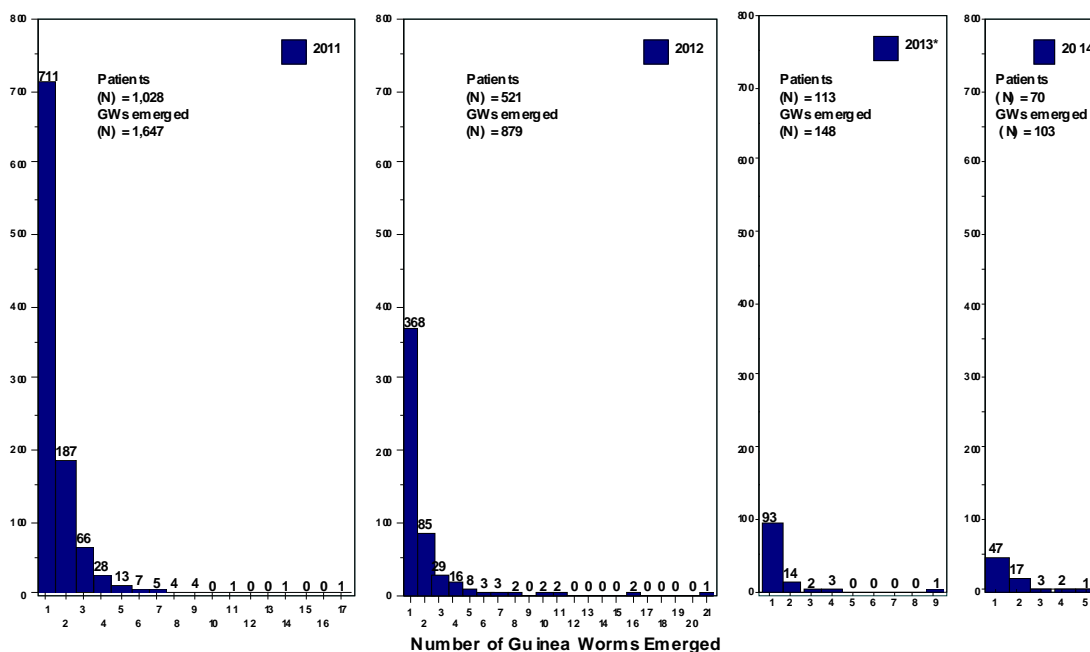


The number of Guinea worms emerging from patients in South Sudan has also been reduced steadily since 2011 (Figure 2).

Figure 2

South Sudan Guinea Worm Eradication Program
Frequency Distribution of the Number of Patients with Guinea Worm Disease
and Number of Guinea Worms Emerging in 2011- 2014



On March 7, 2015, the Undersecretary in the National Ministry of Health, Dr. Makur Matur, represented the national Minister of Health on a visit to the endemic area of Nabweliangakine village in Kapoeta East County of Eastern Equatoria State to commission the mechanized borehole that was completed in late November 2014 with the assistance of UNICEF. Other guests included the Governor, H.E. Louis Lobong Lojore, the Minister of Health of Eastern Equatoria State (Dr. Margaret Itto), the Director General of Preventative Health Services (Dr. John Rumunu), Kapoeta East County Commissioner Mr. Titus Lokwachma, representatives from UNICEF, the World Health Organization, and The Carter Center; ambassadors from the Netherlands, The European Union and the United States; hundreds of community members, and other officials. The Honorable National Minister of Health himself, Dr. Riek Gai Kok, launched the cash reward for reporting a case of Guinea worm disease during a visit to Wulu County in Lakes State in November 2014. The SSGWEP has increased awareness of the cash reward for reporting a case of GWD rapidly throughout the country following its inauguration in April 2014 (Tables 1 and 9). SSGWEP Director Mr. Samuel Makoy Yibi led a Task Force Meeting for regional coordinators of the Guinea worm program in Juba on March 27-28, 2015. Mr. Makoy reports that all active community drug distributors (CDDs) for the Onchocerciasis Control Program have now been trained to conduct awareness of GWD and of the cash reward, as well as to conduct surveillance for GWD. During 2014 the SSGWEP investigated 685 (97%) of 703 rumors about possible cases in areas free of endemic GWD and 656 (93%) were investigated within 24 hours. Similarly it investigated 6,936 rumors of cases in areas with endemic GWD and investigated all within 24 hours (Table 2).

Table 1

South Sudan Guinea Worm Eradication Program
Awareness about the Cash Reward during 2014 in Endemic Areas

County	Surveys	MONTH 2014	Interviews	% Awareness
Kapoeta E.	113	JULY	638	87%
Kapoeta N.	5	JULY	30	80%
Kapoeta S.	6	JULY	41	59%
Aweil W.	3	SEPT.	18	72%
Gogrial E.	51	SEPT.	304	75%
Tonj E.	5	SEPT.	30	80%
Tonj N.	20	SEPT.	120	91%
Awerial	25	NOV.	171	75%
TOTAL	228	-	1352	82%

Table 2

South Sudan Guinea Worm Eradication Program
Rumors of Cases and Investigations in 2014

RUMORS	NUMBER	INVESTIGATED	%	INVESTIGATED < 24 HOURS	%
REPORTED FROM AREAS FREE OF GWD	703	685	97%	656	93%
REPORTED FROM ENDEMIC AREAS	6,936	6,936	100%	6,936	100%

CHAD: MINISTER OF HEALTH VISITS 7 ENDEMIC COMMUNITIES

On March 28-30, 2015, the Minister of Health of Chad, Dr. Ngariara Rimadjita, visited seven endemic communities in Mayo Kebbi Est (Guelendeng, Nanguigoto) and Chari Baguirmi (Ba-illi, Mogo, Bousso, Massenya, Dourbali) Regions to discuss the problem of Guinea worm disease with local officials, health workers and community members. He conducted town hall meetings in Guelendeng, Ba-illi and Mogo, and visited a fish market in Guelendeng. In Nanguigoto, which had the first two cases discovered in 2010, many fishermen visited were not burying the fish entrails, while most villagers in Bousso were doing so. The minister was accompanied on his unprecedented mission by the national coordinator of Chad's GWEP, Dr. Mahamat Tahir Ali, WHO country representative Dr. J.M.V. Yameogo, Carter Center country representative Ms. Melinda Denson, and the chief of UNICEF's WASH Unit in Chad, Mr. Harouna Moustapha, among many others. Reporters and film crews from national radio and television stations accompanied the minister for all three days. In an interview just before returning to N'Djamena, the minister said he wanted to help the public get the information they need in order to stop transmission of the disease among people and dogs in

Chad. The minister’s initiative is welcome political support for Chad’s GWEP and comes not a moment too soon.

During January-April this year, Chad has reported 3 cases of GWD in humans, compared to 4 cases reported during the same period of 2014, but it has reported 114 infections so far in dogs, which is a 356% increase from the 25 dog infections reported during January-April 2014 (Figures 3,4). Infection of copepods by Guinea worm larvae discharged from worms in dogs is the overwhelming source of on-going Guinea worm infections of humans and dogs in Chad. A line listing of the three cases in humans is given in Table 3.

So far this year, Chad’s GWEP has contained none of the three infected persons (0/3), but 68% of the 114 infected dogs. In total, 69% of the 759 villages under active surveillance in Chad have at least one source of safe drinking water. Surveys conducted in January-February 2015 showed that 69% of 127 “priority villages” (reported 1+ infection in humans and/or dogs in 2014-2015) practiced burial of fish entrails, while Abate has been used to treat nine ponds in 7 priority villages (6%) by using portable barriers so far in 2015. The occurrence of cases and introduction of interventions are illustrated in Figure 3. In 2014, overall awareness of the cash reward was apparent in 63% of persons surveyed, but in non-endemic areas of Chad, reward awareness was only 24% (Table 9).

Carter Center consultant Dr. Mark Eberhard visited Chad during April 14-24 to initiate 1) a prospective study to determine whether a high dose of the Mectizan formulation Heartgard (Merial Corporation) can protect dogs from becoming infected, as this medication may prevent incoming 3rd stage infective larvae of *D. medinensis* from reaching maturity, and 2) a study of seasonal fresh water copepod densities in the Chari River.

Figure 3 Chad Guinea Worm Eradication Program
Cumulative Number of Human Cases of GWD in Chad, 2013-2015*

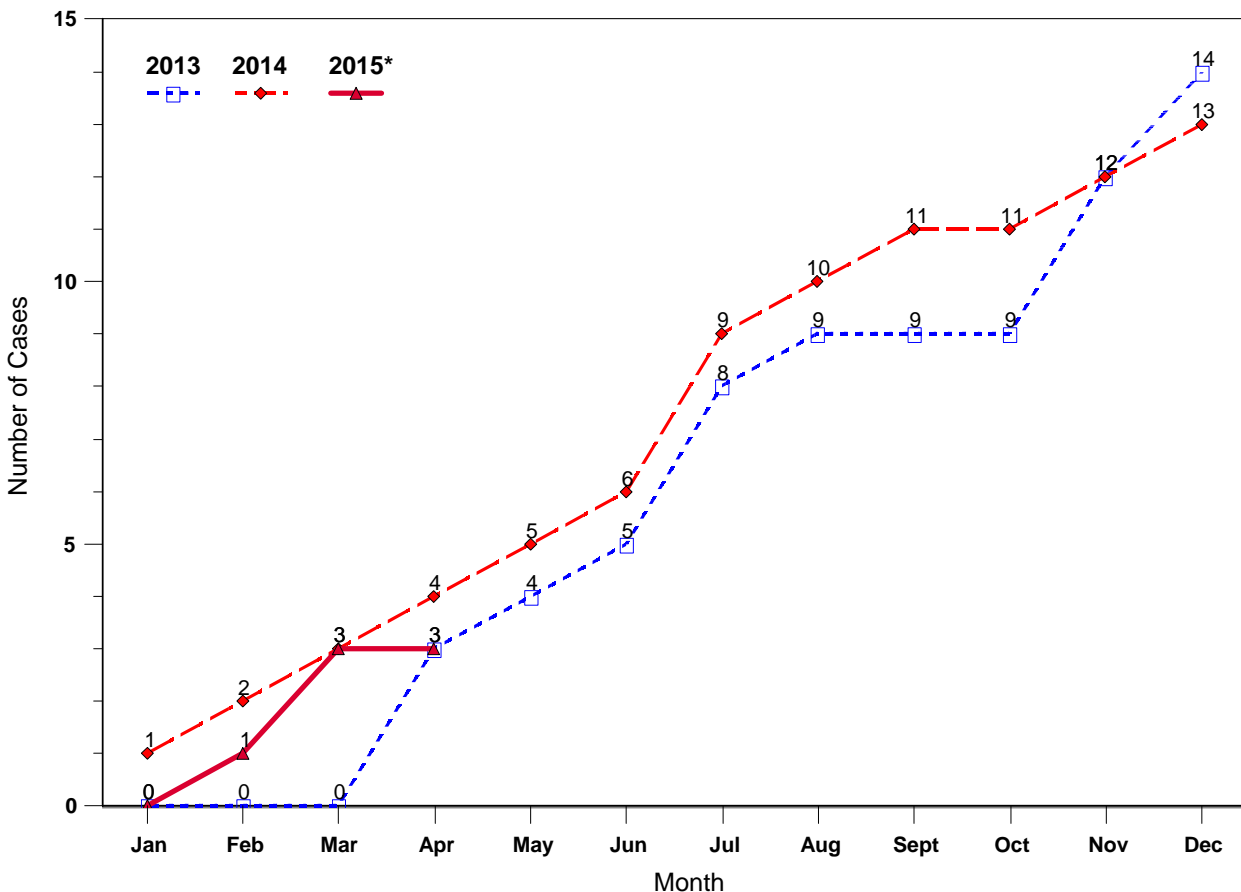


Table 3

Chad Guinea Worm Eradication Program
Line Listing of Cases of GWD during 2015

Case #	Village or Locality of detection			District	Region	Patient			Case Contained?		1 = imported 2= indigenous	Home Village or Locality			Presumed Source of infection identified?		Presumed Source of infection is a known VAS?		
	Name	1= VAS	2= VNAS			Age	Sex	Date GW emerged (D/M/Y)	(Yes, No, or Pending)	If no, date of Abate Rx		Name	1= VAS	2= VNAS	(Yes or No)	Name	(Yes or No)	Actions?	
1.1	Mourgoum		2	Dourbali	Chari Baguirmi	13	M	19-Feb-15	No	-	2	Mourgoum		2	No		No	Contaminated flowing water	
2.1	Marabe I		2	Kyabe	Moyen Chari	8	F	7-Mar-15	No	-	2	Marabe I		2	No	-	No	Did not contaminate water	
2.2								24-Mar-15											
2.3								13-Apr-15											
3.1	Diganali	1		Guelendeng	Mayo-Kebi Est	9	M	28-Mar-15	No	4/6/2015	2	Diganali	1		No	-	Yes		
3.2								5-Apr-15											
3.3								14-Apr-15										Worm extraction in process	

use the 1.1, 1.2... etc. system to designate number of GWs emerging from same case-patient.

VAS = village under active surveillance

VNAS = village not under active surveillance

MALI: NO CASES AND NO NATIONAL TASK FORCE SO FAR

The transmission season for GWD in Mali in 2014 was August-November, so it is not surprising that no cases have been reported in Mali during the first four months of 2015. This program, which began after 16,024 cases were enumerated in the national case search in 1991, reported 40 cases (88% contained) in 2014. The cases detected in 2014 were in only three localities: Tanzikratene (Ansongo district of Gao Region), which reported 29 cases and contained 28 of them; Nanguaye (Gourma Rharous district of Timbuktu Region), which reported 10 cases and contained 7 of them; and Fion (Tominian district of Segou Region), which reported 1 case, uncontained. Tanzikratene currently has no access to safe water, as their small town water system is broken and has not been repaired due to insecurity. Nanguaye also has no source of safe water. Fion has one functioning and two non-functional boreholes. Abate was applied at appropriate times in all three localities last year (Table 4). Reward awareness appears to be good in Mali (Table 9). The program has distributed the new “Guinea worm cloth” to village volunteers and zonal health agents (ASZ: *agents de sante de zone*).

Table 4

MALI GUINEA WORM ERADICATION PROGRAM															
ABATE TREATMENTS IN THREE VILLAGES WITH GUINEA WORM CASES IN 2014															
COMMUNITY	2014												2015		
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR
Tanzikratene (Ansongo,Gao) 28/29 cases, 31 Aug-26 Nov; uncontained 22 Sept.						Yellow	Rains	Yellow	Yellow	Dry	Dry				
								★	★	★	★				
Nanguaye (Gourma Rharous, Timbuktu) 7/10 cases, 15 Sept - 30 Nov; uncontained 12,15, & 16 Sept.						Yellow	Yellow		Yellow	Yellow	Dry				
									★	★	★				
Fion (Tominian, Segou) 0/1 case, 16 Oct; uncontained 16 Oct.										Yellow	Yellow				
										★					
	Yellow	ABATE applied													
	★	GW case(s)													

Table 5

Mali Guinea Worm Eradication Program Rumor Reporting in 2014

Category of Districts	Rumor reporting and investigation					
	Total No of districts	No (%) of districts that reported rumors	Total No of rumors reported	No (%) of rumors investigated within 24 hours	Total No (%) of rumors investigated	No of rumors confirmed as dracunculiasis
Endemic*	5	4 (80%)	109	108 (99%)	109 (100%)	40
All other districts**	55	10 (18%)	42	41 (98%)	42 (100%)	0
Total	60	14 (23%)	151	149 (99%)	151 (100%)	40

* Indigenous cases in 2014 or 2013

** Never endemic, recently freed, formerly endemic

If the reported rate of case containment was accurate and if no cases were missed by the surveillance system last year, Mali may once again be on the verge of stopping transmission of GWD in the country. Mali's GWEP would benefit greatly from a national task force or informal interagency group to meet monthly and help coordinate activities of the program during this critical final stage.

ETHIOPIA: ON VERGE OF ELIMINATION WITHOUT A NATIONAL COORDINATOR?

Ethiopia reported three cases of GWD in humans during 2014: 2 contained cases in June and 1 uncontained case in December. Two of the cases were residents of Wichini village in Gog district of Gambella Region; the other case was a resident of Bathor village in the same district. In addition, the Ethiopian Dracunculiasis Eradication Program (EDEP) detected three infected dogs and one infected baboon in the same vicinity of Gog district in July-August 2014. The three infected humans, three infected dogs, the infected baboon, and one infected dog detected in January 2015 were resident in or near four villages located along the same road within about 10 kilometers (6 miles) of each other. Abate was applied to the water sources associated with all of these infections within 7 days of the respective infection (Table 6). Reward awareness in Ethiopia has improved, but is not yet at the level it needs to be (Tables 8 and 9). Ethiopia's National GWEP Task Force met on March 13, 2015.

Table 6

Ethiopia Dracunculiasis Eradication Program:
Guinea Worm Infections in 2014-2015 in Gog District, Gambella Region

VILLAGE	2014												2015		
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR
WICHINI						2/2 H	0/1 D								
ATHETI							0/1 D	0/1 D					0/1 D		
ABLEN								0/1 B							
BATHOR												0/1 H			
	ABATE treatments														

0/1 = uncontained infection

H = human

D = dog

B = baboon; detected on 29 August 2014; ABATE applications began 4 September 2014 in Ablen

Table 7

Category of Districts	Rumor reporting and investigation					
	Total No of woredas	No (%) of woredas that reported rumors	Total No of rumors reported	No (%) of rumors investigated within 24 hours	Total No(%) of rumors investigated	No of rumors confirmed as dracunculiasis
Endemic*	2	2 (100%)	3860	3514 (91%)	3860 (100%)	2
All other districts**	830	11 (1.3%)	428	387 (90%)	428 (100%)	1
Total	832	13 (1.5%)	4288	3901 (91%)	4288 (100%)	3

* Indigenous cases in 2014 or 2013

** Never endemic, recently freed, formerly endemic

The EDEP began with only 1,120 cases of GWD detected during its national case search in 1993, including two foci of the disease: one in South Omo (SNNP Region) and the other in Gambella Region. The focus in South Omo was eliminated in 2001, and has remained free of GWD since then, leaving the single focus in Gambella Region (currently limited to Gog district). We are informed that the national program coordinator, who departed the country suddenly for three months in December 2014 to combat Ebola in West Africa, has had his tour of duty extended for another three months. As part of the altered division of labor between The Carter Center and the World Health Organization (WHO) for assisting Ethiopia in the final stages of its extended eradication program, as of April 6, 2015, The Carter Center assumed full responsibility for providing financial support for active surveillance in Ethiopia, including helping to raise awareness of the reward for reporting a case of the disease nationwide, continuing for three years after the last known indigenous case (not one year as before). Even if its last case of GWD has occurred already, health authorities in Ethiopia have much work to do in order to convince the International Commission for the Certification of Dracunculiasis Eradication (ICCDE) that the infection has been eliminated from the country.

The WHO Representative Dr Pierre Mpele-Kilebou and The Carter Center Country Representative Dr Zerihun Tadesse met with H.E the Minister of State of Ethiopia Dr Kebede Worku at Federal Ministry of Health (FMoH) on April 6, 2015 to formally hand over WHO responsibilities for assisting the EDEP to improve surveillance capacity and cash reward awareness in areas free of GWD to The Carter Center. A report outlining WHO-supported assistance to the EDEP was delivered to the FMoH and to The Carter Center Representative with recommendations and future action steps. During the event, the WHO country Representative assured the FMoH that WHO will continue to provide support and leadership in coordinating the efforts towards Guinea-worm disease eradication in Ethiopia. The State Minister suggested that the National Professional Officer at WHO support The Carter Center during the transition.

SURVEILLANCE IN THE END GAME

At this stage of the global Guinea Worm Eradication Program, detecting every case promptly becomes ever more critical, and failure to do so can be very costly. Programs in the four remaining endemic countries need to use every opportunity to discover each case of GWD in time to prevent it from contaminating a water supply and transmitting the infection to others. The three main means of reporting suspected cases are 1) monthly or weekly reports from fixed health centers, including the Integrated Disease Surveillance Reporting (IDSR) system; 2) including queries about cases of GWD during National Immunization Days (NIDs), Mass Drug Administration (MDA) such as Mectizan® for onchocerciasis or vitamin A supplements, surveys conducted in markets, schools or other venues; and 3) by publicizing the cash reward for reporting a case of GWD. It is important to measure the efficacy of all three modes of surveillance. Measurements from 2014 in the four endemic countries are included in Tables 8 and 9.

Table 8

**Guinea Worm Eradication Program Indicators,
2014 Reward Awareness,* Rumor Reporting, and Fixed Reporting Units**

Country	% reward awareness per number of persons queried	Rumors reported per 1,000 population	Number of rumors (national population, millions)	% rumors investigated within 24 hours	Average (%) of fixed reporting units (IDSR+) reporting monthly (# units)
Chad	63% (492)	0.151	1,723 (11.4)	96%	93% (1,059)
Ethiopia	66% (10,808)	0.046	4,354 (94.1)	88%	90% (19,188)
Mali	92% (751)	0.01	151 (14.5)	100%	89% (1,184)
South Sudan	92% (1,352)	0.765	7,630 (11.3)	99%	62% (993)

* Reward awareness by convenience sampling; not random sampling.

Table 9

**Reward Awareness in Non-Endemic Areas
of Endemic Countries, 2012-2014**

Non-Endemic Areas	2012	2013	2014	2015 Goal: 80%
Chad	37%	16%	24%	Attain
Mali	4%	46%	98%	Sustain
Ethiopia	60%*	50%	68%	Attain
South Sudan	---	---	90%	Sustain

As Table 8 shows, the number of rumors generated by surveillance efforts so far is still much less than expected in all four countries. In 2014, a study was conducted to estimate how many GWD rumors should be expected in South Sudan with the initiation of the reward system. Based on the variety of skin lesions that could be mistaken for GWD as well as the estimated number of true GWD cases, this study suggested that a fully sensitive surveillance system should generate least 20 rumors of GWD per 1,000 population. There is still much work to do in order to reach that level of sensitivity.

ITFDE REVIEWS STATUS OF THE GUINEA WORM ERADICATION CAMPAIGN

On April 28, 2015, the International Task Force for Disease Eradication (ITFDE), which is headquartered at The Carter Center, devoted its 23rd Meeting to a review of the global Guinea Worm Eradication Program. The ITFDE is chaired by Dr. Donald Hopkins of The Carter Center, but Dr. Julie Jacobson of the Bill & Melinda Gates Foundation chaired this meeting, since Dr. Hopkins was one of the presenters. Other presenters included Dr. Ernesto Ruiz-Tiben and Mr. Adam Weiss of The Carter Center, Dr. Dieudonne Sankara of WHO and Dr. Mark Eberhard (ICCDE member, retired from CDC). A report of this meeting will be published in WHO's *Weekly Epidemiological Record*.

RECENT PUBLICATIONS

Green J, 2015. Exhibition Countdown to zero: defeating disease. The Lancet 15:518.

World Health Organization, 2015. Dracunculiasis eradication-global surveillance summary, 2014. Wkly Epidemiol Rec 90 (19); 201-215.

World Health Organization, 2015. Monthly report on dracunculiasis cases, January– February 2015 Wkly Epidemiol Rec 90 (19); 215-216.

Table 10

Number of Reported Cases of Guinea Worm Disease Contained and Number Reported by Month during 2015*
(Countries arranged in descending order of cases in 2014)

COUNTRIES WITH ENDEMIC TRANSMISSION	NUMBER OF CASES CONTAINED / NUMBER OF CASES REPORTED													% CONT.
	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL*	
SOUTH SUDAN	0/0	0/0	0/0	/	/	/	/	/	/	/	/	/	0/0	0
MALI [§]	0/0	0/0	0/0	/	/	/	/	/	/	/	/	/	0/0	0
CHAD	0/0	0/1	0/2	/	/	/	/	/	/	/	/	/	0/3	0
ETHIOPIA	0/0	0/0	0/0	/	/	/	/	/	/	/	/	/	0/0	0
TOTAL*	0/0	0/1	0/2	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/3	0
% CONTAINED	0%	0%	0%										0%	

COUNTRIES REPORTING CASES	NUMBER OF CASES CONTAINED / NUMBER OF CASES REPORTED													% CONT.
	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL*	
SUDAN [^]	0/0	0/0	0/0	/	/	/	/	/	/	/	/	/	0/0	0

TOTAL	0/0	0/1	0/2	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/3	0
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*Provisional

Cells shaded in black denote months when zero indigenous cases were reported. Numbers indicate how many imported cases were contained and reported that month.

Cells shaded in yellow denote months when transmission of GWD from one or more cases was not contained.

[§]Reports include Kayes, Koulikoro, Segou, Sikasso, and Mopti, Tinbuktu and Gao Regions; in late April, the GWEP deployed one technical advisor to Kidal to oversee the program during the transmission season (for the first time since 2012).

[^]A Carter Center consultant, deployed to Kafia-Kingi area in South Darfur in March, implemented active village-based surveillance in Kafia-Kingi and four other at-risk villages, and began monthly reporting.

Number of Reported Cases of Guinea Worm Disease Contained and Number Reported by Month during 2014
(Countries arranged in descending order of cases in 2013)

COUNTRIES WITH ENDEMIC TRANSMISSION	NUMBER OF CASES CONTAINED / NUMBER OF CASES REPORTED													% CONT.
	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL*	
SOUTH SUDAN	0/0	0/0	3/3	3/4	3/4	6/8	13/22	14/21	4/5	1/3	0/0	0/0	47/70	67
CHAD	1/1	1/1	1/1	1/1	0/1	0/1	1/3	0/1	1/1	0/0	1/1	1/1	8/13	62
MALI [§]	0/0	0/0	0/0	0/0	0/0	0/0	0/0	1/1	14/18	12/13	8/8	0/0	35/40	88
ETHIOPIA	0/0	0/0	0/0	0/0	0/0	2/2	0/0	0/0	0/0	0/0	0/0	0/1	2/3	67
TOTAL*	1/1	1/1	4/4	4/5	3/5	8/11	14/25	15/23	19/24	13/16	9/9	1/2	92/126	73
% CONTAINED	100	100	100	80	60	73	56	65	79	81	100	50	73	

COUNTRIES REPORTING CASES	NUMBER OF CASES CONTAINED / NUMBER OF CASES REPORTED													% CONT.
	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL*	
SUDAN [^]	/	/	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0

TOTAL	1/1	1/1	4/4	4/5	3/5	8/11	14/25	15/23	19/24	13/16	9/9	1/2	92/126	73
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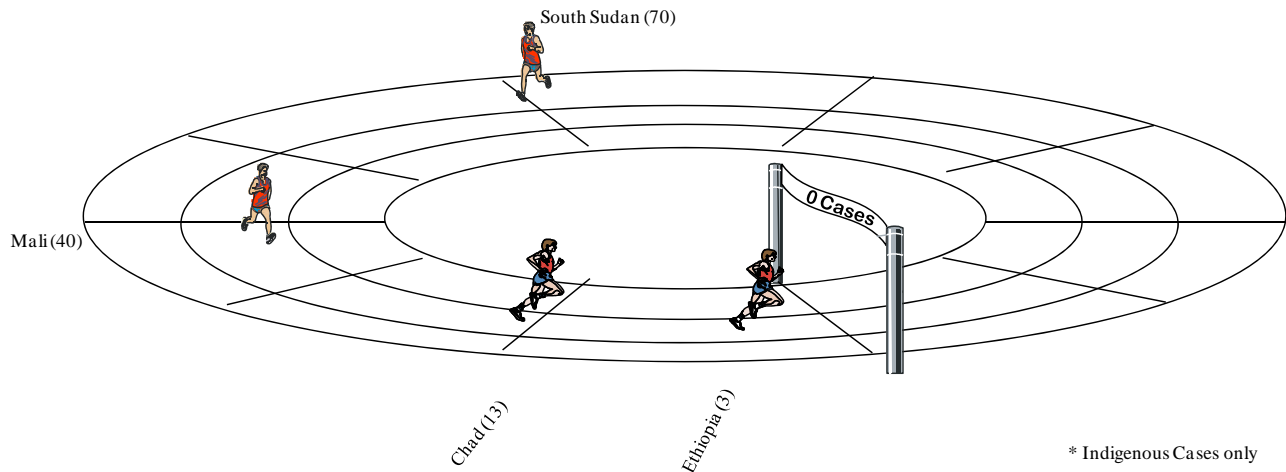
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GUINEA WORM RACE: 2014*



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

Note to contributors:

Submit your contributions via email to Dr. Sharon Roy (gwwrapup@cdc.gov) or to Dr. Ernesto Ruiz-Tiben (eruizti@emory.edu), by the end of the month for publication in the following month's issue. Contributors to this issue were: the national Guinea Worm Eradication Programs, Drs. Donald R. Hopkins and Ernesto Ruiz-Tiben of The Carter Center, Drs. Sharon Roy and Mark Eberhard of CDC and Dr. Dieudonné Sankara of WHO.

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<http://www.cdc.gov/parasites/guineaworm/publications.html#gwwp>

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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