



Date: August 18, 2015

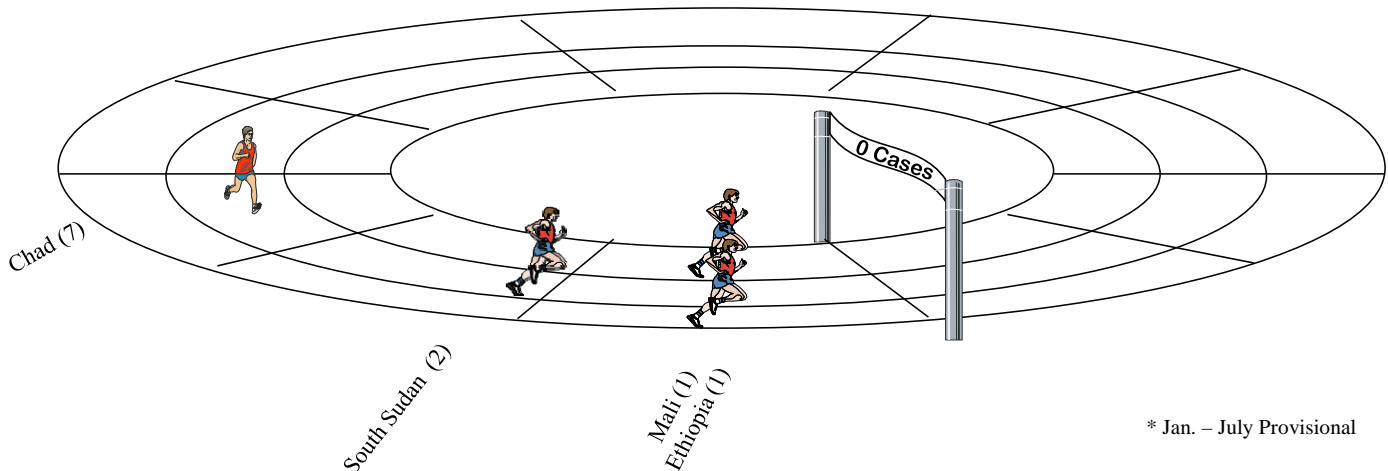
From: WHO Collaborating Center for
Research, Training and Eradication of Dracunculiasis, CDC

Subject: GUINEA WORM WRAP-UP #235

To: Addressees

GUINEA WORM RACE: 2015*

WILL CHAD BE THE LAST ENDEMIC COUNTRY?



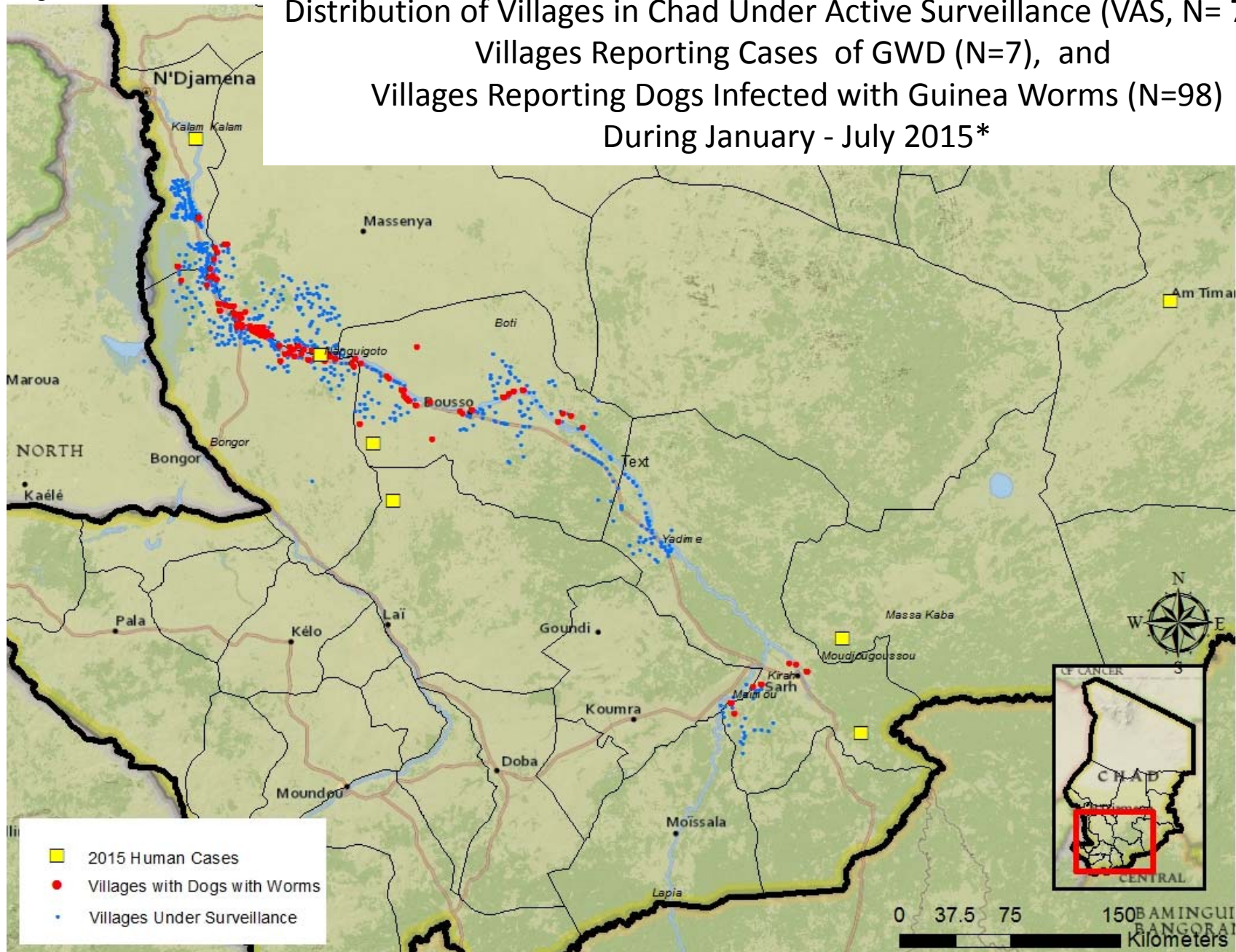
* Jan. – July Provisional

Because it did not sustain adequate surveillance during the pre-certification period after it interrupted transmission in 2000, Chad may now become the last country to interrupt transmission of the disease (Figure 1). As of the end of July, Chad had reported 7 cases of Guinea worm disease (0% contained) and 387 infected dogs (70 % contained) so far in 2015: 231/283 (82%) dogs contained in 89 villages under active surveillance and 38/104 (37%) in 33 villages not under active surveillance (Figure 2). This is a reduction of 22% from the 9 human cases (56% contained) reported during the same period of 2014, and an increase of 322% from the 87 infected dogs (33% contained) reported for the same period of 2014. All 7 cases were 20 years old or less; 2 of them were female. The line-listing of this year’s cases is given in Table 1.

The working hypothesis of the “peculiar epidemiology” of GWD transmission that is occurring now in Chad is that copepods infected with the parasite *Dracunculus medinensis* are consumed by fish and infective larvae of the parasite remain viable in fish tissue and occasionally infect

Figure 2

Distribution of Villages in Chad Under Active Surveillance (VAS, N= 755), Villages Reporting Cases of GWD (N=7), and Villages Reporting Dogs Infected with Guinea Worms (N=98) During January - July 2015*



* Provisional ** Geographic coordinates are missing for 2 VAS and 24 villages reporting dog infections

Table 1

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 VAS? (Yes or No)	Actions/Comments?
						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		
	Name	1= VAS	2= VNAS															
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	Diganaly	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
4.1	Maicomb		2	Danamaji	Moyen Chari	3	M	28-Apr-15	No		2	Maicomb		2	No		No	
4.2								17-May-15										
4.3								17-May-15										
5	Mourabat	1		Bailli	Bailli	14	M	24-Jun-15	No		2	Mourabat	1		Yes	Pond 1 km of Pandki	Yes	Escaped from health center during containment process. The boy drank water from a pond contaminated last year by a dog in Ngargue (1km of Pandori where the boy resided for several months)
6	Ferick Tchaguine		2	Lai	Tangile	18	M	26-Jun-15	No		1	Ferick Tchaguine		2	?		?	Patient is resident in Ba Illi but herds cattle to Lai District. Contaminated sources of water while herding cattle, but the GWEP did not learn this on time. Patient also refused to reveal location of ponds.
7	Houa Ali		2	Am-Timan	Salamat	12	F	6-Jul-15	No		2	Goz-Arachidia		2	?		?	

VAS = Villages under active surveillance
VNAS= Villages not under active surveillance

Figure 3

Chad Guinea Worm Eradication Program
Cumulative Number of Infected with Guinea Worms by Month, 2013-2015*

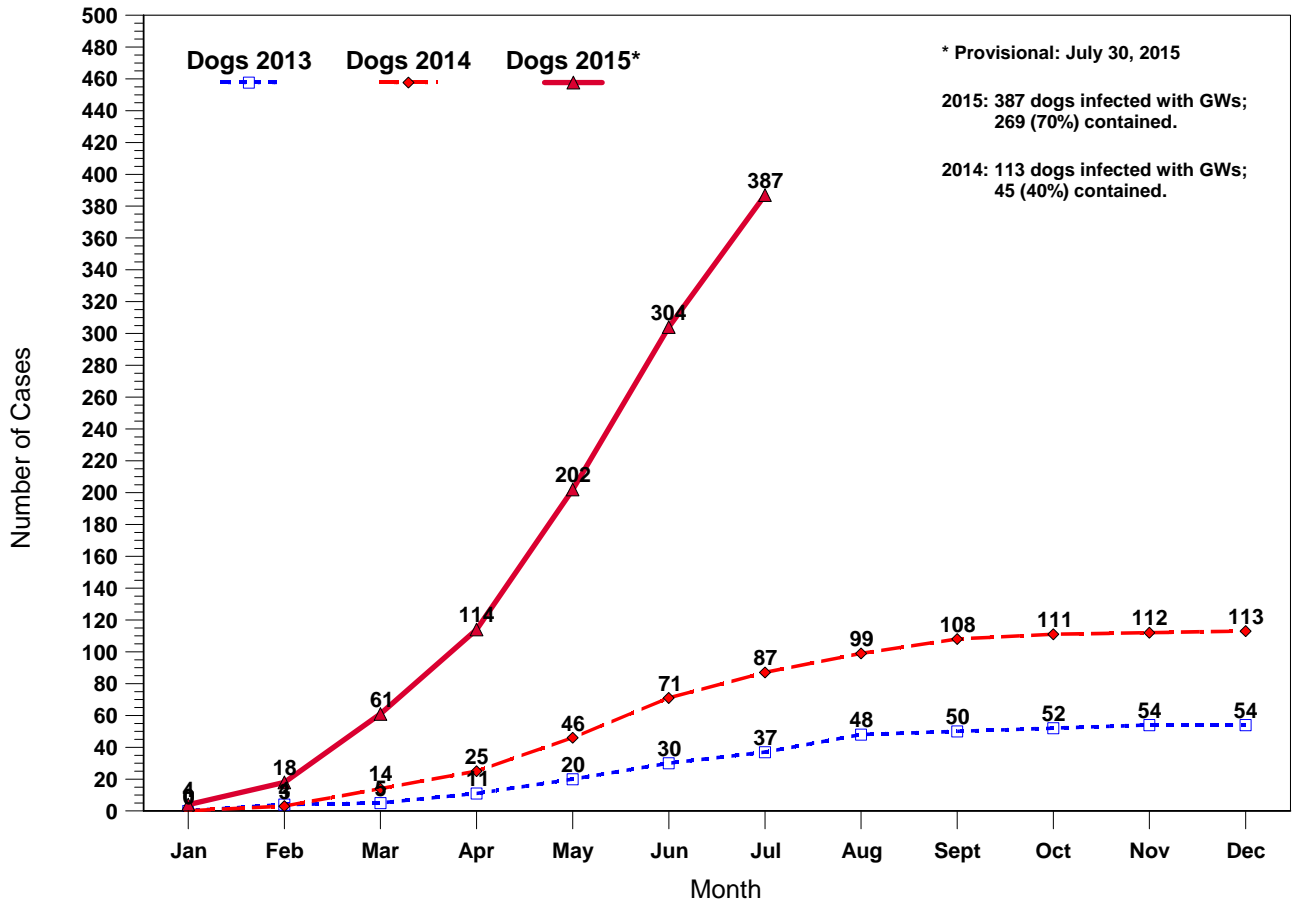


Figure 4

CHAD GUINEA WORM ERADICATION PROGRAM
REPORTED GUINEA WORM INFECTIONS IN DOGS BY MONTH DURING 2014 AND JANUARY - JULY 2015*

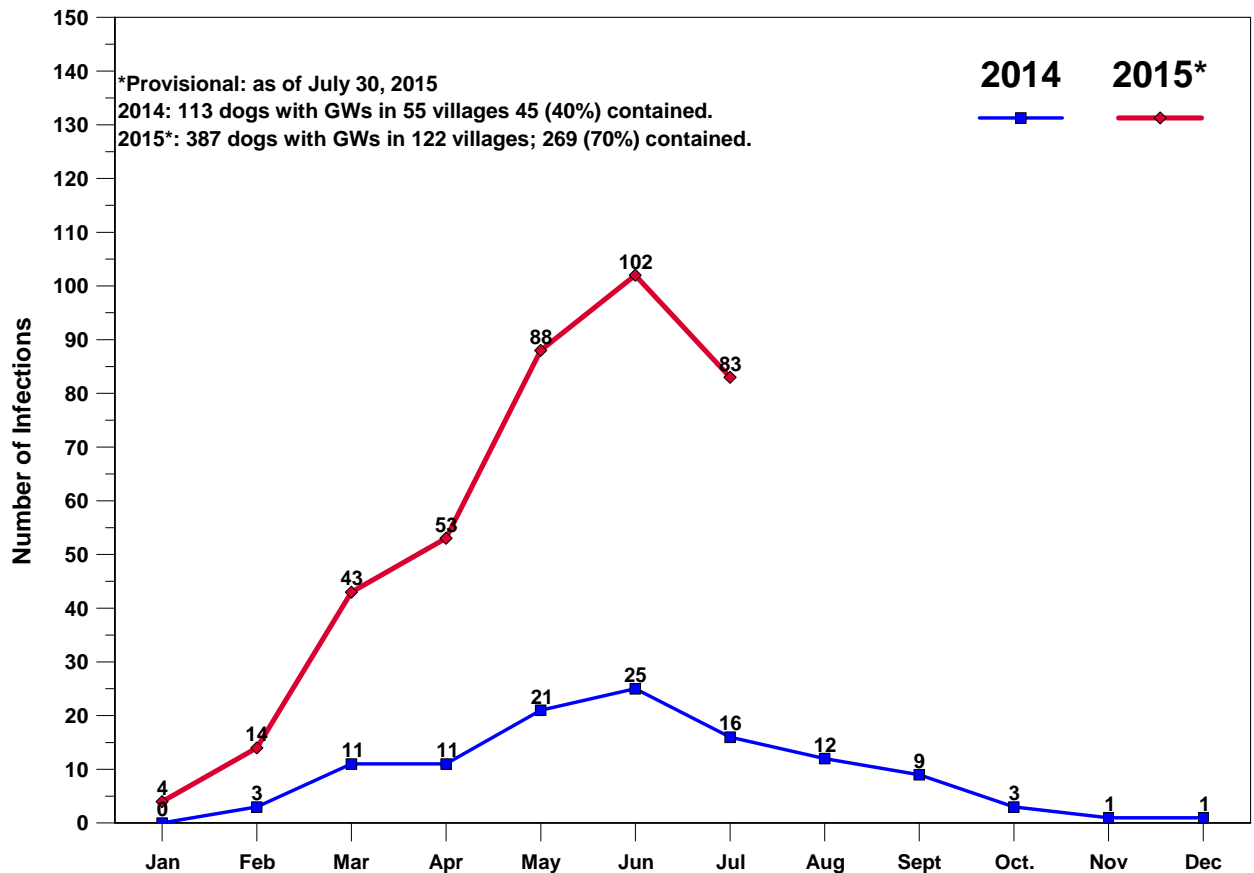


Figure 5

Chad Guinea Worm Eradication Program
Cumulative Number of Cases of Dracunculiasis Reported Monthly: 2013 - January-July 2015*

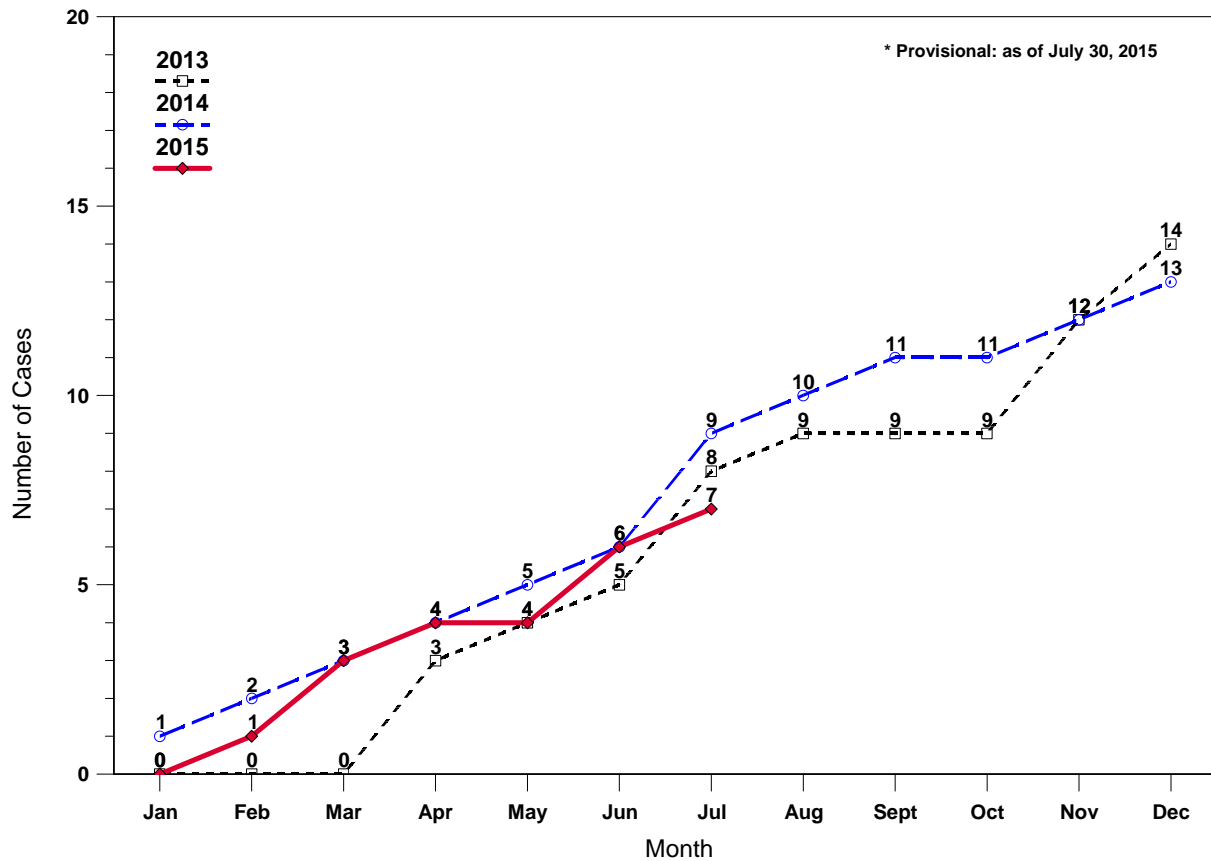
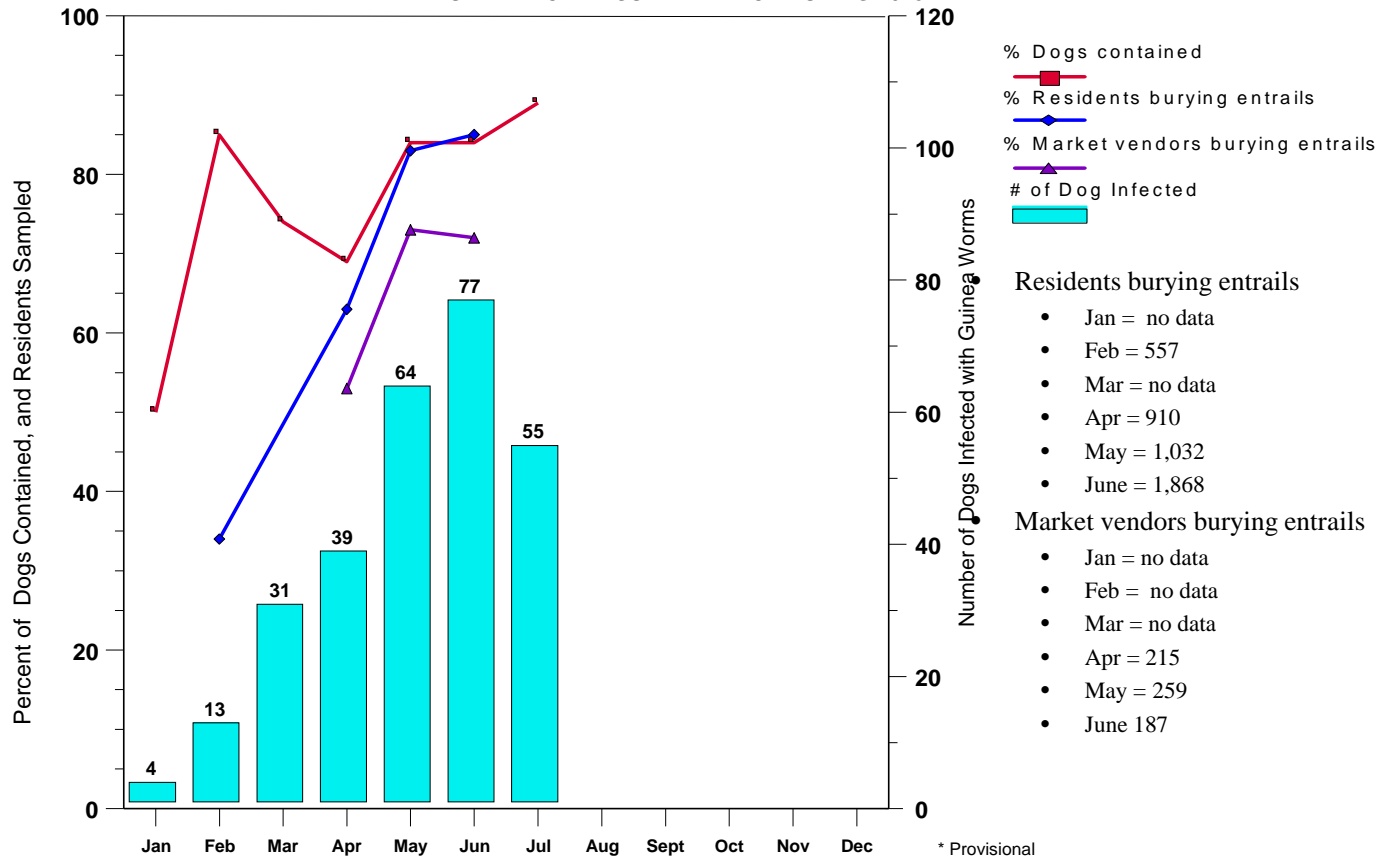


Figure 6

CHAD GUINEA WORM ERADICATION PROGRAM
PERCENTAGE BY MONTH OF INFECTED DOGS CONTAINED AND OF SAMPLED RESIDENTS AND MARKET VENDORS BURYING FISH ENTRAILS, AND NUMBER OF DOGS INFECTED WITH GUINEA WORMS IN 757 VILLAGES UNDER ACTIVE SURVEILLANCE DURING 2015*^



* Provisional
 ^ 104 additional dog infections with GWs were reported from villages not under active surveillance

humans who eat undercooked or poorly cured fish, and much more often dogs eating raw infected fish, including fish entrails. There is no evidence that humans in Chad are being infected during this current outbreak by drinking contaminated water. According to laboratory tests, the genome of Guinea worms emerging from dogs in Chad is indistinguishable from those emerging from humans in Chad, and the overwhelming majority of such worms in Chad are coming from infected dogs, not from infected humans (489 Guinea worms from dogs, 13 Guinea worms from humans in January-June 2015).

The latest indices from surveys conducted in June this year are that 88% of residents sampled in the 746 villages under active surveillance (VAS) surveyed in June reported burying fish entrails, and 72% of fish vendors surveyed in June reported burying fish entrails (Figure 6). Currently 2,047 village volunteers and 119 supervisors, including 9 expatriate Technical Advisors, are working in the GWEP of Chad.

Enhanced health education of villagers to cook their fish well, to bury fish entrails, and not allow dogs to eat fish entrails began in October 2013 and covered half or more of the at-risk population starting around May 2015. Efforts to persuade villagers to tether infected dogs until the worm emerges in order to prevent contamination of water and infection of copepods began in February 2014. In May 2015, the program conducted 3,961 enhanced health education sessions in 606 villages and 3,450 sessions on tethering dogs and the cash reward for doing so in 530 villages. Offering of a cash reward (~US\$20 equivalent) for reporting and tethering infected dogs began in February 2015 and may have contributed to some of the substantial increase in infected dogs seen this year compared to 2014 when a total of 113 infected dogs were reported for the entire year. Chad has offered a cash reward equivalent to about US\$100 for reporting a case of GWD in humans since before 2010. The program should begin to see the impact of these interventions on the number of cases in humans and infections in dogs any time between now and May 2016, allowing for the one-year long incubation period. (Figure 4 and Figure 5).

Drs. Ernesto Ruiz-Tiben, Mark Eberhard, and Hubert Zirimwabagbo, and Ms. Melinda Denson of The Carter Center; and Drs. Jean Marie V. Yameogo, Djimrassengar Honore and Marthe Beral of WHO met with the Minister of Health, Hon. Dr. Ngariera Rimadjita and members of his team, including Dr. Mahamat Tahir Ali, the national coordinator of Chad's GWEP, in N'Djamena on July 18 to discuss the status of the GWEP.

Research Update: Chad

Recent outbreaks of non-human infections in Chad and the need to understand this rare epidemiology are a current challenge facing GWD eradication efforts. Studies so far (Eberhard et al 2014) postulate that the intense reliance on fish as a source of sustenance and commercial earnings in communities along the Chari River in Chad creates conditions for dogs to have easy access to large amounts of raw fish entrails, some of which contain third-stage infective larvae of *D. medinensis*, causing dogs to become infected. 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. This unusual modality of transmission may have been smoldering at low levels in years past, obscured by poor surveillance. Insufficient understanding and control of this form of outbreak threatens the timely elimination of GWD in Chad and may delay the end of the global eradication campaign.

Given the urgency, The Carter Center and CDC are leading an active research agenda that includes continued studies of the genetics of *Dracunculus* worms extracted from humans and

animals, investigating the longevity of third stage larvae in fish, determining what species of copepods are present in the endemic area of Chad, and developing and implementing a protocol for detecting *Dracunculus* DNA in fish and/or copepods. So far there is no evidence of a wild animal reservoir playing a role in transmission of GWD in Chad. Genomic research conducted by CDC and the Sanger Institute in the United Kingdom so far indicates Guinea worms from both human and dog infections in Chad are indistinguishable.

In April 2015, The Carter Center initiated a prospective study in 7 villages to determine whether a high monthly dose (twice per month) of Mectizan® (Heartgard) can protect against GW infection in dogs by preventing incoming 3rd stage infective larvae of *D. medinensis* from reaching maturity. Eight rounds of monthly treatments (92 dogs enrolled) and placebo (83 dogs) have been completed. Dogs receiving Heartgard or placebo monthly are residents in the same villages. A total of 7 (8%) of 92 dogs in the treatment arm of the study have had infections with GWs (acquired in 2014), while 6 (7%) of 83 dogs in the placebo arm of the study of have had GW infections since the study began four months ago. The effect of Heartgard medication on dogs receiving it twice per month during 2015 will not become clearly manifest until April-May 2016.

During July 2015 copepods were collected and fed first stage larvae (L1s) of GWs from infected dogs. Infected copepods will be allowed to incubate the larvae until these reach the L3 infective stage and will then be fed to fish to corroborate that these are ingested and where these larvae migrate within the fish. The longevity of L3s in fish will be determined, as well as their viability.

A study of seasonal copepod densities in selected lagoons along the Chari River was also started in April 2015. Receipt of data from this study is pending.

SOUTH SUDAN: NO HIDING PLACE FOR GUINEA WORMS

The South Sudan Guinea Worm Eradication Program (SSGWEP) has reported a provisional total of two confirmed cases of Guinea worm disease (contained) in January-July 2015 (Tables 2 and 3). This compares to 41 cases (68% contained) reported during the same period of 2014, a reduction of 95% so far. Last year, 43 of South Sudan's cases occurred in an outbreak in July-August 2014.

Dr. Ernesto Ruiz-Tiben visited the SSGWEP during August 20-24, 2015 to assess efforts to improve surveillance capacity and cash rewards awareness nationwide in South Sudan, and to evaluate efforts taken with assistance from The Carter Center to strengthen its GWEP secretariat and to help South Sudan prepare for certification of eradication. During his visit he met with Dr. Makur Kariom, Undersecretary of Health, Ministry of Health and with Mr. Makoy Samuel Yibi, Director of Neglected Tropical Disease Department, Ministry of Health.

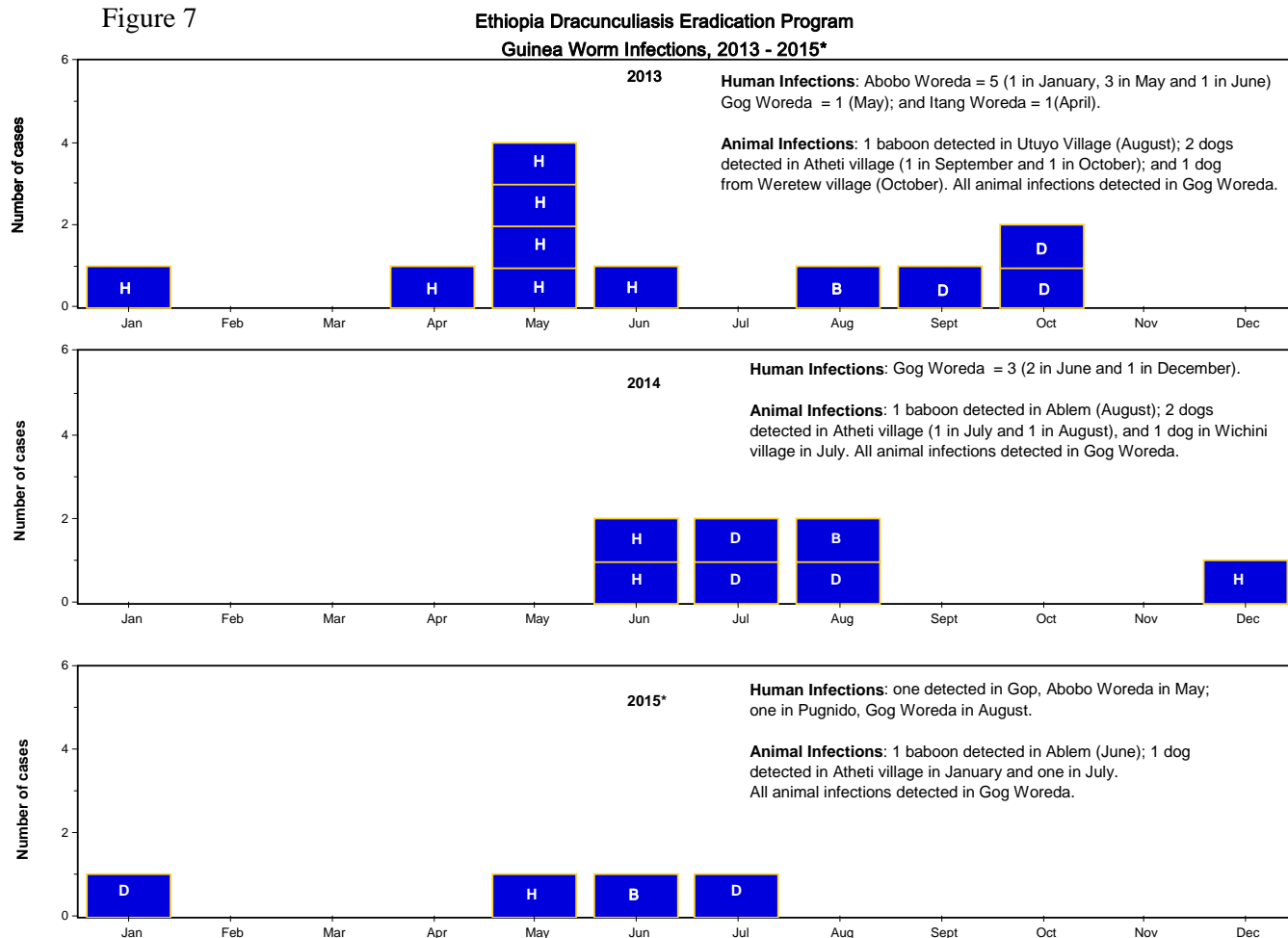
Ms. Carla Blauvelt, former Carter Center Technical Advisor, former Deputy Country Representative, and more recently Country Representative in South Sudan left the SSGWEP on August 28, 2015 to return home and be with family. We commend Carla for her stellar four and a half years of service to the SSGWEP and for her technical and managerial contributions to the program, including the 95% decline in cases during January-July 2015 (2 cases) compared to the same period a year ago (41 cases). Our best wishes to Carla for success in her new endeavors.

ETHIOPIA: CERTIFICATION COMMITTEE AND TECHNICAL WORKING GROUP MEET

On June 30, the Technical Working Group of the Ethiopia Dracunculiasis Eradication Program (EDEP) met for two and a half hours under the chairmanship of Dr. Daddi Jima, deputy director general of the Ethiopian Public Health Institute (EPHI). Participants at the Working Group meeting included acting EDEP coordinator Mr. Amanu Shifara, and representatives of The Carter Center and WHO. Among other issues, the meeting agreed that WHO would help facilitate the subsequent meeting of the National Certification Committee. Ethiopia's National Certification Committee met on July 14 under the chairmanship of Dr. Teshome Gebre. The meeting discussed several programmatic issues, including preparation of Ethiopia's Country Report to the World Health Organization.

Specimens obtained from a dog on January 11 in Atheti Village and from a dead baboon on June 11 in Ablem, both in Atheti Kebele, were confirmed to be Guinea worms. This brings the total known Guinea worm infections in Ethiopia as of July this year to 1 human, 1 baboon, and 1 dog (Figure 7) (Table 4). All three infections were associated with four closely linked villages in Gog district where cases were reported in 2014, and which since last year have had ABATE® Larvicide applied to surface sources of water every 28 days.

Figure 7



*Provisional

H = human infection; D = dog infection; B = baboon infection

NB: All dog and baboon infections in 2014-2015 were detected in Gog Woreda (District), as were human infections in 2014 and 1 human infection in May 2013. Water sources associated with human, dog and baboon infections in 2014-2015, in Atheti, Whichini, and Ablem villages of Gog Woreda treated monthly with ABATE. The human case in May 2015 was fully contained at the Abobo Woreda case containment center, and considered to have been infected in Bathor forest area of Gog Woreda during 2014, therefore imported from that locality.

Dr. Ernesto Ruiz-Tiben visited the EDEP during August 17-20, 2015 to assess efforts to improve surveillance capacity and cash rewards awareness nationwide in Ethiopia, and to evaluate efforts taken with assistance from The Carter Center to help Ethiopia strengthen its national EDEP secretariat and to prepare for certification of eradication. During his visit he met with Dr. Dadi Jima, Director General, Ethiopian Public Health Institute (EPHI), Federal Ministry of Health (FMOH) and with Dr. Kebede Worku, State Minister, FMOH (program section), and with Mr. Amanu Shifara, acting national EDEP coordinator, EPHI, FMOH.

MALI: NATIONAL COORDINATOR REPLACED

The national coordinator of Mali's GWEP, Dr. Gabriel Guindo, who led the program courageously for the past decade, has been replaced. Dr. Guindo returned from a supervisory visit to the field on July 3rd. We are very grateful for Dr. Guindo's dedicated service and wish him well in his subsequent endeavors. Thank you Gabriel!! The new coordinator, Dr. Mohamed Berthe, assumed his duties on July 14, 2015 in a transition ceremony at the GWEP secretariat in Bamako. The new coordinator, who is also the coordinator for Mali's Human African Trypanosomiasis Program, made his first supervisory field visit for Guinea worm eradication later in July, to Mopti region. Insecurity in the endemic areas continues to be a severe impediment to the GWEP in Mali.

One worm specimen from a patient from Parasilame Village, Fangasso Zone, Tominian District of Segou Region was confirmed to be GWD. The patient's reported worm emergence was on 24 July 2015 and not contained (Table 5). Mali's 40 cases in 2014 were reported during August-November from Gao and Timbuktu Regions (Table 2).

Figure 8

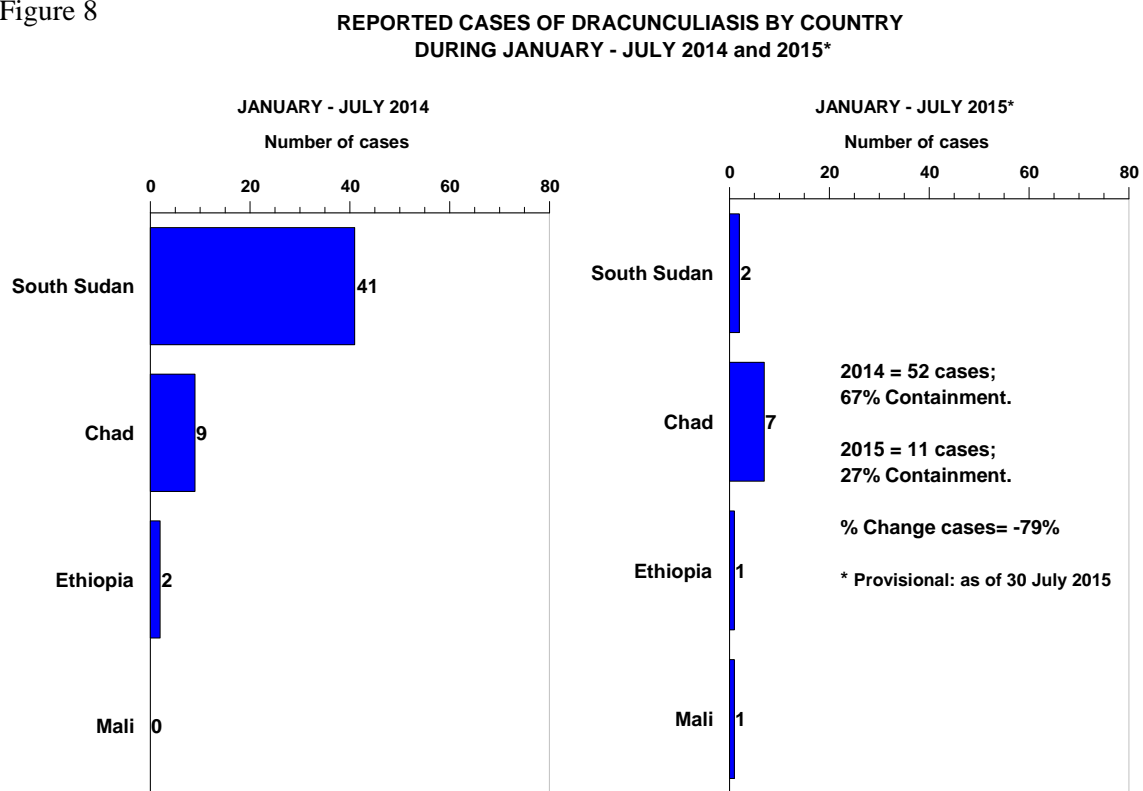


Table 2

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	0/0	1/1	1/1	/	/	/	/	/	2/2	100
MALI [§]	0/0	0/0	0/0	0/0	0/0	0/0	0/1	/	/	/	/	/	0/1	0
CHAD	0/0	0/1	0/2	0/1	0/0	0/2	0/1	/	/	/	/	/	0/7	0
ETHIOPIA	0/0	0/0	0/0	0/0	1/1	0/0	0/0	/	/	/	/	/	1/1	100
TOTAL*	0/0	0/1	0/2	0/1	1/1	1/3	1/3	0/0	0/0	0/0	0/0	0/0	3/11	27
% CONTAINED	0	0	0	0	100	33	33						27	

*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. One technical advisor deployed to Kidal in April 2013 continues to oversee the program in that region.

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	

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).

Table 3

SOUTH SUDAN GUINEA WORM ERADICATION PROGRAM
LINE LISTING OF CASES OF GWD DURING 2015

Case #	Village or Locality of Detection			Payam	County	Age	Sex	Date GW Emerged	Case Contained?		1 = Imported 2 = Indigenous	Home Village or Locality			Presumed Source of Infection Identified?		Presumed Source of Infection is a Known EVA?		Worm Specimen		
	Name	1 = EVAS	2 = NEVAS						(Yes, No, or Pending)	If No, Date of Abate Rx*		Name	1 = EVAS	2 = NEVAS	(Yes / No)	Description	(Yes / No)	Actions?	Date sent to CDC	Diagnosis	CDC Accession Number
1.1	DAKBUONG	1		ABUYONG	AWERIAL	5	F	22/Jun/15	YES		2	DAKBUONG	1		NO	STILL UNDER INVESTIGATION	NO	ENSURING FILTER COVERAGE, CASE SWEEPS, MAKE THE REWARDS MORE WELL KNOWN, ABATE NEEDS TO CONTINUE BECAUSE VILLAGE IS ENDEMIC. COOMUNITY CONTRACTS ALREADY IN PLACE AS OF APRIL 2015 FOR EVS DAKBUONG AND WUNKUM	1/Jul	GUINEA WORM	PDB15-155
2.1	LORIWO	1		JIE	KAPOETA EAST	25	M	11/Jul/15	YES		2	LORIWO	1		NO	POSSIBLE LOZUDOK OR KASSINGOR MOUNTAIN VILLAGES	NO	DAILY CASE SEARCH, MAKING SURE EVERY BODY HAS AND USE FILTERS, COMMUNITY MEETING HELD AND ANOTHER ONE WILL BE HELD ON SATURDAY (25/7/2015).	7/Aug	GUINEA WORM	PDB15-164

NEVS = Non Endemic Villages
Gardens = Farming areas of villages
CC = Cattle Camp
CCC = Case Containment Center

Table 4

ETHIOPIAN DRACUNCULIASIS 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 VAS?	Actions/Comments?
	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		
1.1	Gop	1		Abobo	Gambella	25	M	27-May-15	Yes		1	Gop	1		Yes	Bathor	Yes	The patients travel/residential history links him to Bathor Village and farm/forest area, and possibly Aruit or Belack ponds in the forest area where case of GWD was confirmed in December 2014.

VAS = Villages under active surveillance
VNAS= Villages not under active surveillance

Table 5

MALI 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 VAS?	Actions/Comments?
	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		
1.1	Parasilame		2	Tominian	Segou	18	M	24-Jul-15	No		?	Parasilame		2	No		?	The patient's travel/residential history links him to Djenne District of Mopti Region in November 2014 (no cases of GW reported from Djenne in 2014). A second GW emerged from this patient in August 2015. Investigation of this case is ongoing

VAS = Villages under active surveillance
VNAS= Villages not under active surveillance

**PROGRESS DURING JANUARY-JULY 2015 TOWARDS IMPROVING
SURVEILLANCE CAPACITY AND CASH REWARD AWARENESS IN CHAD,
ETHIOPIA, MALI, AND SOUTH SUDAN**

Surveillance level I (Districts/Counties with endemic transmission of GWD): staffing is complete, supporting active village-based surveillance and interventions to interrupt transmission in 757 villages in Chad, 173 in Ethiopia, 375 in Mali, and 4,700 in South Sudan.

Surveillance level II (Districts/Counties at risk of importation from surveillance level I communities or from neighboring endemic countries):

- **Chad:** The GWEP recruited and trained 126 additional field staff, including a Program Officer to strengthen surveillance. A national surveillance system training is scheduled for September during which 23 surveillance officers (focal points), 6 Regional Surveillance Officers, 4 National Polio Surveillance Officers and 2 WHO surveillance hub Coordinators are expected to participate. Polio and UNICEF's Communications for Development community workers are providing redundant surveillance. The GWEP cash reward is \$100, and community radio messages are being broadcast in Kyabe, Sarh, Koumra, Bongor and Bousso, areas considered at risk of importations. A \$20 cash reward for tethering dogs infected with Guinea worms was introduced in February 2015 to help owners prevent infected dogs from contaminating water sources. The GWEP active surveillance is focused on villages where human cases and/or dog infections occur or have occurred and expansion of the number of villages under active surveillance is ongoing in those areas; primarily along the Chari River and tributaries. Ministry of Health staff in these areas that are focused on surveillance are 1 Regional Medical Officer, 3 Regional Surveillance Officers, 1 District Medical Officer, 10 District Surveillance Focal Persons, and 21 Health Center Managers. The national GWEP secretariat established and is promoting the use of a telephone "Hot Line" for reports of rumors about possible cases of GWD from districts and for advice to those districts regarding the investigation of such rumors. GWD is integrated into the national surveillance system so all health staff assist.
- **Ethiopia:** The Ethiopian Dracunculiasis Eradication Program (EDEP) has recruited a Program Officer to assist with surveillance and dissemination of information about GWD and the cash reward, and trained 36 additional staff; including 3 former employees of WHO in surveillance level II Woredas (districts). A total of 23 Woreda field staff, 20 Health Extension Workers (HEWs) and 20 health army workers (community volunteers) were also trained in GW-free Woredas of Gambella Region. The reward was raised to \$100 in 2014, and the program is preparing broadcast messages and seeking a Public Relations/communications firm to develop a comprehensive marketing strategy for dissemination of messages about GWD and the cash reward. The Carter Center recently completed a Project Agreement (PA) negotiation with Southern Nations and Nationalities Peoples Region, and implementation of surveillance in that region is expected to begin soon. The Carter Center is currently negotiating a National Project Agreement, which includes national surveillance. GW is a reportable disease within the Public Health Emergency Management surveillance system. The EDEP plans to use all health army and HEWs in surveillance level II areas to report community based rumors of possible cases of GWD with the district level surveillance system so these can be immediately investigated. The national EDEP secretariat plans to establish and promote the use of a telephone "Hot Line" for reports of rumors about possible cases of GWD from

districts/regions and for advice to those districts/regions regarding the investigation of such rumors.

- **Mali:** The GWEP has recruited a Program Officer to assist with surveillance and dissemination of information about GWD and the cash reward, and recruited two additional physicians (*medicines d'appui*) to assist in Gourma Rharous district of Timbuktu Region and Djenne and Tomian districts of Mopti Region to strengthen surveillance and interventions. There are 2 Program Officers devoted to surveillance in GW free areas. A training during late 2014 included 372 new health agents (physicians, nurses, midwives) and another 212 were trained in 2015 from 17 Districts. Polio, and occasionally malaria and other NTD programs have been doing redundant surveillance, but not yet systematically. The reward was increased to \$100 in 2014 and the program began radio and TV messages about the new reward amount in 2015. The national GWEP secretariat plans to establish and promote the use of a telephone “Hot Line” for reports of rumors about possible cases of GWD from districts and for advice to those districts regarding the investigation of such rumors. The GW surveillance is integrated into the national health surveillance system.
- **South Sudan:** The GWEP has designated a Program Officer to assist with surveillance and dissemination of information about GWD and 47 other SSGWEP staff assist in Surveillance Level II areas. A total of 10 Train-the-Trainer education sessions were provided to 216 persons, including 92 County Surveillance Officers and State supervisory staff. Staff members from the Polio, Trachoma, and Onchocerciasis programs provide redundant surveillance. The program established a reward in 2014 equivalent to \$100 and plans to disseminate information about GWD and the cash reward to residents in 85 counties in all 10 states, and 1 Administrative Area (Greater Pibor Administrative Area). Currently there are 42 health staff directly working on surveillance with another 89 assisting health workers in GW-free areas of South Sudan.

Surveillance level III (Districts/Counties at low or no risk of importations from remaining endemic areas or neighboring countries): No new staffing contemplated at the moment. The GWEPs will use all existing government/public health infrastructure, including disease control/elimination programs, to promote dissemination of information about GWD and about the cash reward, and will conduct ad hoc assessments of cash reward awareness periodically in these areas, combining these with education about GWD and the cash reward in markets, schools, religious places, etc., as warranted.

Strengthening the national GWEP secretariats:

- Chad GWEP: Needs additional office space for staff and for program archives. No decision has been made yet by the MOH.
- Ethiopia: The Federal Ministry of Health agreed to provide a room at the Ethiopia Public Health Institute to house the EDEP secretariat. The program is seeking space for 7 secretariat staff and for program archives.
- Mali: The MOH has agreed to add 3 rooms to the Secretariat office. The Carter Center will support their construction. A new GWEP coordinator was appointed in July 2015. Orienting the new GWEP coordinator, who has no experience working on GW, may slow progress.
- South Sudan: 8 new staff members have been recruited primarily to support monitoring and evaluation of cash reward awareness and rumor investigations. The MOH agreed to

provide space for the national GWEP secretariat at the ministry. The Carter Center has provided 4 pre-fabricated container offices.

Note: Once transmission is interrupted in areas with endemic transmission (during 2015-2016), surveillance modalities nationwide will become those prescribed for surveillance level III areas.

* Surveillance levels I, II, and III were defined and described in *GW Wrap Up* # 234.

NEWS FROM THE WORLD HEALTH ORGANIZATION

Sudan: Dr. Dieudonne Sankara and Ms. Junerlyn Agum from WHO Headquarters and Dr. Albis Gabrielli from the WHO Eastern Mediterranean Regional Office visited Sudan to assess the status of progress towards certification of Sudan as Guinea worm free country. Dr. Naeema Al Gasseer, WHO Country Representative in Sudan; Dr. Khalid El Tahir of WHO office/Sudan and the visiting team met with Dr. Drisam, Undersecretary of the Federal Ministry of Health; Dr. Abassi, Director of Basic Health Care; Dr. Moussab, Director of Control of Neglected Tropical Diseases; the Director of Integrated Disease Surveillance and Response and his staff, including Ms. Hind, Focal Point Guinea Worm Eradication within IDSR. Members of the mission also met with Dr. Nabil Aziz, The Carter Center Country Representative in Sudan.

Ethiopia: The WHO Country Representative, Dr. Pierre N'Pele and staff from the WHO country office visited Gambella from 10-14 June 2015, and held discussions with Regional Health Bureau, Administration for Refugee and Returnee Affairs (ARRA) and other partners for increased GWD surveillance in the region. To also boost surveillance activities among refugees, WR Ethiopia also paid a visited in Kule refugee camp.

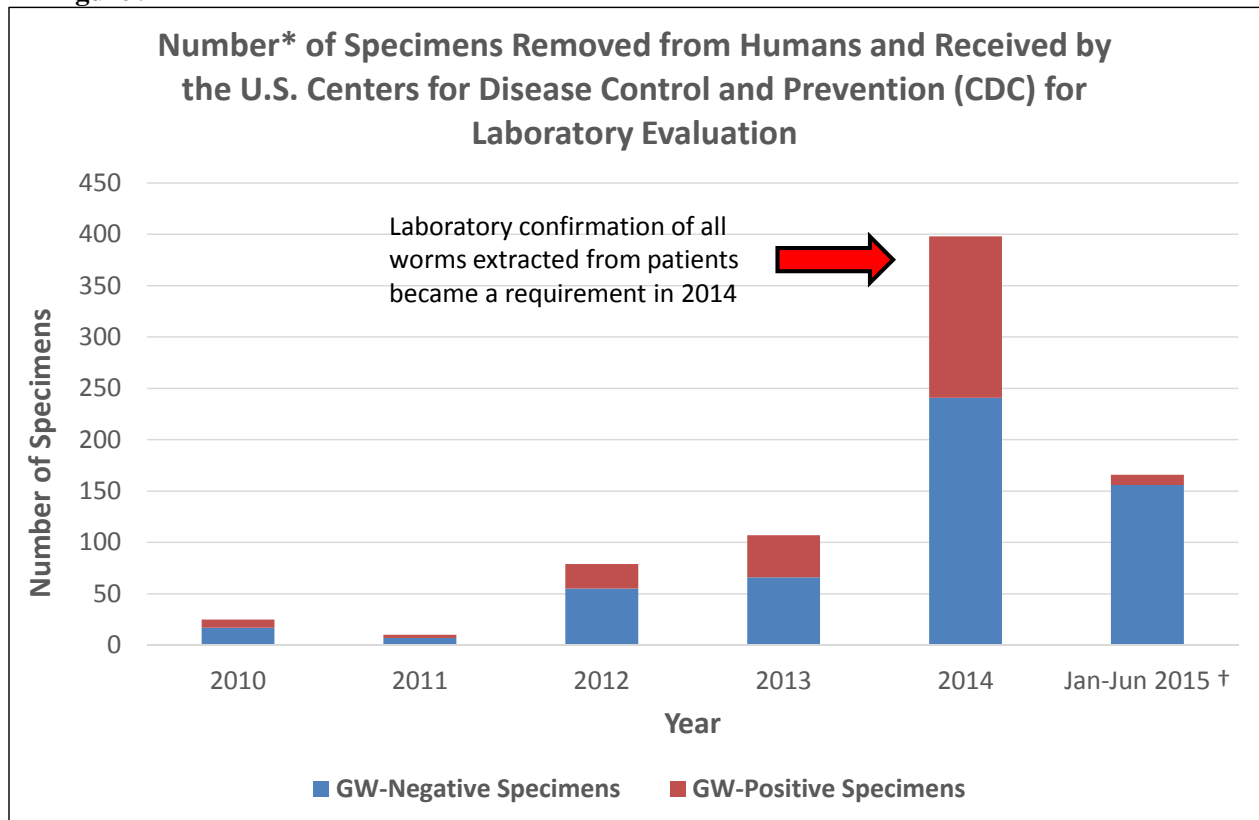
As part of strengthening surveillance for cases of GWD in the refugee camps, a WHO field officer provided supervision, and held community mobilisation awareness creation sessions in Tierkide, Dimma and Kule refugee camps during July 2015.

WHO will host trainings on GWD surveillance and response, and on community mobilisation and awareness during August 24-26, 2015 for health workers supporting the Administration for Refugees and Returnees Affairs (ARRA), staff from NGOs for disease surveillance and management among refugees, as well as staff at Governmental Health Center catchment areas hosting refugees in Gambella Region.

MEETINGS

- South Sudan GWEP Mid-Year Review: Kapoeta, September 2-3, 2015
- Chad GWEP Annual Review: N'Djamena(?), November 16-17, 2015
- South Sudan GWEP Annual Review: Juba , December 9-10, 2015
- Ethiopia DEP Annual Review: Gambella, December 14-15, 2015
- Mali GWEP Annual Review: No dates yet.

Figure 9



* Note—the number of lab-confirmed specimens **DOES NOT MATCH** the number of lab-confirmed cases in any given year because in earlier years lab confirmation was not required and because multiple worms may have been evaluated and confirmed from the same case-patient.

† Provisional

ERRATUM

The revised definition for case containment appearing in issue 234 should have contained five conditions not four. It should have read as follows:

Revised Criteria for a Contained Case: A case of Guinea worm disease is contained if all of the following conditions are met:

1. The patient is detected before or within 24 hours of worm emergence; and
2. The patient has not entered any water source since the worm emerged; and
3. The village volunteer has properly managed the case, by cleaning and bandaging until the worm is fully removed, and by giving health education to discourage the patient from contaminating any water source (if two or more emerging worms are present, the case is not contained until the last worm is pulled out); and
4. The containment process, including verification that it is a case of Guinea worm disease, is validated by a supervisor within 7 days of the emergence of the worm *and*
5. ABATE is used if there is any uncertainty about contamination of sources of drinking water, or if a source of drinking water is known to have been contaminated.

AMERICAN MUSEUM OF NATURAL HISTORY EXHIBIT EXTENDED

The exhibition “Countdown to Zero: Defeating Disease” which opened at the American Museum of Natural History in New York City in January this year has been extended from its originally planned duration there of six months until January 2017 due to the exhibit’s popularity. The exhibit features the progress towards eradication of Guinea worm disease, but also includes material on smallpox and polio eradication, as well as elimination of lymphatic filariasis and onchocerciasis, and control of malaria, schistosomiasis and Ebola.

RECENT PUBLICATIONS

Askt, Jef 2015. Driven to Extinction. *The Scientist* 7:28-36. [<http://www.the-scientist.com/?articles.view/articleNo/43382/title/Driven-to-Extinction/>]

Eberhard, ML; et al. 2015 Thirty-Seven Human Cases of Sparganosis from Ethiopia and South Sudan Caused by *Spirometra*. *Am J Trop Med Hyg.* 93(2): 350-355.

World Health Organization, 2015. Meeting of the International Task Force for Disease Eradication, April 2015. *Wkly Epidemiol Rec* 90:384-392.

N.B.: This meeting reviewed the global Guinea Worm Eradication Program. [<http://www.who.int/entity/wer/2015/wer9031.pdf?ua=1>]

GUINEA WORM DISEASE IN THE NEWS AND CYBERSPACE

A link to the French language video about Guinea worm disease and the cash reward that is being broadcast on national television in Mali is

<https://drive.google.com/file/d/OB11Ttr4CKePPZGNJVmRuTXBZdVE/edit?pli=1>

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 (ernesto.ruiz-tiben@cartercenter.org), 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, Dr. Sharon Roy of CDC, Dr. Dieudonné Sankara of WHO and Dr. Mark Eberhard.

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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



World Health
Organization

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