of information in the Guinea Worm Wrap-Up
does not constitute "publication" of that information.
In memory of BOB KAISER

For information about the GW Wrap-Up, contact the WHO Collaborating Center for Research, Training, and Eradication of Dracunculiasis, NCZVED, Centers for Disease Control and Prevention, F-22, 4770 Buford Highway, NE, Atlanta, GA 30341-3724, U.S.A. FAX: 770-488-7761. *The GW Wrap-Up web location is* http://www.cdc.gov/ncidod/dpd/parasites/guineaworm/default.htm.

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