DEPARTMENT OF HEALTH & HUMAN SERVICES

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

Memorandum

Date: February 28, 2011

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

Subject: GUINEA WORM WRAP-UP #203

To: Addressees

CARTERS HONOR NIGER, NIGERIA DURING A SPECIAL CEREMONY AT 15TH MEETING OF GUINEA WORM ERADICATION PROGRAM MANAGERS

More than 400 persons, including the ambassadors to the United States from Benin, Burkina Faso, India, Mauritania and Oman, joined President and Mrs. Jimmy Carter in a ceremony held at The Carter Center in Atlanta on February 17 to honor Niger and Nigeria for having reported no indigenous cases of Guinea worm disease (dracunculiasis) for at least twelve consecutive months. Niger reported its last indigenous case in the village of Tintihoune, Tillaberi Region, in October 2008. Nigeria reported its last indigenous case in the village of Ezza Nkwubor, Enugu East Local Government Area, Enugu State, in November 2008.

The Honorable Counselor, Mr. Boubacar Moussa Rilla of Niger's embassy to the United States accepted the Carter Center Award for Guinea Worm Eradication on behalf of Niger. Federal Minister of Health of Nigeria, the Honorable Prof. Onyebuchi Chukwu, accepted the Carter Center Award on behalf of his country. Former Nigerian Head of State General (Dr.) Yakubu Gowon, who made 82 advocacy visits to 135 endemic Nigerian villages after joining the campaign in 1998, spoke during the hour-long ceremony of Guinea worm disease's impact on people in affected communities. The Nigerian delegation to the ceremony also included Mrs. Victoria Gowon, Prof. Adetokunbo Lucas (a member of The Carter Center's International Task Force for Disease Eradication), the Honorable Mr. Patrick Onadipe (political minister of the Embassy of Nigeria), Honorable Minister Mr. Baba Garba (acting consul general-Atlanta), Mrs. Genevive O. Ndukwu (technical advisor to the Federal Minister of Health), and Dr. Henry Akpan (chief consultant epidemiologist in the Nigerian FMOH). Former Nigerian National Coordinator Dr. Lola Sadiq, former Nigerian Zonal Facilitator Prof. Luke Edungbola and former

Nigerien National Coordinator Mr. Sadi Moussa also attended the ceremony. Nigeria will increase its reward for reporting a case of GWD from 10,000 naira (~US$65) to 25,000 naira in March 2011.

President and Mrs. Carter also presented Jimmy & Rosalynn Carter Awards for Guinea Worm Eradication to the national coordinators of the Guinea Worm Eradication Programs of Niger and Nigeria, Mr. Harou Oumarou ("in recognition of his dedicated and effective leadership since 2004 and participation since 1991 in the campaign to eradicate Guinea worm disease-dracunculiasis-from Niger") and Mrs. Ifeoma Anagbogu ("in recognition of her dedicated and effective leadership since 2007 and participation since 1988 in the campaign to eradicate Guinea worm disease-dracunculiasis-from Nigeria"), respectively. The live webcast of former U.S. President Jimmy Carter and dignitaries from around the world celebrate Nigeria and Niger as the most recent countries to mark a full year with no indigenous cases of Guinea worm disease has been archived for viewing (as of March 7) on the Carter Center's website.

15TH MEETING OF GUINEA WORM ERADICATION PROGRAM MANAGERS

Participants at the Program Managers Meeting for endemic countries and countries in the pre-certification stage, which was held at The Carter Center on February 15-18, included representatives from Burkina Faso, Chad, Cote d'Ivoire, Ethiopia, Ghana, Kenya, Mali, Niger, Nigeria, Sudan and Togo. Drs. Dirk Engels, Gautam Biswas, Dieudonne Sankara, Adiele Onyeze and Alhousseini Maiga attended from the World Health Organization (WHO), Mr. Michael Forson from UNICEF, Drs. Stephen Blount, Mark Eberhard, Sharon Roy and Steven Becknell from CDC, Drs. Donald Hopkins and Ernesto Ruiz-Tiben and Mr. P. Craig Withers, Jr. from The Carter Center, and Dr. Anders Seim of Health and Development International (HDI), among others.
The country reports received during the Program Managers Meeting established the final figures for the national Guinea Worm Eradication Programs during 2010. The countries reported a total of 1,797 cases in 775 villages in 2010, from Sudan, Mali, Ethiopia, Chad and Ghana. Only 262 villages reported indigenous cases worldwide in 2010 (Tables 1, 2, and 3, and Figure 1). Recommendations from the meeting are included also in this issue.

- Mr. Makoy Samuel Yibi, director of the **Southern Sudan Guinea Worm Eradication Program (SSGWEP)**, reported 1,698 cases (Tables 3 and 4) from 732 villages (only 227 villages reported indigenous cases) in 2010, of which 1,264 cases (74%) were contained. This is a reduction of 38% from the 2,733 cases reported by the SSGWEP in 2009, 78% of which were contained. The SSGWEP benefited greatly from peaceful conduct of the referendum on independence for Southern Sudan that occurred in January 2011. President and Mrs. Jimmy Carter visited Sudan during the referendum and discussed the status of the Guinea worm program with Mr. Makoy, Carter Center resident advisor Mr. David Stobbelaar, the South Sudan ministers of health and of water resources and irrigation, and with the UNICEF resident representative to Southern Sudan, as well as with President Salva Kiir of Southern Sudan and President Omar Al-Bashir of Sudan. The SSGWEP will establish nine new "mobile" (tents) Case Containment Centers

(CCCs; 3 in Greater Kapoeta of Eastern Equatoria State, 1 in Central Equatoria State, 5 in Warrap State) in addition to the 7 permanent CCCs and 5 mobile CCCs that operated in Greater Kapoeta, Awerial County of Lakes State, and Warrap State during 2010. The South Sudan Ministry of Water Resources and Irrigation and UNICEF have begun an intensified effort to improve drinking water sources in priority endemic villages in Southern Sudan in 2011. Mr. Makoy and Mr. Stobbelaar accompanied Mr. Ken Maskall of UNICEF's water and sanitation section in Juba on a week-long visit to endemic communities in Eastern Equatoria State in early February.

- Dr. Gabriel Guindo, the national coordinator of **Mali's Guinea Worm Eradication Program**, reported 57 cases from 22 villages (15 villages with indigenous cases) in 2010, of which 45 cases (79%) were contained. This is a reduction of 69% from the 186 cases reported by the program in 2009, 73% of which were contained. 197 villages are under active surveillance. Mali exported three cases to Niger in 2010. UNICEF funded construction of four borehole wells in four endemic sites in Gao *cercle* during 2010: Tagarbouch (11 cases in 2010), Ntamamarat (3 cases), Intodet (2 cases) and Simikit Iferwane (2 cases). Mali is considering establishing a national commission in 2011 to guide preparations for certification of Guinea worm disease elimination. The Malian GWEP currently offers a cash reward, approximately US $10, for persons with GWD to self-report and ~ US $ 6 to persons providing information leading to confirmation of a case of GWD. The aim of the program is to admit every person with an emerging Guinea worm into a case containment center/facility, including offering US $4 per diem to patients, plus three meals a day, and safe drinking water and sanitation during the patient's hospitalization (Table 1).

- Dr. Daddi Jima, deputy director general in the Ethiopian Ministry of Health, reported on behalf of the **Ethiopian Dracunculiasis Eradication Program (EDEP)**, which detected 21 cases from 9 villages (5 villages with indigenous cases) in 2010, of which 19 cases (90%) were contained. This is a reduction of only 17% from the 24 indigenous cases that Ethiopia reported in 2009. One of the 21 cases was imported from Southern Sudan into Nyangatom *Woreda* (District) SNNPR region; the remaining 20 cases were all located in Gog *Woreda* of the Gambella Region. All of the cases in 2010 except one were admitted to a CCC or a health facility. This program undoubtedly did not detect all cases that occurred in 2009, but in 2010 the EDEP established active surveillance in all 69 inhabited communities of Gog *Woreda*. About 40,000 community drug distribution volunteers in the national onchocerciasis control program will be educated about GWD and will carry Guinea worm recognition cards in 2011 in an effort to bolster surveillance capacity and reporting of any alleged cases from areas now free of the disease. All Guinea worm patients that reported to a CCC or GW field supervisor before the blister ruptured, and any other informer who reported a case of the disease received a cash reward of 500 birr each; the amount of the reward was increased to 1,000 birr (~US$126) in January 2011.

- Dr. Andrew Seidu-Korkor, the national coordinator of **Ghana's Guinea Worm Eradication Program (GGWEP)**, reported only 8 cases, all of them contained in a CCC, in four villages of the Northern Region in 2010. This is a reduction of 97% from the 242 cases (93% contained) that Ghana reported in 2009. Ghana has launched a GWEP National Certification Commission, and also launched a cash reward of 50 Ghana cedis for reporting a case of Guinea worm disease; it increased the amount to GHC100

(~US$70) in January 2011. Ghana's new Minister of Health Mr. Joseph Yieleh Chireh announced Ghana's happy news at a press briefing in Accra on January 26. Ghana plans to create a Guinea Worm Museum in Tamale to preserve memorabilia and lessons of the national eradication campaign.

- Dr. Djidina Mathias Roger, the director of non-communicable diseases in the ministry of health, reported on the outbreak of Guinea worm disease in **Chad** during 2010, after the country reported no indigenous cases since 1998. He was accompanied to the meeting by Dr. Djimrassengar Daudongar Honore, who is the focal point for Guinea worm disease in the WHO mission in Chad. Chad has reported 10 confirmed cases of the disease from 7 villages during 2010 (Figure 2). None of the cases has a history of travel outside of Chad, and none was contained. WHO provided technical assistance via consultancies by Dr. Dieudonne Sankara of WHO headquarters and Dr. Alhousseini Maiga of WHO's Regional Office for Africa. In January, WHO issued its second written update on this outbreak, as of December 20, 2010. Figure 3 shows the month and order of occurrence of the 10 reported cases, and an updated line listings of the ten cases is given in Tables 5 and 6. Two epidemiologists from the U.S. Centers for Disease Conrol and Prevention (CDC), Drs. Charbel El Bcheraoui and Jenny A. Walldorf, assisted the investigation in Chad from January 24 to February 22, 2011. Dr. Jim Zingeser, now with the Food and Agriculture Organization (FAO) in Rome, helped obtain maps of migratory paths used by cattle herders in Chad, as did Dr. Serge Resnikoff, formerly of WHO. Mr. Philip Downs helped access aerial maps of the affected areas from Google Earth.

CAMEROON, CENTRAL AFRICAN REPUBLIC AND NIGERIA ARE ADVISED TO HEIGHTEN SURVEILLANCE FOR GUINEA WORM DISEASE IN APPROPRIATE AREAS OF THOSE COUNTRIES, GIVEN THE INVOLVEMENT OF MIGRANT HERDSMEN IN CHAD'S OUTBREAK.

15th Meeting of Guinea Worm Eradication Program Managers
The Carter Center, Atlanta, Georgia, USA
February 15-18, 2011
Recommendations

All Programs

1. All programs' standard operating procedures should include a graphic of conditions that resemble guinea worm disease (e.g. onchocerciasis, Buruli ulcer, larva *migrans*, *Tunga penetrans*, idiopathic tropical ulcer, etc.*)* and can be the source of rumors.
2. Program managers should review the surveillance indicators on a monthly basis and in high-risk villages on a weekly basis.
3. National Guinea worm disease programs should strengthen surveillance through close collaboration with other health programs and IDSR.
4. Before districts or states are considered as having interrupted all transmission, a field and report-based review and evaluation should be undertaken to ensure that transmission has indeed been interrupted.
5. WHO and the Carter Center through the *WER* and the *Guinea Worm Wrap-Up* should alert all surrounding countries of the Guinea worm status in Chad including the results of

the current CDC investigation, and update the overall status of the GWEP for all countries on a monthly basis.

Burkina Faso

1. The program should reinforce the publicity of the cash reward nationwide.

Chad

1. The MOH and the Government of Chad need to declare the outbreak of GWD to be a national emergency and request assistance (financial, logistical, personnel) from all available partners now to begin responding immediately to the outbreak. The Government of Chad needs to provide the necessary resources to the program.
2. The impending transmission season of GWD in Chad (Jan. – Oct. 2011) requires that the MOH/Chad urgently refine and implement the plan of action and budget for GWD (village-based surveillance and intervention against transmission and supervision of all program activities) in the appropriate Regions, Departments, and Districts linked to the outbreak of GWD in 2010.
3. The MOH and the program need to review the preparedness of the Chad program by April 2011 before the peak transmission season.
4. A Reward system should be publicized nationwide.
5. The program needs to train village volunteers in all endemic villages.
6. The program needs to assess the quality of surveillance for GWD.
7. The program should consider establishing a mobile team in each endemic district to facilitate the detection and containment of cases.
8. The Ministry Water Resources and partners from the water sector need to enhance their participation in the national eradication effort and should be requested to fund the provision of safe and clean drinking water targeting Guinea worm endemic villages as a priority and ensuring that the maintenance and parts for the water equipment are supplied accordingly and timely.

Cote d'Ivoire

1. The Cote d'Ivoire program should strengthen its reward system.

Ethiopia

1. The EDEP should have a full time National Guinea Worm Eradication program coordinator.
2. The EDEP National Coordinator should go to Gambella monthly during the peak transmission season to supervise the EDEP efforts there.
3. Beginning May 2011, the EDEP should assess, by region, knowledge and community awareness about the cash reward for reporting cases of GWD and take steps to improve awareness accordingly.
4. The EDEP should strengthen collaboration with the other health programs to improve surveillance for GWD.
5. The EDEP should conduct more extensive active searches in villages and mapping of water sources along the frontier with Eastern Equatoria, Sudan.
6. The EDEP should form a National Commission and begin detailed documentation and make field visits to review the program.
7. Ethiopia needs to consider setting up a system for monitoring the Nyangatom to catch any imported cases into the region.

Kenya

1. The program is encouraged to get the MOH to accelerate the appointment of the independent national commission to review the Guinea worm disease situation, surveillance and document progress.
2. The program should publicize widely the reward.
3. The IDSR and other health programs need to be engaged to report on GWD weekly.

Mali

1. Mali should plan intensified 2011 activities in specific communities based on careful analysis of the cases in 2009 and 2010 which were not contained or where the 2009 source remains unclear.

Nigeria

1. Nigeria should reintroduce weekly surveillance in the North Eastern States for cases that might come from Chad.
2. Nigeria should put Guinea Worm Disease on the list of diseases reported weekly.

North Sudan

1. North and South Sudan GWEPs should initiate a collaboration to share information on GWD monthly starting in March.
2. The IDSR in the border area should be strengthened and complemented with wide-spread announcements of the reward in north Sudan for Guinea worm disease reporting.
3. North Sudan should review its plan for 2011 to focus its scarce resources on activities that can give maximal probability of detecting any imported cases.

Southern Sudan

1. The Ministry of Health and partners need to pursue, even intensify advocacy work for Guinea worm eradication.
2. The GW Task Force should meet monthly, to review progress and plan for subsequent months, beginning in March 2011.
3. The program and its partners should prepare a written plan and review existing protocols describing how surveillance for GWD will be managed, as well as how to respond to reported cases and to suspected cases and rumors.
4. Southern Sudan should seek ways to improve effectiveness of vector control for all treatable transmission sources (unsafe drinking water).
5. The Ministry of Irrigation and Water Resources and partners from the water sector need to enhance their participation in the national eradication effort and should be requested to fund the provision of safe and clean drinking water targeting Guinea worm endemic villages as a priority. They should also ensure that the maintenance and parts of the water equipment are supplied accordingly and in a timely manner.

Lessons Learned

The elimination of Guinea worm disease from many countries and the imminent global eradication of the infection is a great achievement. It is all the more remarkable in that the result was achieved through the application of traditional public health interventions, including

improving access to safe drinking water. Guinea worm disease will be eradicated without the use of specific chemotherapy or the use of a vaccine.

1. Safe water supply: Countries that have achieved the elimination of Guinea worm disease should intensify efforts to improve access to safe drinking water as an intervention aimed at controlling other water-borne infections such as cholera, and childhood diarrheal diseases. The latter infections require a higher level of purification of drinking water to protect against viral and bacterial infections. The lessons learned from the Guinea worm programs can be further developed to target these other waterborne infections. The technologies used in the Guinea worm program and the strategies adopted for implementing them can form the basis for further improvement.
2. Surveillance: it is widely recognized that surveillance has been a powerful tool for the Guinea worm program. For the control of cholera and other waterborne infections, the surveillance methods would need to be modified and adapted.

   [See report of the Technical Discussions at the World Health Assembly in 1968: "National and Global Surveillance of Communicable diseases" Chairman's opening remarks – Adetokumbo O. Lucas]

Table 1

Dracunculiasis (Guinea Worm Disease) Eradication Campaign
Awards for Reporting and Assessment of Penetration of Reward Messages
Among the Population, by Country During 2010

Country	Award Amount		Knowledge Assessment		Incentives for hospitalization until GW(s) manually extracted
	Informant	Patient	Sample	% with knowledge about the Reward*	
Burkina Faso		In-Kind	707 persons	41%	NA
Chad		US $100	17 Villages	9% (range 0-96%)	US $6 per day
Cote d'Ivoire		US $ 30			NA
Ethiopia^	US $20	US $40	?	100%	Bed sheets; blanket, and mosquito net.
Ghana		US $70			NA
Kenya		None			NA
Mali	US $6	US $10			US $4 per day
Niger	US $6	US $10	714 persons	66%	US $4 per day
Nigeria		US $65	1,212 persons	45%	NA
Sudan (North)		None			NA
Sudan (South)		None			Sleeping mat; bed sheet; mosquito net; 50 Kg. Sorghum bag (pre-emergent GW) or 35 Kg (GW already emerged) for staying at CCC; blanket (Kauto Plateau only)
Togo		US $40	703 persons	31%	NA

* All data from 2010, except Togo (2008)

^ As of January 2011 the reward was increased to US $60 for a self-reporting GW patient and US $30 for the informant.

Table 2

Number of Cases Contained and Number Reported by Month during 2011* (Countries arranged in descending order of cases in 2010)

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	5 / 6	/	/	/	/	/	/	/	/	/	/	/	**5 / 6**	83
MALI	0 / 0	/	/	/	/	/	/	/	/	/	/	/	**0 / 0**	0
ETHIOPIA^	0 / 0	/	/	/	/	/	/	/	/	/	/	/	**0 / 0**	0
CHAD	0 / 0	/	/	/	/	/	/	/	/	/	/	/	**0 / 0**	0
GHANA	0 / 0	/	/	/	/	/	/	/	/	/	/	/	**0 / 0**	0
TOTAL*	5 / 6	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	**5 / 6**	83
% CONTAINED	83												83	
% CONT. OUTSIDE SUDAN	0												0	

* provisional

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

Number of Cases Contained and Number Reported by Month during 2010 (Countries arranged in descending order of cases in 2009)

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	5 / 6	21 / 35	78 / 113	119 / 160	144 / 190	173 / 241	273 / 361	226 / 290	118 / 159	71 / 95	31 / 41	5 / 7	**1264 / 1698**	74
GHANA	2 / 2	3 / 3	1 / 1	1 / 1	1 / 1	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	**8 / 8**	100
MALI	0 / 0	0 / 0	0 / 0	0 / 0	1 / 1	0 / 0	4 / 6	6 / 6	13 / 19	18 / 19	3 / 5	0 / 1	**45 / 57**	79
ETHIOPIA^	0 / 0	1 / 1	2 / 2	6 / 6	1 / 2	1 / 2	1 / 1	2 / 2	1 / 1	1 / 1	2 / 2	1 / 1	**19 / 21**	90
CHAD	0 / 0	0 / 0	0 / 0	0 / 1	0 / 0	0 / 1	0 / 3	0 / 3	0 / 1	0 / 1	0 / 0	0 / 0	**0 / 10**	0
NIGER^	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	2 / 2	0 / 1	0 / 0	**2 / 3**	67
TOTAL*	7 / 8	25 / 39	81 / 116	126 / 168	147 / 194	174 / 244	278 / 371	234 / 301	132 / 180	92 / 118	36 / 49	6 / 9	**1338 / 1797**	74
% CONTAINED	88	64	70	75	76	71	75	78	73	78	73	67	74	
% CONT. OUTSIDE SUDAN	100	100	100	88	75	33	50	73	67	91	63	50	75	

^ Ethiiopia reported and imported case from Southern Sudan in June, and Niger reported three imported cases from Mali (2 in October and 1 in November).The origin of cases in Chad is uncertain.

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

Number of Cases Contained and Number Reported by Month during 2009 (Countries arranged in descending order of cases in 2008)

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	4 / 12	12 / 18	39 / 47	134 / 221	277 / 428	388 / 458	434 / 521	452 / 543	240 / 275	104 / 141	39 / 55	11 / 14	**2134 / 2733**	78
GHANA	40 / 45	49 / 50	50 / 52	27 / 28	30 / 34	18 / 19	6 / 7	1 / 1	1 / 1	2 / 3	0 / 0	1 / 2	**225 / 242**	93
MALI	0 / 0	0 / 0	0 / 0	0 / 0	1 / 1	7 / 7	14 / 23	34 / 43	48 / 68	23 / 34	5 / 7	3 / 3	**135 / 186**	73
ETHIOPIA	0 / 0	0 / 0	2 / 2	6 / 6	2 / 5	6 / 8	2 / 2	1 / 1	0 / 0	0 / 0	0 / 0	0 / 0	**19 / 24**	79
NIGERIA	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
NIGER	0 / 0	0 / 0	0 / 1	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	1 / 2	0 / 1	1 / 1	0 / 0	**2 / 5**	40
TOTAL*	44 / 57	61 / 68	91 / 102	167 / 255	310 / 468	419 / 492	456 / 553	488 / 588	290 / 346	129 / 179	45 / 63	15 / 19	**2515 / 3190**	79
% CONTAINED	77	90	89	65	66	85	82	83	84	72	71	79	79	
% CONT. OUTSIDE SUDAN	89	98	95	97	83	91	69	80	70	66	75	80	83	

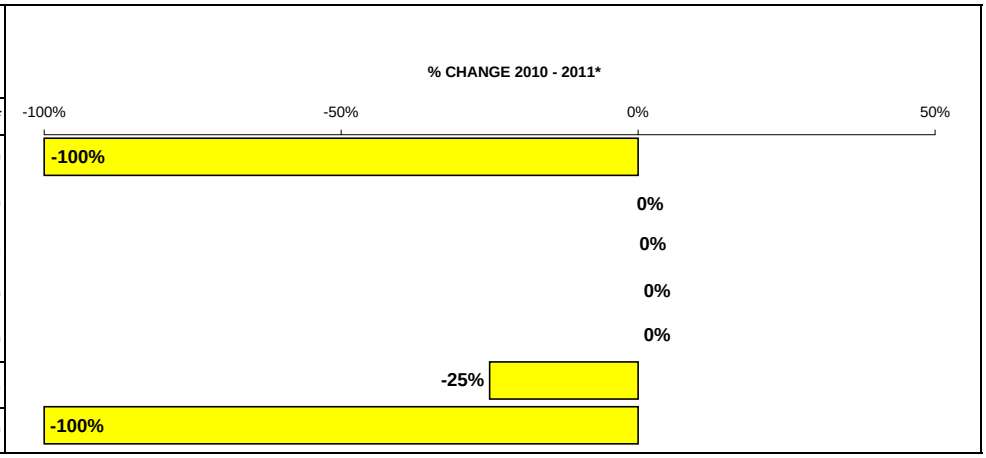
^ Niger reported 5 imported cases: 1 from Ghana and 4 from Mali.

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

Figure 1

Number of Indigenous Cases Reported During the Specified Period in 2010 and 2011*, and Percent Change in Cases Reported

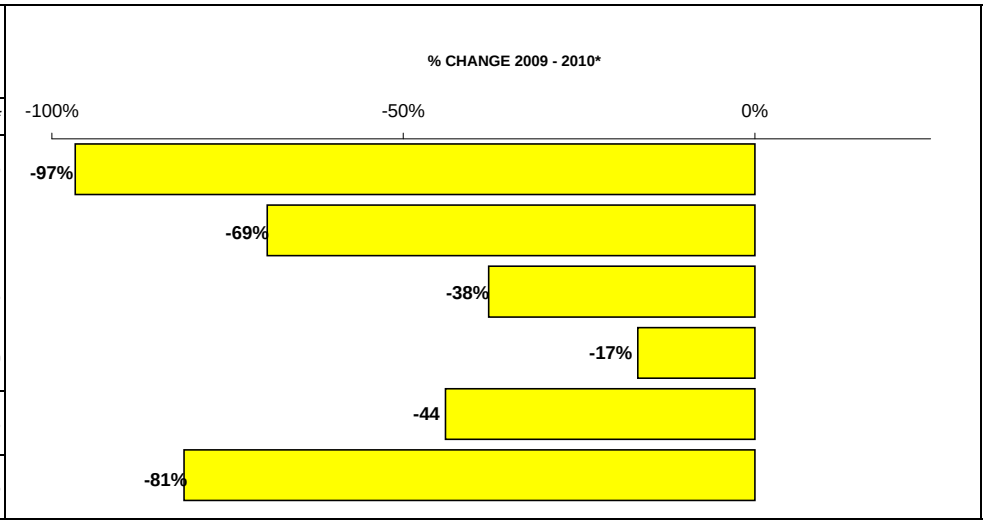
Country	Indigenous Cases Reported	
	2010	2011*
Ghana (1)	2	0
Mali (1)	0	0
Sudan (1)	6	6
Ethiopia (1)	0	0
Chad (1)	0	0
Total	8	6
All countries, excluding Sudan	2	0



* Provisional
(1) Indicates months for which reports were received, i.e., Jan..2011*

Number of Indigenous Cases Reported During the Specified Period in 2009 and 2010*, and Percent Change in Cases Reported

Country	Indigenous Cases Reported	
	2009	2010*
Ghana	242	8
Mali	186	57
Sudan	2733	1698
Ethiopia	24	20
Total	3185	1783
All countries, excluding Sudan	452	85



* Excludes one case imported into Ethiopia from Southern Sudan, three cases imported into Niger from Mali, and 10 cases reported from an outbreak in Chad. The origin of cases reported in Chad is uncertain.

Table 3

Dracunculiasis Eradication Campaign: Status of Interventions:2010*

Countries Reporting Cases in 2010	Number of reported cases (indigenous) in 2010*	Number of reported cases (imported) in 2010**	% of all cases reported that were contained during 2010	Overall % change in indegenous cases in endemic villages/localities during 2009 and 2010	Villages / Localities								
					2010*			Status of Interventions during 2010*					
					No. reporting one or more cases	No. reporting only imported cases***	No. reporting indigenous cases	Endemic villages 2009-2010*	% reporting monthly^	% with filters in all households^	% using Abate^	% with one or more sources of safe water^	% provided health education^
Sudan	1,698	0	74%	-38%	732	505	227	676	99%	98%	60%	22%	90%
Ghana	8	0	100%	-97%	4	0	4	19	100%	95%	100%	84%	100%
Mali	57	0	79%	-69%	22	3	19	53	100%	100%	93%	17%	100%
Ethiopia	20	1	90%	-17%	9	4	5	9	100%	100%	100%	78%	100%
Niger	0	3	66%	NA	3	3	0	0	NA	NA	NA	NA	NA
Chad	10	?	0%	NA	7	0	7	?	?	?	?	?	?
Total	1,793	4	76%	-44%	777	515	262	757	98%	98%	63%	23%	90%
Total outside Sudan	95	4	74%	-81%	45	10	35	81	100%	99%	95%	39%	100%

* Provisional

** Imported from another country

*** imported from another country or from another in-country endemic village

^ The base of the percentage is the number of villages/localities where the program applied interventions during 2009-2010

NA = not applicable

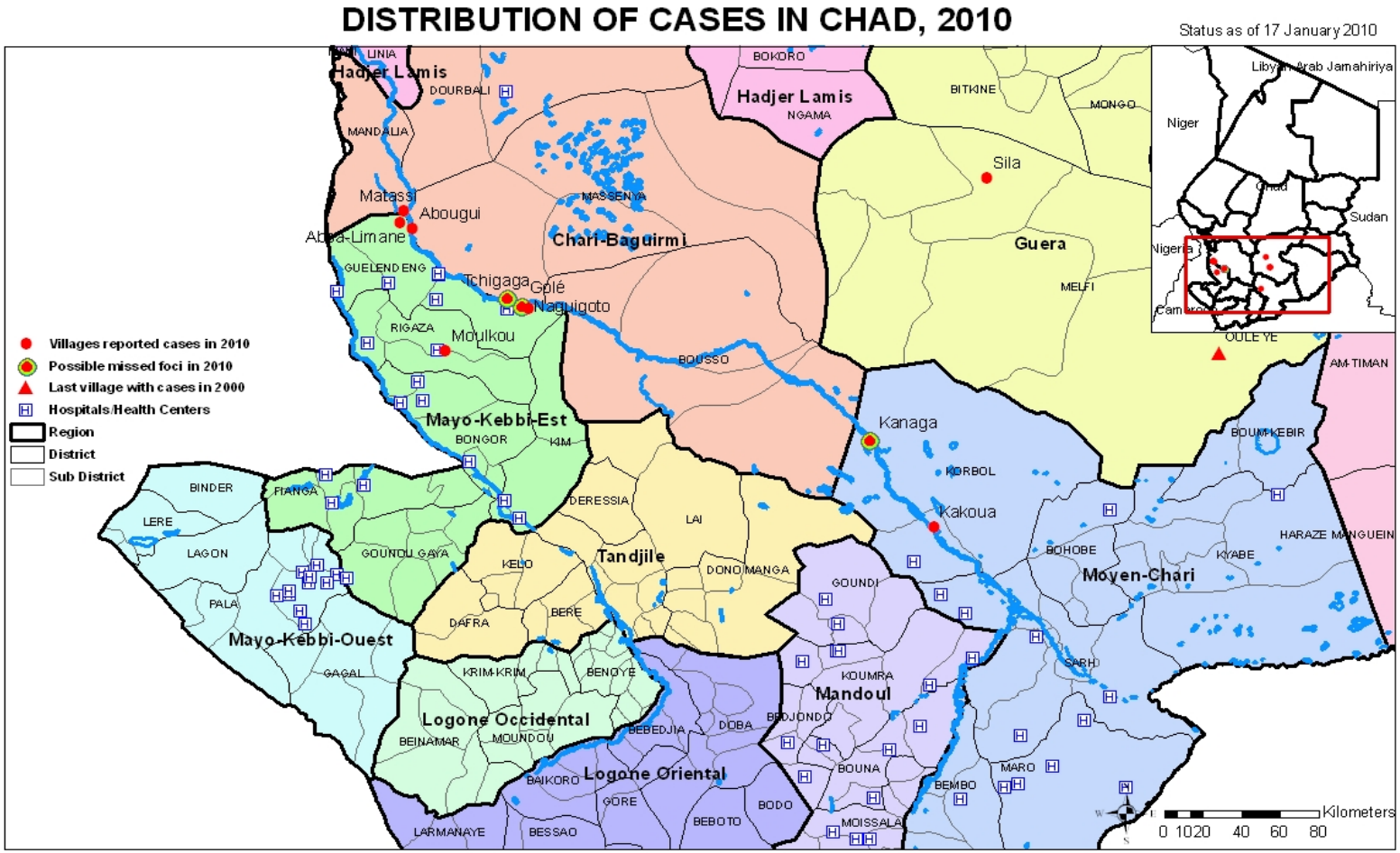
Table 4

Southern Sudan Guinea Worm Eradication Program
Cases Reported and Contained During 2010* by State, County and Month

State	County	Cases Contained / Cases Reported													% Contained
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total	
Eastern Equatoria	Kapoeta East	2 / 2	15 / 27	62 / 92	51 / 83	64 / 89	54 / 82	39 / 56	20 / 26	10 / 13	4 / 7	1 / 1	0 / 0	322 / 478	67%
	Kapoeta North	0 / 0	0 / 0	12 / 16	46 / 52	33 / 43	15 / 19	5 / 6	9 / 11	3 / 5	1 / 3	0 / 0	0 / 0	124 / 155	80%
	Kapoeta South	0 / 0	0 / 0	0 / 1	5 / 7	2 / 3	1 / 2	4 / 6	2 / 2	4 / 5	2 / 3	1 / 2	0 / 0	21 / 31	68%
	Torit	0 / 0	0 / 0	0 / 0	0 / 0	0 / 1	0 / 0	0 / 1	0 / 1	0 / 0	0 / 0	0 / 0	0 / 0	0 / 3	0%
STATE TOTAL		2 / 2	15 / 27	74 / 109	102 / 142	99 / 136	70 / 103	48 / 69	31 / 40	17 / 23	7 / 13	2 / 3	0 / 0	467 / 667	70%
Warrab	Tonj North	1 / 1	2 / 2	0 / 0	4 / 4	9 / 14	34 / 47	77 / 99	60 / 85	36 / 45	8 / 12	3 / 3	1 / 2	235 / 314	75%
	Tonj East	0 / 0	1 / 1	1 / 1	7 / 8	3 / 3	30 / 39	59 / 77	45 / 57	21 / 31	20 / 24	15 / 20	3 / 4	205 / 265	77%
	Tonj South	0 / 0	1 / 1	0 / 0	1 / 1	2 / 2	3 / 3	36 / 40	16 / 18	5 / 9	2 / 2	1 / 1	0 / 0	67 / 77	87%
	Gogrial East	0 / 0	0 / 0	1 / 1	0 / 0	0 / 0	2 / 4	6 / 6	5 / 6	1 / 1	1 / 1	0 / 0	0 / 0	16 / 19	84%
STATE TOTAL		1 / 1	4 / 4	2 / 2	12 / 13	14 / 19	69 / 93	178 / 222	126 / 166	63 / 86	31 / 39	19 / 24	4 / 6	523 / 675	77%
Lakes	Awerial	0 / 0	1 / 1	0 / 0	4 / 4	26 / 27	25 / 33	29 / 48	52 / 61	33 / 43	27 / 36	7 / 9	0 / 0	204 / 262	78%
	Cuibet	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	3 / 3	0 / 0	0 / 0	3 / 3	100%
	Yirol E.	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	1 / 2	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	1 / 2	50%
	Yirol W.	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 1	0 / 0	0 / 1	0 / 0	0 / 0	0 / 2	0%
	Wulu	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 1	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 1	0%
STATE TOTAL		0 / 0	1 / 1	0 / 0	4 / 4	26 / 27	25 / 33	30 / 51	52 / 62	33 / 43	30 / 40	7 / 9	0 / 0	208 / 270	77%
Central Equatoria	Terekeka	1 / 2	1 / 3	2 / 2	0 / 0	0 / 1	2 / 2	10 / 11	6 / 10	2 / 4	1 / 1	3 / 3	0 / 0	28 / 39	72%
	Juba	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	4 / 4	1 / 1	1 / 1	0 / 0	0 / 0	6 / 6	100%
STATE TOTAL		1 / 2	1 / 3	2 / 2	0 / 0	0 / 1	2 / 2	10 / 11	10 / 14	3 / 5	2 / 2	3 / 3	0 / 0	34 / 45	76%
Jonglei	Pibor	0 / 0	0 / 0	0 / 0	0 / 0	0 / 2	5 / 8	4 / 5	6 / 7	1 / 1	1 / 1	0 / 0	1 / 1	18 / 25	72%
	Nyriol	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%
	Ayod	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	1 / 1	0 / 0	0 / 0	0 / 0	1 / 1	100%
	Wuror	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%
STATE TOTAL		0 / 0	0 / 0	0 / 0	0 / 0	0 / 2	5 / 8	4 / 5	6 / 7	2 / 2	1 / 1	0 / 0	1 / 1	19 / 26	73%
Western Bahr Al Ghazal	Jur River	1 / 1	0 / 0	0 / 0	1 / 1	5 / 5	2 / 2	3 / 3	1 / 1	0 / 0	0 / 0	0 / 2	0 / 0	13 / 15	87%
STATE TOTAL		1 / 1	0 / 0	0 / 0	1 / 1	5 / 5	2 / 2	3 / 3	1 / 1	0 / 0	0 / 0	0 / 2	0 / 0	13 / 15	87%
Western Equatoria	Mvolo	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%
TOTAL		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%
Northern Bahr A; Ghazal	Aweil East	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%
TOTAL		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%
SOUTHERN SUDAN TOTAL		**5 / 6**	**21 / 35**	**78 / 113**	**119 / 160**	**144 / 190**	**173 / 241**	**273 / 361**	**226 / 290**	**118 / 159**	**71 / 95**	**31 / 41**	**5 / 7**	**1264 / 1698**	**74%**
% CONTAINED		**83%**	**60%**	**69%**	**74%**	**76%**	**72%**	**76%**	**78%**	**74%**	**75%**	**76%**	**71%**	**74%**	

* Provisional

Figure 2



This map is for WHO's internal use only. The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

Data source: MOH and World Health Organization
Map production: Guinea worm Eradication
World Health Organization

World Health Organization

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Figure 3

Reported Cases of Dracunculiasis From Chad: 2010

(Cases Arranged in Order of Date (month) of Worm Emergence)

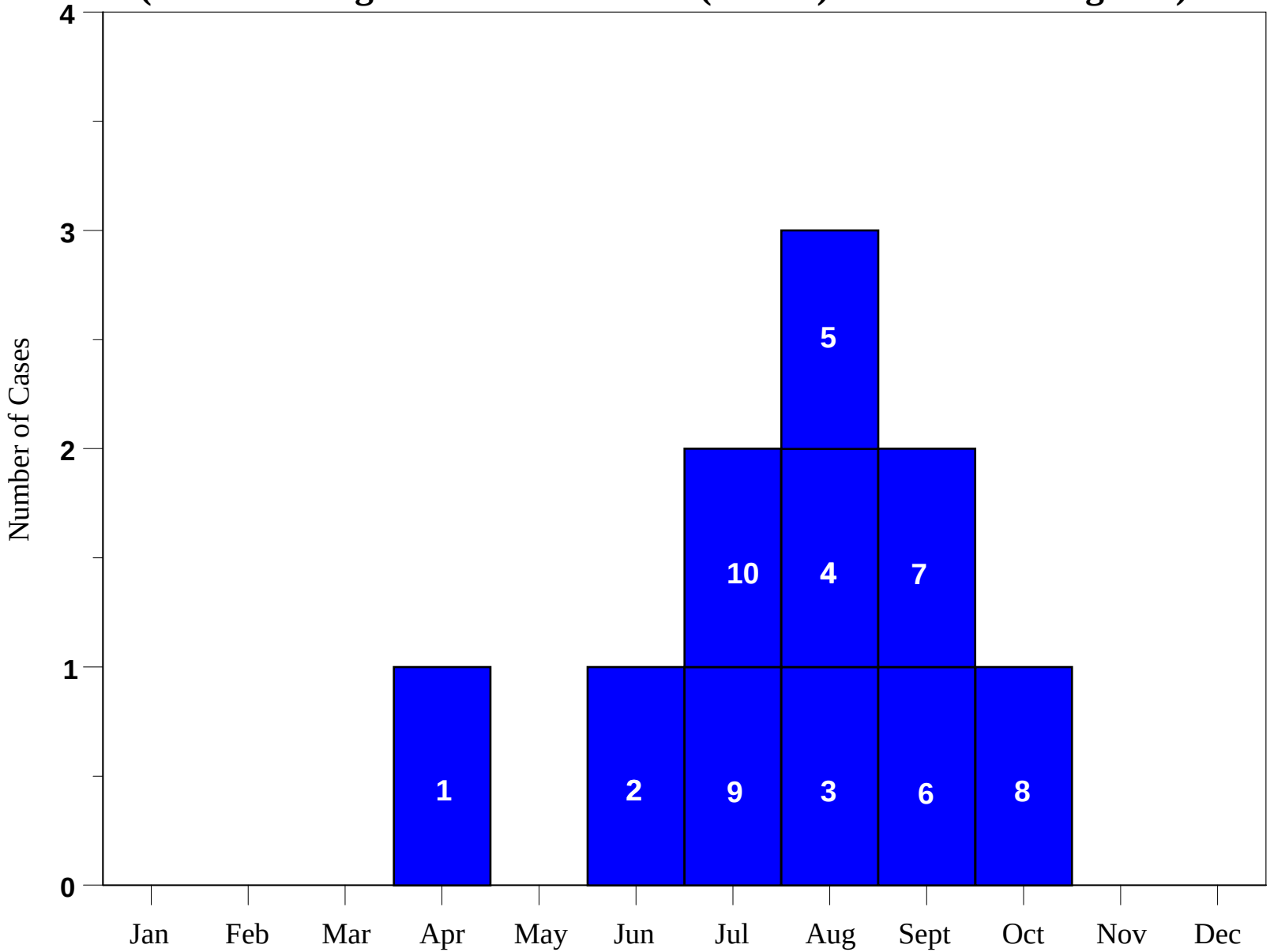

Table 5

Chad Guinea Worm Eradication Program
Reported Cases of Guinea Worm Disease: 2010*

Patient Number	CDC Specimen Accession Number	Village of Residence	Village Where Case Detected	District	Age	Gender	Date of Detection	Date of emergence of 1st Guinea worm (total worms emerged)	Date case confirmed	Date GW extracted	Contaminated Water	Contained	Travel History: Year, Village and District
1**	PDB10-10	Nanguigoto	Nanguigoto	Guelendeng	60	F	April 2010	04 2010 (2 worms)	April 2010	1-Apr-2010	Yes	No	2008:Mitau Village, Guelendeng District; and Bram Village, Massenia District
2**	PDB10-9	Nanguigoto	Nanguigoto	Guelendeng	27	F	18-Jun-10	18 June 2010 (1 worm)	19-Jun-2010	23-Jun-2010	Yes	No	2008:Mitau Village, Guelendeng District
3		Matassi	Matassi	Massenya	27	F	20-Aug-10	24-Aug-2010 (1 worm)	12-Sept-2010	24-Aug-2010	Yes	No	2005 and 2009:Matassi Village, Massenya District
4**	PDB10-17	Madjafa and Matassi	Matassi	Dourbali	25	F	24-Aug-10 (2 worms)	10-Aug-10	25-Aug-10	16-Sep-2010	Yes	No	2009:Raihoutou Village, Guelendeng District
5	PDB10-16	Abba Limane since June 2010	Abba Limane	Guelendeng	15	M	24-Aug-10	10-Aug-10 (1 worm) Sep 2010 (1 worms)	30-Aug-2010 and Sept 2010	2-Sept-2010 and Sept 2010	Yes	No	2010:Abba Limane Village, Guelendeng District
6**	PDB10-15	Abourgoui	Abourgui	Massenya	60	M	2-Sep-10	July-2010 (5 worms)	13-Sept-10	13-Sept-10	Yes	No	1950s Abourgui Village, Dourbali District
7**	PDB10-19	Moulkou	Moulkou	Guelendeng	4	F	17-Sep-10	17-Sept-2010 (1 worm)	17-Sept-10	23-Sep-2010	Yes	No	2009:Cigague Village, Bousso District
8	PDB10-18	Kakoua	Kakoua	Sarh	9	M	1-Oct-10	1-Oct-2010 (1 worms)	2-Oct-10	11-Oct-2010	Yes	No	Kakoua
9		??	Sila	Melfi	10	F	1-Oct-10	1-Oct-10 (1 worm)	2-Oct-10	11-Oct-2010	Yes	No	
10		??	Sila	Melfi	42	F	15-Sep-10	15-Sept-10 (2worms)	15-Sep-10	22-Spt-10	Yes	No	

* Provisional

** Worm specimens obtained from these patients were confirmed to be *Dracunculus medinensis* by the Centers for Disease Control and Prevention in Atlanta.

Patients 1 and 4 dates (underlined) are puzzling.

PDB10-15, 17, 19 "preserved" in water

PDB10-16 no specimen in container. However there is an photograph of this patient with a GW emerging from his ankle.

PDB10-18 fixed in formalin

Case # 1 = Aunt of case # 2

Cases # 4 , 5 are siblings.

Table 6

Chad Guinea Worm Disease Outbreak

Region	District	Village	Case Number	Date of Search	Interventions						Comments
					VV selected	IEC	ABATE	Filters Distributed		Safe Water	
								Household	Pipe		
Mayo Kebbi Est	Guelendeng	Nanguigoto	1, 2	Aug 2010	Yes						
		Abba Limane	5	Nov/Dec 2010	Yes						Migrant herdsmen
		Moulkou	7	Aug 2010	Yes						
		Katawa	4	Nov/Dec 2010							Migrant herdsmen
		Gole		Nov/Dec 2010	Yes						Missed case 2010?
		Mitau	1	Aug 2010							
		Mahaing		Nov/Dec 2010	Yes						
Chari Baguirmi	Massenya	Matassi	3, 4	Nov/Dec 2010							
		Madjafa	4	Nov/Dec 2010							Migrant herdsmen
		Abourgui	6 (5 GWS)	Nov/Dec 2010	Yes						Missed cases 2007-2010?
		Mouray	4								Migrant herdsmen
	Bousso	Kanaga		Nov 2010, Jan 2011							Missed cases 2009, 2010?
		Bouram	1	Nov/Dec 2010							
		Cegague/Tchigaga		Nov/Dec 2010	Yes						Missed cases 2009, 2010?
		Kalba									Missed case 2010?
Moyen Chari	Sarh	Kakoua	8	Nov/Dec 2010							
Guera	Melfi	Sila	9, 10	Nov/Dec 2010	Yes						
		Safi		Nov/Dec 2010	Yes						
		Magnam		Nov/Dec 2010	Yes						

WORLD HEALTH ORGANIZATION

On January 20, the Executive Board of the World Health Organization (WHO) approved a report (EB128/15) and draft resolution EB128.R6 on dracunculiasis eradication for consideration by the World Health Assembly in May 2011. Mozambique speaking on behalf of the African countries, Germany, the United Kingdom and the USA made comments and supported the draft resolution, a copy of which may be found at http://apps.who.int/gb/ebwha/pdffiles/EB128/B128R6-en.pdf

DEFINITIONS: ESTABLISHMENT OR RE-ESTABLISHMENT OF ENDEMICITY IN A COUNTRY, AND RUMOR OF CASE OF GUINEA WORM DISEASE

During the Program Managers Meeting, a small working group of representatives from endemic countries (Ghana and Sudan), The Carter Center, CDC, WHO, ICCDE, UNICEF and HDI agreed on the following criteria for declaring establishment or re-establishment of dracunculiasis endemicity in a country, and on a definition for a rumor of a possible case of GWD.

1. Criteria for declaring re-establishment of dracunculiasis endemicity in a country:

A country will be considered to have established or re-established dracunculiasis endemicity if

- *The country has not reported a confirmed* indigenous case of the disease for >3 years, and*
- *Subsequently indigenous transmission of cases (laboratory-confirmed) is shown to occur in that country for three or more consecutive calendar years*

2. Rumor of Guinea worm disease – Information about an alleged case of Guinea worm disease obtained from any source.

*Meets case definition of a confirmed case of dracunculiasis. Reference WHO, 2003 Dracunculiasis eradication: case definition, surveillance and performance indicators *Wkly Epidemiol Rec* 78:323-328.

DONATIONS

BASF Corporation (with its predecessors American Cyanamid and American Home Products) has been a donor to the Carter Center's Guinea Worm Eradication Program since 1988, contributing ABATE® larvicide at a total value of more than $4 million. ABATE® larvicide is a key intervention against the transmission of Guinea worm disease. Primarily a chemicals company, BASF produces a number of public health products, largely for vector-borne diseases. These products include bed nets, adulticide/larvicide, and chemicals to treat textiles, walls, curtains and floors for the prevention of malaria. In December 2010 and January 2011 BASF donated 1,500 liters of ABATE® for the fight against Guinea worm disease in Sudan, Mali, Ethiopia, and Chad.

The John P. Hussman Foundation, a valued partner of The Carter Center since 2007, pledged a new $1 million challenge grant in support of the Guinea Worm Eradication Program. Support from individuals and organizations in response to the challenge grant will be matched by the Hussman Foundation on a one-to-one basis up to $1 million. Based in Ellicott City, Maryland, the Hussman Foundation supports projects that are designed to benefit vulnerable, overlooked communities. The Foundation aims to have a major, sustainable impact at a low cost per person affected in medical research, model programs for replication, and emergency aid to improve health and education in developing countries. Prior contributions from the Hussman Foundation have advanced the Center's work to address Guinea worm disease, malaria, trachoma, and schistosomiasis.

RECENT PUBLICATIONS

Hopkins DR, 2011. Looking to the future in Sudan (letter). *New York Times* January 15:A18.

Warungu J. 2011. Turning the Corner. *BBC Focus on Africa* January-March:62-63.

World Health Organization, 2010. Monthly report on dracunculiasis cases, January–July 2010. Wkly Epidemiol Rec 86:45-52).

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, CGH, 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/parasites/guineaworm/publications.html
Back issues are also available on the Carter Center web site English and French are located at
http://www.cartercenter.org/news/publications/health/guinea_worm_wrapup_english.html.
http://www.cartercenter.org/news/publications/health/guinea_worm_wrapup_francais.html

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