

Date: January 12, 2017

From: WHO Collaborating Center for Dracunculiasis Eradication, CDC

Subject: GUINEA WORM WRAP-UP #245

To: Addressees

Detect and Contain Every Guinea Worm Infection Immediately!!!

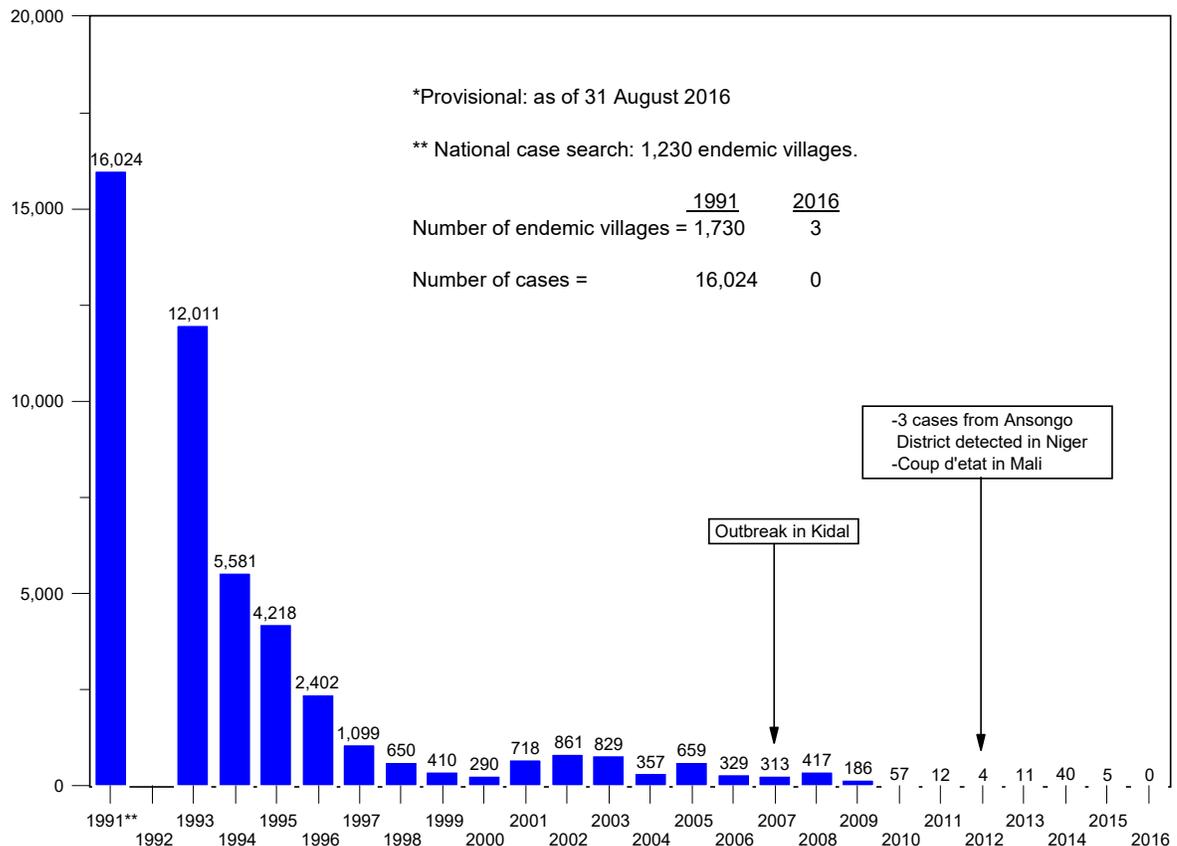
MALI REPORTS ZERO CASES IN 2016!



For the first time since its Guinea Worm Eradication Program (GWEP) began interventions in 1993 Mali has reported zero cases of Guinea worm disease (GWD) for an entire calendar year, in 2016 (Figure 1, Table 1 and Figures 2 and 3). Mali’s last known case became ill in Gourma Rharous district of Timbuktu Region on November 17, 2015--a patient who was one of only 5 cases reported (3 contained) in Mali in 2015. The welcome news of Mali’s apparent interruption

Figure 1

MALI GUINEA WORM ERADICATION PROGRAM
NUMBER OF CASES OF DRACUNCULIASIS REPORTED: 2000 - 2016*

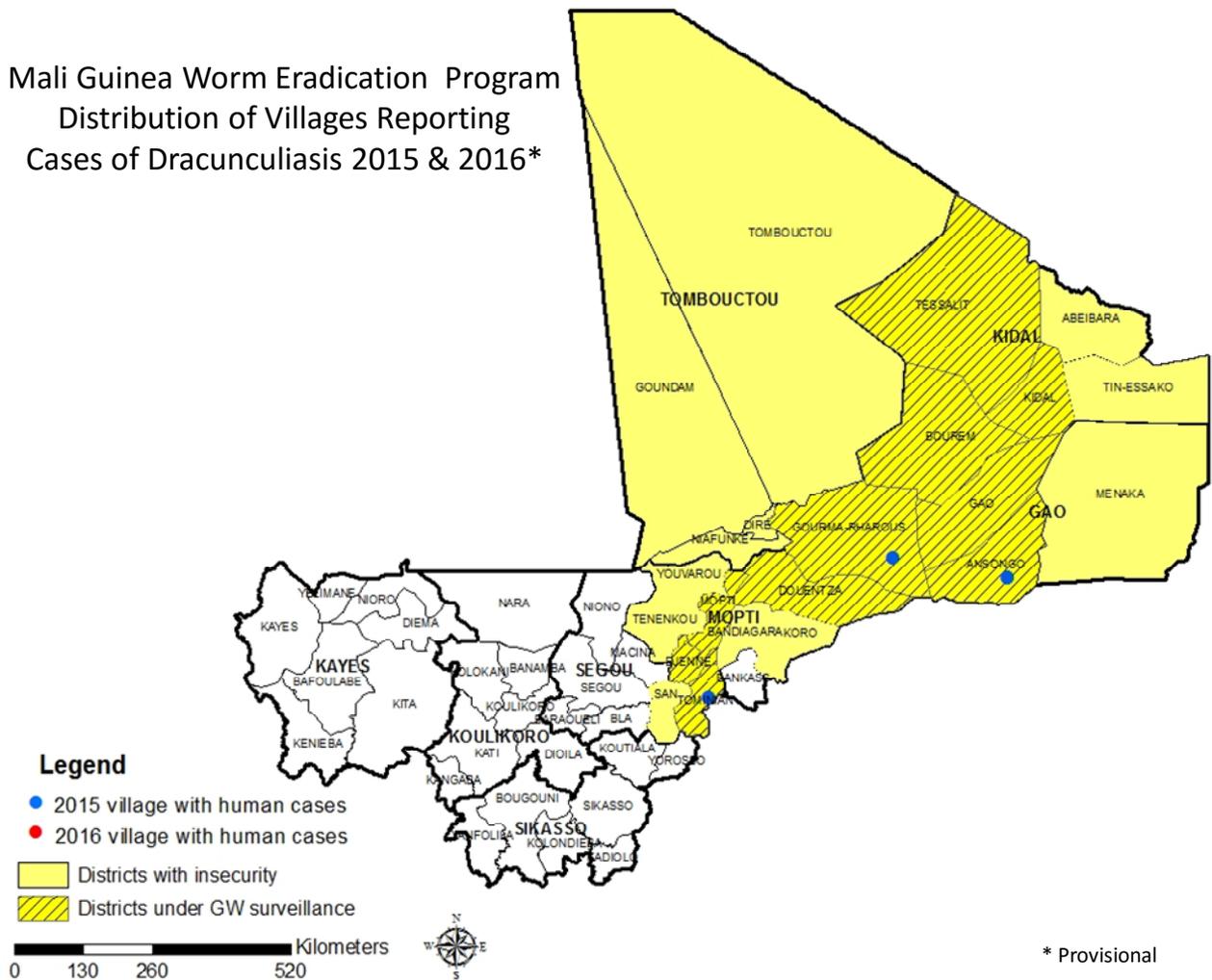


of Guinea worm disease transmission is tempered by two challenges to proving it has been interrupted, namely: constraints to surveillance posed by insecurity in parts of the country, and recent detection of Guinea worm infections in a few dogs in Mali.

Insecurity has limited program operations especially in the northern regions of Timbuktu, Kidal, Gao and Mopti since the *coup d'etat* in March 2012. Mali's GWEP currently has 698 villages or settlements under active surveillance in parts of those four regions and an adjacent district of Segou Region (Figure 2). Kidal was the focus of a large outbreak that began in 2007 after a case was imported from Gao Region. Kidal and Mopti reported their last cases in 2013. Gao, Segou and Timbuktu reported 3, 1, and 1 cases respectively in 2015. In August 2014 Mali increased its cash reward for reporting a case of GWD to 50,000 FCFA (~US\$ 100) from 20,000 FCFA. The average rate of public awareness for that reward among persons surveyed in endemic and non-endemic districts in February-November 2016 was 84% (9,503/11,323), including 94% of 70 residents surveyed in Kidal Region in November. The GWEP investigated all but one of the 516 rumors of cases that it received in January-November 2016 within 24 hours.

Figure 2

Mali Guinea Worm Eradication Program
Distribution of Villages Reporting
Cases of Dracunculiasis 2015 & 2016*



* Provisional

Despite significant risks and insecurity, the program monitored each of the five cases reported from three villages in August-November 2015 with multiple visits by program staff monthly during August-November 2016, totaling 26 visits to Tanzikratene village (3 cases) in Gao Region, 33 visits to Ngariatane in Timbuktu, and 17 visits to Parasilame in Segou. Beginning with Minister of Health Dr. Marie Madeleine Togo's visit to Segou and Mopti in June 2016 (see *Guinea Worm Wrap-Up* #242), staff from the program's national secretariat (National Program Coordinator Dr. Mohamed Berthe, former NPC Dr. Gabriel Guindo, Carter Center Country Representative Mr. Sadi Moussa, and/or data manager Mr. Madani Dialle) made supervisory visits to Gao, Timbuktu, Mopti and Sikasso Regions in August; to Segou in September; to Gao, Timbuktu, Mopti and Segou in October; and to Gao, Segou and Kayes in November. Members of the secretariat also made a supervisory visit to Kidal (including Tessalit) in May 2016 for the first time in two years. Malian technical assistant (TA) Dr. Adama Sobingo arrived in the regional capital of Kidal in June, was relocated to Bamako because of insecurity in August, returned in mid-November and made a second supervisory visit to the field in Kidal that month. A family in Kidal that allegedly had two missed cases of GWD in October 2015 was visited by Dr. Adama or staff from the secretariat three times in 2016 by mid-November. Notwithstanding these numerous acts of courage, insecurity is still a serious challenge to program operations in Mali and if it continues will be a major challenge to eventual certification of the country as free of GWD. For reasons explained below, safe access to Tenenkou district in Mopti Region is particularly needed as of now.

Mali reported a single dog with an emerging Guinea worm, its first such confirmed infection, in Tominian district of Segou Region in 2015. The program began offering a cash reward equivalent to US\$20 for reporting and tethering infected dogs to prevent transmission in March 2016, and has reported 11 infected dogs (9, or 82% contained) in June-November 2016. The average public awareness of the reward for reporting an infected dog in surveyed areas of Tominian district through November this year is 79% (3,741/4,709). Ten of the dogs this year originated in Tenenkou district, which is an insecure area of Mopti Region, but they developed their infections after living in Tominian district for 2 days (one dog), 4-6 months (8 dogs), or 10-12 months (two dogs) (Table 2). The worms from dogs in Mali have been confirmed as genetically indistinguishable from *Dracunculus medinensis* worms removed from humans.



WHO has helped conduct surveillance for GWD in camps for internally displaced persons within Mali as well as among Malians living in refugee camps in neighboring Burkina Faso, Niger and Mauritania. In addition to supporting precertification countries (Kenya and Sudan), WHO assisted countries in post certification stage with significant risk because of their proximity or linkages to endemic countries (Niger, Burkina Faso, Mauritania, Uganda, Cameroon, CAR, Nigeria, and Ghana) to conduct nationwide campaigns for increasing cash reward awareness and reporting of rumors/suspected cases and cases should they occur.

Similar awareness campaigns were conducted in refugee/IDP camps in post-certification countries for self and voluntary reporting of cases should they occur. Activities consisted of dissemination of messages on the cash reward scheme in appropriate local languages through local radios, TV stations, display of posters, use of town criers as applicable, school system, community mobilizations, churches and mosques as appropriate to reach the maximum of people. For instance, during 2016, the level of awareness of the cash reward among Malian refugees in Burkina Faso and Niger was found to be 93.2% and 80% respectively. Four rumors of Guinea worm cases were reported and investigated among Malian refugees in Niger in the Tillaberi region in 2016- none of

them was confirmed as Guinea worm disease. The level of awareness on the cash reward in Malian refugees in Mauritania was estimated to be 64%. In Ethiopia, the level of awareness among refugees from South Sudan was found to range from 56 – 82%.

Appointed in May 2015, Mali’s National Certification Committee met in January, February and August 2016. It also visited Mopti and Sikasso Regions in August; in November it visited 9 districts and the regional office in Kayes Region with support provided by WHO and The Carter Center. The GWEP established a sub-office in Mopti as of December 1, 2016.

Barring another surprise, the world is now down to only three countries where transmission of dracunculiasis is occurring in humans: Chad, Ethiopia and South Sudan (Figure 3). To secure its apparent interruption of transmission, Mali’s GWEP will need to continue interventions, including tethering infected dogs and targeted use of Abate in areas at risk, as well as gain safe access to Tenenkou district in order to eliminate also the apparently limited transmission among dogs in Mali.

Figure 3

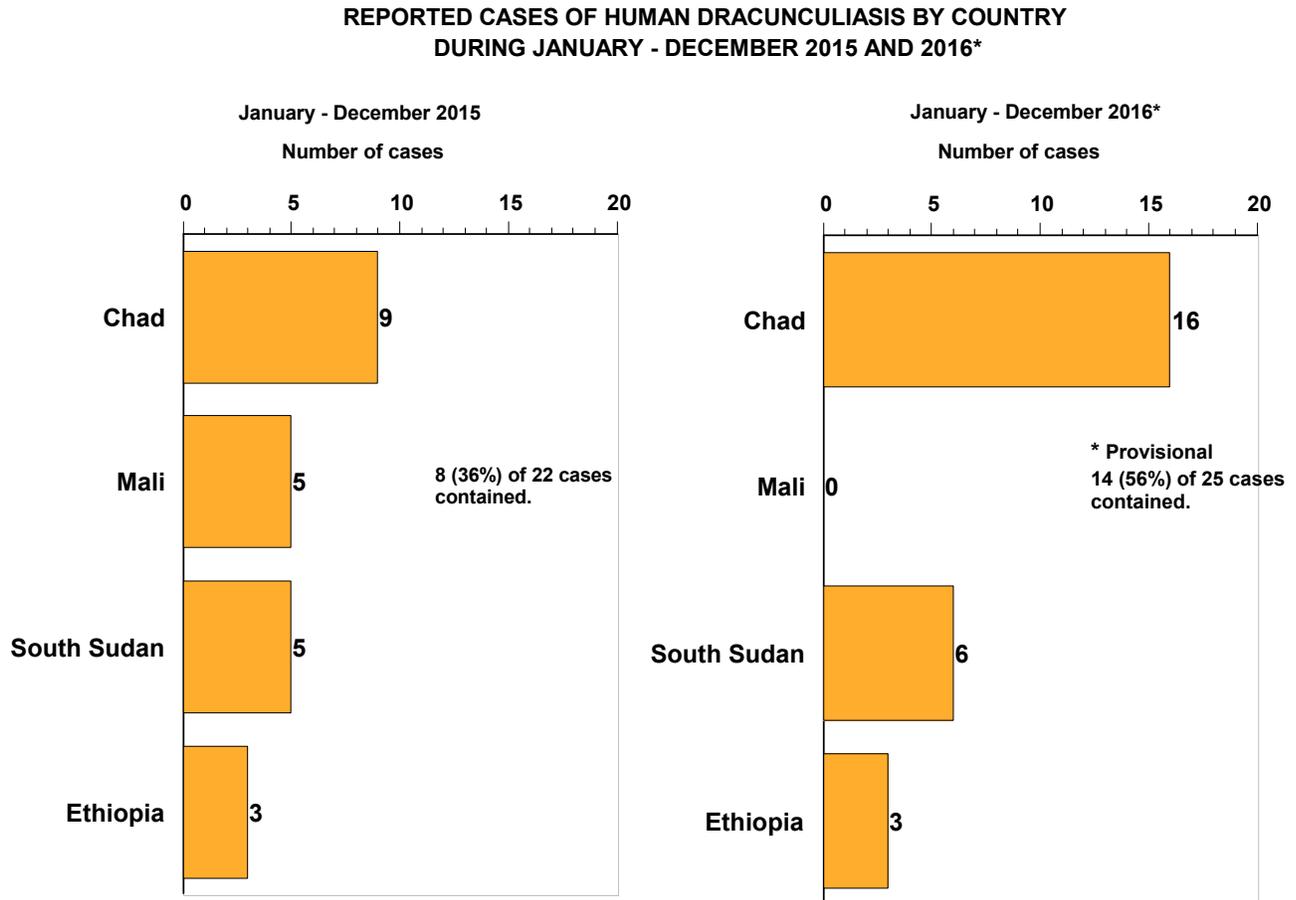


Table 1

Number of Reported Cases of Guinea Worm Disease Contained and Number Reported by Month during 2016*
(Countries arranged in descending order of cases in 2015)

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*	
CHAD	0 / 0	1 / 1	0 / 0	1 / 1	1 / 1	0 / 1	1 / 2	1 / 3	1 / 2	3 / 4	0 / 0	0 / 1	9 / 16	56%
MALI §	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%
SOUTH SUDAN	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	3 / 4	0 / 0	0 / 0	0 / 1	0 / 0	0 / 1	0 / 0	3 / 6	50%
ETHIOPIA	0 / 0	0 / 0	0 / 0	0 / 0	1 / 1	1 / 1	0 / 0	0 / 0	0 / 1	0 / 0	0 / 0	0 / 0	2 / 3	67%
TOTAL*	0 / 0	1 / 1	0 / 0	1 / 1	2 / 2	4 / 6	1 / 2	1 / 3	1 / 4	3 / 4	0 / 1	0 / 1	14 / 25	56%
% CONTAINED	0%	100%	0%	100%	100%	67%	50%	33%	25%	75%	0%	0%	56%	

*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 a case of GWD did not meet all case containment standards.

§Reports include Kayes, Koulikoro, Segou, Sikasso, and Mopti, Tinbuktu, Gao, and Kidal Regions; reports from Kidal Region are contingent on security conditions during 2016 and times when the GWEP is able to deploy a technical advisor to Kidal Region to oversee the program there.

Number of Reported Cases of Guinea Worm Disease Contained and Number Reported by Month during 2015

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*	
CHAD	0 / 0	0 / 1	0 / 2	0 / 1	0 / 0	0 / 2	0 / 1	0 / 1	0 / 0	0 / 1	0 / 0	0 / 0	0 / 9	0%
MALI §	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 1	0 / 0	3 / 3	0 / 1	0 / 0	3 / 5	60%
SOUTH SUDAN	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	1 / 1	1 / 2	0 / 1	0 / 0	0 / 0	0 / 1	0 / 0	2 / 5	40%
ETHIOPIA	0 / 0	0 / 0	0 / 0	0 / 0	1 / 1	0 / 0	0 / 0	1 / 1	0 / 0	1 / 1	0 / 0	0 / 0	3 / 3	100%
TOTAL*	0 / 0	0 / 1	0 / 2	0 / 1	1 / 1	1 / 3	1 / 3	1 / 4	0 / 0	4 / 5	0 / 2	0 / 0	8 / 22	36%
% CONTAINED	0%	0%	0%	0%	100%	33%	33%	25%	0%	80%	0%	0%	36%	

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, Gao, and Kidal Regions; reports from Kidal Region are contingent on security conditions during 2015 and times when the GWEP is able to deploy a technical advisor to Kidal Region to oversee the program there.

Table 2

MALI GUINEA WORM ERADICATION PROGRAM
LINE LISTING OF DOG INFECTIONS DURING 2016*

Dog infection & GW number	Region	District	Sanitary district	Village	Ethnicity of dog owner	Occupation of dog owner	Containment	Date of detection	Date of GW emergence	Contamination of water (Yes/No or probable)	Use of ABATE
1.1	Segou	Tominian	Fangasso	Dimana	Bobo	Farmer	Yes	8-Juin-16	15-Juin-16	Probable	Yes
1.2									17-Jun-2016		
1.3									18-Jun-2016		
2	Segou	Tominian	Fangasso	Masso	Bobo	Farmer/Hunter	Yes	3-Juil-16	3-Juil-16	Probable	Yes
3.1	Segou	Tominian	Fangasso	Mampe	Bobo	Farmer	No	6-Juil-16	6-Juil-16	Probable	Yes
3.2									7-Juil-16		Yes
3.3									16-Juil-16		Yes
3.4									6-Aout-16		Yes
3.5									10-Aout-16		Yes
3.6									16-Aout-16		Yes
4	Segou	Tominian	Ouan	Bathiridougou	Bobo	Farmer	Yes	7-Aout-16	7-Aout-16	Probable	Yes
5.1	Segou	Tominian	Ouan	Kantama	Bobo	Farmer	Yes	15-sept.-16	15-Sep-2016	Probable	Yes
5.2											
6	Segou	Tominian	Ouan	Bosokuy	Bobo	Farmer	Yes	14-sept.-16		Probable	Yes
7.1	Segou	Tominian	Fangasso	Parasilame	Bobo	Farmer	Yes	10-sept.-16	10-Sep-2016	Probable	Yes
7.2								11-sept.-16	11-Sep-2016	Probable	Yes
8	Segou	Tominian	Ouan	Bathiridougou	Bobo	Farmer	No	18-sept.-16	21-Sep-2016	Probable	Yes
9	Segou	Tominian	Fangasso	Masso	Bobo	Farmer	Yes	20-sept.-16	21-Sep-2016	Probable	Yes
10	Segou	Tominian	Fangasso	Tesso	Bobo	Farmer	Yes	08-oct.-16	10-Nov-2016	Probable	Yes
11	Segou	Tominian	Fangasso	Sokoura	Bobo	Farmer	Yes	12-oct.-16	19-Oct-2016	Probable	Yes

* Provisional

CHAD: MORE CASES AND INFECTED DOGS AND MORE INTERVENTIONS

Chad reported 16 cases of Guinea worm disease in January-November 2016 (56% contained), vs. 9 cases (0% contained) in 2015 (Table 1, Figures 3 and 4). The cases in 2016 included a new focus of 7 cases and at least one confirmed infected dog in Salamat Region of southeastern Chad. Notably, the 16 cases reside in 12 different villages, with 12 different ethnicities and 12 different languages (Table 3). None of the presumed sources of these cases has been identified (Table 4). As of November the program had 1,563 villages under active surveillance, including 324 priority villages that had a case in a human or an infected dog in 2015 or 2016. Chad has offered a reward equivalent to US\$100 for reporting a case of GWD since 2010. The latest crude rate of reward awareness in 2016 is 46% (65% in 2015), with 2,732 rumors of suspect cases reported in January-November 2016 (94% of which were investigated within 24 hours) vs. 1,955 rumors in all of 2015. An impressive ceremony held at Al-Ardep village in Aboudeia district on December 6 to deliver three rewards included a representative of the governor of Salamat Region, chiefs of seven area villages, and a huge crowd. Other reward ceremonies were held in Am Timan district on December 7 and Haraze district on December 10.

Figure 3

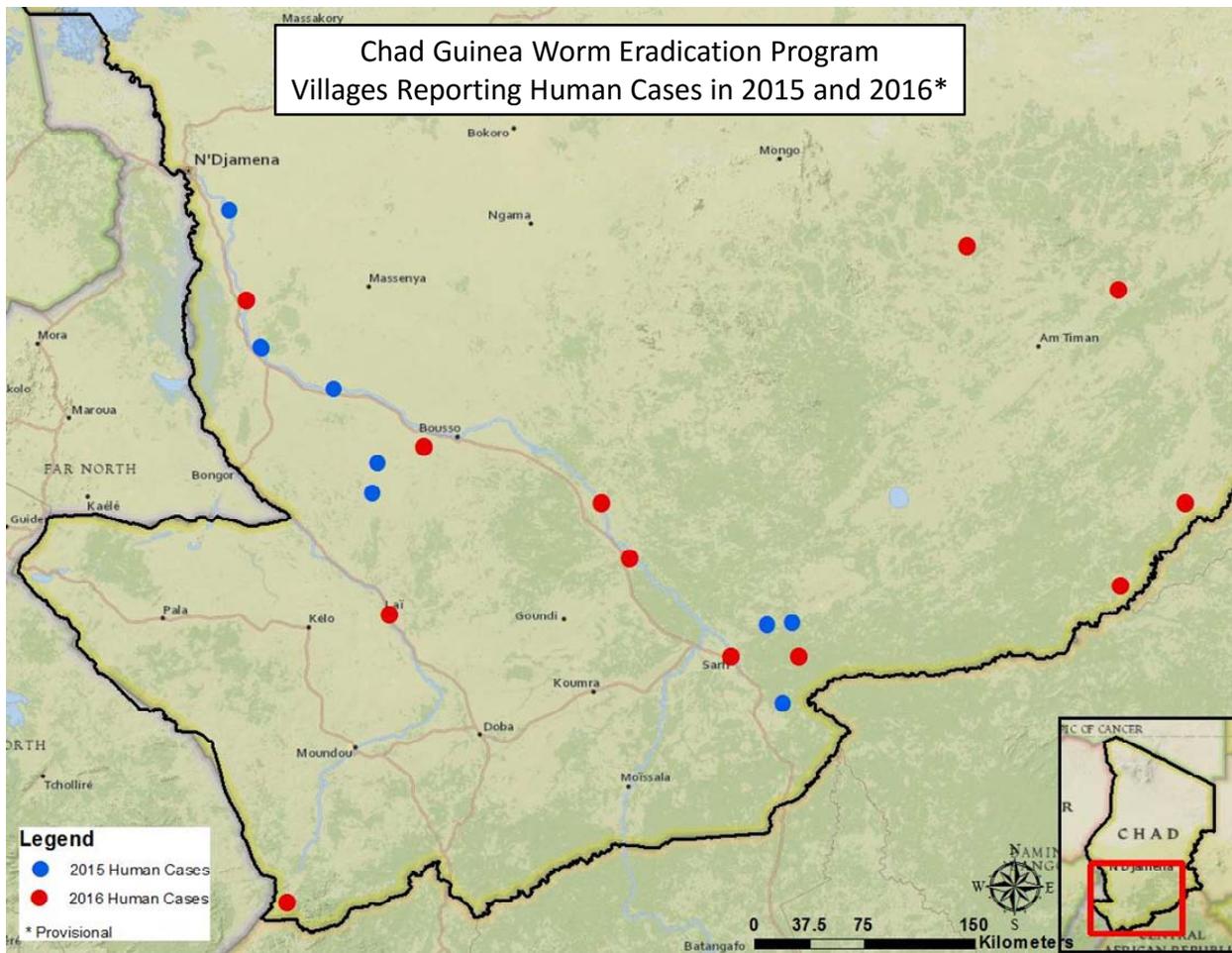


Table 3

CHAD GUINEA WORM ERADICATION PROGRAM
LINE LISTING OF CASES OF GWD DURING 2016*

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 or 2= VAS	3= VNAS			Age	Sex	Date GW emerged (D/M/Y)	(Yes, No, or Pending)	If no, date of Abate Rx		Name	1= VAS	3= VNAS	(Yes or No)	Name	(Yes or No)	Actions/Comments?
1.1	Sarh (quartier Kassai)		3	Sarh	Moyen Chari	12	M	28-Feb-16	Yes	-	2	Sarh (quartier Kassai)		3	No	-	-	Patient visits the health center during the day and returns to the house each evening with his grandmother.
1.2								1-Mar-16	Yes	-	2					-	-	
1.3								29-Mar-16	Yes	-	2					-	-	
2.1	Ngara (quartier Mani)	1		Bailli	Chari Banguermi	5	M	29-Apr-16	Yes	-	2	Ngara	1		No	-	-	
3.1	Belly (quartier Gole)	1		Onoko	Chari Banguermi	11	F	25-May-16	Yes	-	2	Belly (quartier Gole)	1		No	-	-	The household is in enclave separate from the VAS. No ASV was serving that specific area.
3.2								16-Jun-16	Yes	-	2					-	-	
4	Mama		3	Korbol	Moyen Chari	38	F	2-Jun-16	No	N/A (Chari)	2	Mama		3	No	-	-	Patient crossed river traveling to health center, with worm submerged in the water.
5.1	Kombol	2		Haraze	Salamat	60	F	7-Jul-16	No	-	2	Kombol	2		No	-	-	First worm was isolated; second worm was not isolated. Case therefore not contained.
5.2						60	F	4-Aug-16	No	16-Aug-16	2	Kombol	2		No	-	-	Patient entered water source before realizing a second worm was emerging.
6	Dankolo (quartier Myabo)	1		Danamadji	Moyen Chari	55	M	30-Jul-16	Yes	-	2	Dankolo (quartier Myabo)	1		No	-	-	
7	Al-Ardep		3	Aboudeia	Salamat	24	F	10-Aug-16	No	-	2	Al-Ardep		3	No	-	-	13 days between first detection and arrival at the health center. The patient contaminated 5 ponds during that time. The patient's cousin is Case #9.
8	Kombol	2		Haraze	Salamat	11	F	24-Sep-16	Yes	-	2	Kombol	2		No	-	-	Patient is the granddaughter of case #5.
9	Al-Ardep		3	Aboudeia	Salamat	18	F	31-Aug-16	No	-	2	Al-Ardep		3	No	-	-	Patient is the cousin of Case #7.
10	Waitan	2		Niellern	Moyen Chari	50	F	24-Sep-16	No	-	2	Waitan	2		No	-	-	Patient was a suspect in January 2015. That worm was confirmed as onchocerciasis.
11	Ndimiti	2		Haraze	Salamat	4	M	28-Sep-16	Yes	-	2	Ndimiti	2		No	-	-	
12	Dankolo (quartier Myabo)	1		Danamadji	Moyen Chari	35	M	11-Oct-16	Yes	-	2	Dankolo (quartier Myabo)	1		No	-	-	Patient is a neighbor of case #6. They fish together and drink from the lake during their work.
13	Al-Ardep		3	Aboudeia	Salamat	50	F	12-Oct-16	Yes	-	2	Al-Ardep		3	No	-	-	Patient is a neighbor of cases #7 and #9.
14	Madoc		3	Bessao	Logone Occidental	22	M	15-Oct-16	Yes	-	2	Madoc		3	No	-	-	Patient has no history of travel.
15	Goz-djamir	2		Am Timan	Salamat	40	F	20-Oct-16	Yes	-	2	Goz-djamir	2		No	-	-	
16	Lai		3	Lai	Tandjile	9	M	7-Dec-16	No	21-Dec-16	2	Lai		3	No	-	-	Patient has no history of travel.

*Provisional

VAS = village under active surveillance in level 1 or 2 areas

VNAS = village not under active surveillance, level 3 areas

Provisionally, Chad also reported 1,013 infected dogs in January-December 2016 (65% tethered), compared to 503 infected dogs (68% tethered) in 2015. For the first time this year, zero infected dogs were reported for weeks number 48 and 49 (November 27-December 10). Since January 2015 the program has offered a reward equivalent to US\$20 for reporting and tethering an infected dog to help prevent transmission of infection from dogs. The latest crude rate of reward awareness for reporting dogs is reportedly 31% in 2016 vs. 30% in 2015, although anecdotal reports suggest the rates of reward awareness for reporting infected dogs or human cases in Chad is higher than the estimates. Monthly surveys in priority villages continue to confirm that 85% or more of households surveyed were reportedly burying the entrails of gutted fish to help prevent transmission of infection to dogs. Abate was applied to suspected transmission sites in 11 villages in October.

A demonstration project using the topically-administered anti-helminthic Advocate® manufactured by Bayer, treated 3,642 dogs during the first round of monthly treatments in October and 4,165 dogs in November. The demonstration is underway in three zones with the highest numbers of infected dogs during 2015-2016 in areas near the border with Central African Republic: Gon in Moissala district of Mandoul Region, Malmana in Danamadji district/Moyen Chari Region, and Marabe in Kyabe district/Moyen Chari Region.

Meanwhile, the KYNE professional communications team that has been working with Chad's Ministry of Health, Ministry of Information and the national GWEP to develop and pre-test strategies to increase awareness of the rewards for reporting Guinea worm infections nationwide expects to begin training for implementation of the new public information campaign early in 2017, after Chad's annual review. This initiative will include a newly designed Guinea worm cloth pattern with colors and symbols related to those to be used in the forthcoming communications campaign.

After seven years of resumed known infections, Guinea worm transmission in Chad still features the paradox of worms that are *genetically indistinguishable* in the laboratory, but which appear *epidemiologically different* from Guinea worms in other countries in their sudden, explosive infection of dogs and their consistently sparse, random and non-explosive infection of humans in Chad.

ETHIOPIA CONVENES ANNUAL GW REVIEW IN GAMBELLA

The Ethiopian Dracunculiasis Eradication Program (EDEP) held its annual in-country Program Review at Gambella on December 13-14, 2016, under the leadership of National Program Coordinator Mr. Getaneh Abrha Estayew. Participants at the review included representatives of the Federal Ministry of Health, the Ethiopia Public Health Institute (EPHI), Gambella Region Health and Water Bureaus, UNICEF, Guinea Worm Ambassador Dr. Tebebe Yemane Brehan, Gambella President Mr. Gatluak Tut, Dr. Andrew Seidu Korkor of WHO/AFRO, and the Director of South Sudan's GWEP, Mr. Samuel Makoy. The Carter Center delegation to the meeting was led by Vice President Dr. Dean Sienko, GWEP Director Dr. Ernesto Ruiz-Tiben, and Country Representative Dr. Zerihun Tadesse. The President of Gambella Region Mr. Galuak Tut, the representative of the WHO Country Office Dr. Mary Esther, and Dr. Sienko gave keynote speeches, and the meeting was opened by the Director General of EPHI Dr. Amha Kebede.

Ethiopia has reported a provisional total of 3 cases (2 contained) from 3 villages in 2016. The source of none of the cases has been established, the last one of which, a 20 year old Nuer man who is a hunter and refugee from Ulang County in Upper Nile State of South Sudan, apparently could have been infected in either Ethiopia or South Sudan. The other 2 cases were of Agnuak ethnicity, as were most patients in Ethiopia in recent years. The EDEP also reported 14 infected dogs (10 contained) and 2 infected baboons in January-December. All but one of the infected animals and 2 of the 3 cases were detected in Gog district of Gambella Region, mostly in Atheti kebele (sub-district).

The program intensified treatment of water sources in Gog district with ABATE® larvicide during 2016, especially in Atheti sub-district, where treatments increased to an average of 119 treatments per month in July-October, from an average 33 treatments per month in the same period of 2015. As of November 2016 the EDEP had 152 villages under active surveillance (Level 1) in endemic Gog (71) and Abobo (79) districts and Gambella Town (2) of Gambella Region. All other districts of Gambella Region are under level 2 surveillance, as is formerly endemic Surma district (76) of SNNP Region. Throughout 2017 the EDEP will add 28 villages under active surveillance (Level 1) in Lare district/Gambella Region where the itinerant Nuer hunter (case #3) was diagnosed. The program reported a cumulative total of 10,612 rumors of suspect cases (99.6% investigated within 24 hours) in January-November 2016, vs. 8,321 rumors in 2015. The average rate of awareness of the reward for reporting a GW case in humans in January-November 2016 was 68% (4,941/7,274) for multiple districts of Gambella Region (78% in Gog district; 91% in Agnuak villages), and 91% (360/397) for two districts of SNNP Region. Of 3,682 persons surveyed about the reward for reporting an infected dog, 49% were aware in Gog and Abobo districts of Gambella Region as of November. The GWEP in Gambella held a regional quarterly review on October 11.

During a visit by Carter Center epidemiologist Dr. James Zingeser from October 26 to November 8 he and Carter Center Country Representative Dr. Zerihun Tadesse and others conducted two focus group discussions with hunters in Gog district at Atheti village in Atheti sub-district and Bathor village in Janjor sub-district. Among other items, the hunters identified at least one surface water source that was not being treated with Abate (near Werutew village). Some hunters also reported that baboons with GW infections were easier to kill, since they were lame. During a rare meeting on November 2nd, Ethiopia's National Certification Committee decided that it should be reconstituted and reactivated, with new membership and new chairmanship. WHO staff investigated 868 (96%) of 904 rumors reported within 24 hours in five refugee camps (Tierkide, Kule, Jewi, Okugu and the newly established Nguenyiel camp) during 2016. The total population of refugees from South Sudan in these camps is estimated to be 202,515.

On the 12th of December 2016, EDEP conducted advocacy field visit to Pagak entry point, Lare district health office and Tierkide refugee camp. The field visit was organized to observe ongoing activities to control importation of Guinea worm disease cases from South Sudan refugees; maintain the support of implementing partners and to advocate for Guinea Worm Eradication Program and bring about renewed commitment at all level. Participants include EPHI Director General, EDEP coordinator, Gambella RHB, SSGWEP coordinator, WHO South Sudan, WHO-IST/AFRO, WHO Ethiopia team, The Carter Center and Members of the National Certification Commission.

SOUTH SUDAN: SIX CASES, NO DOGS, TIGHTER GRIP

South Sudan's GWEP has reported six cases from four villages during 2016. Three of the six cases were contained and the source of infection is known for four of the cases (see also line-listing in *Guinea Worm Wrap-Up #244*) (Table 4). The 3 contained cases all occurred in June in Angon village in Jur River County. Water sources in the village (Rumchieth, in Tonj East County) of one uncontained case were already being treated with Abate before that worm emerged and water sources associated with the other uncontained case at Parieng cattle camp in the same county were treated on the eighth day after that worm began emerging. The SSGWEP has 2,666 villages under active surveillance. South Sudan found one infected dog, its first ever, in the same household as one of the cases in 2015, but has found no infected dogs in 2016.

On September 23rd, South Sudan's Minister of Health, the Honorable Dr. Riek Gai Kok visited Udici payam in Wau State to present the cash reward to three confirmed cases of Guinea worm disease in a ceremony hosted by the governor of Wau State, H.E. Andrea Mayar. All three cases, which had a total of 16 worms, were reported from Angon village and were fully contained. In 2015, the same village reported one case as well as the first and only reported dog infection in South Sudan. The minister was accompanied by a large delegation, including Undersecretary of Health Dr. Makur Matur Kariom, Area Member of Parliament Hon. Siro Giarjuk Mariano, Director of the SSGWEP Mr. Makoy Samuel Yibi, and many other distinguished guests from national, state and local levels. The minister visited the GW case containment center and presented the full reward of 5,000 South Sudanese Pounds (~US\$67) for meeting the containment criteria for each of their multiple worms (the three patients had a total of 16 Guinea worms). He praised the patients for reporting their symptoms early and protecting other members of their community from contracting the disease and thereby setting an example for other communities in South Sudan. The minister remarked that South Sudanese President H.E. General Salva Kiir Mayardit and the government are monitoring closely the race to be the next country to stop transmission. The minister expressed the government's unwavering commitment to the remaining endemic communities and called on the local paramount chief and other local authorities to intensify community mobilization efforts. He recognized village volunteers, Guinea worm team and health workers as the real heroes and heroines of South Sudan's effort to eradicate Guinea worm disease.

The main threats to the elimination of Guinea worm transmission in South Sudan, which appears to be imminent, are the on-going insecurity in much of the country and the Guinea worm patient detected in Ethiopia in September 2016 whose source of infection is unknown, but who according to his travel history may have become infected in South Sudan or in Ethiopia (see previous issue). Most of the expatriate technical assistants provided by The Carter Center have been evacuated from South Sudan since July 2016; the program is now being implemented by its very capable director Mr. Makoy and his local teams. This program also benefits from strong political support provided by the Government of South Sudan.

Table 4

Cases of Guinea Worm Disease in 2015: Containment Status and Source Detection

Case #	Date Guinea Worm Emerged	Village Where Detected / District (or County)	Case Contained?	Presumed Source of Infection Identified?
Chad #1	19 Feb 2015	Mourgoum/Dourbali	NO	NO
Chad #2	7 Mar 2015	Marabe I/Kyabe	NO	NO
Chad #3	28 Mar 2015	Diganaly/Guelendeng	NO	NO
Chad #4	28 Apr 2015	Maicomb/Danamaji	NO	NO
Chad #5	24 Jun 2015	Mourabat/Bailli	NO	Ngargue/Bailli
Chad #6	26 Jun 2015	Ferick Tchaguine/Lai	NO	Ngargue/Bailli
Chad #7	6 Jul 2015	Houa Ali/Am-Timan	NO	NO
Chad #8	17 Aug 2015	Mana Belegna/Massenya	NO	NO
Chad #9	14 Oct 2015	Kousseri/Kyabe	NO	NO
Mali #1	22 Jul 2015	Parasilame/Tominian	NO	NO
Mali #2	1 Oct 2015	Tanzikratene/Ansongo	YES	Tanzikratene/Ansongo
Mali #3	20 Oct 2015	Tanzikratene/Ansongo	YES	Tanzikratene/Ansongo
Mali #4	25 Oct 2015	Tanzikratene/Ansongo	YES	Tanzikratene/Ansongo
Mali #5	17 Nov 2015	Ngariatane/Gourma Rharous	NO	Nanguaye/Gourma Rharous?
South Sudan #1	22 Jun 2015	Dakbuong/Awerial	YES	Dakbuong/Awerial
South Sudan #2	11 Jul 2015	Loriwo/Kapoeta East	YES	Kassingor Mountain village
South Sudan #3	26 Jul 2015	Angon/Jur River	NO	NO
South Sudan #4	25 Aug 2015	Rumchieth/Tonj East	NO	NO
South Sudan #5	10 Nov 2015	Awelpiny/Yirol West	NO	NO
Ethiopia #1	27 Mar 2015	Gop Fishing Area/Abobo	YES	near Bathor village/Gog
Ethiopia #2	2 Aug 2015	PRC Agnuak/Gog	YES	near Bathor village/Gog
Ethiopia #3	26 Oct 2015	Akweramero Farm/Gog	YES	near Bathor village/Gog

Chad also reported 508 infected animals (336 contained) in 2015.

South Sudan and Mali reported 1 infected animal each in 2015; the infected dog in Mali was contained.

Ethiopia reported 14 infected animals (4 contained) in 2015.

Cases of Guinea Worm Disease in 2016: Containment Status and Source Detection

Case #	Date Guinea Worm Emerged	Village Where Detected / District (or County)	Case Contained?	Presumed Source of Infection Identified?
Chad #1	28 Feb 2016	Sarh / Sarh	YES	NO
Chad #2	29 Apr 2016	Nagara/Bailli	YES	NO
Chad #3	25 May 2016	Gole / Onoko	YES	NO
Chad #4	2 June 2016	Mama / Korbol	NO	NO
Chad #5	7 July 2016	Kombol / Haraze	NO	NO
Chad #6	30 July 2016	Dankolo / Danamadji	YES	NO
Chad #7	10 Aug 2016	Al-Ardep / Aboudeia	NO	NO
Chad #8	16 Aug 2016	Kombol / Haraze	YES	NO
Chad #9	31 Aug 2016	Al-Ardep / Aboudeia	NO	NO
Chad #10	24 Sept 2016	Waitan / Sarh	NO	NO
Chad #11	28 Sept 2016	Ndimti / Haraze	YES	NO
Chad #12	11 Oct 2016	Dankolo / Danamadji	YES	NO
Chad #13	12 Oct 2016	Al-Ardep / Aboudeia	YES	NO
Chad #14	15 Oct 2016	Madoc / Bessao	YES	NO
Chad #15	20 Oct 2016	Gozdjamir / Amtiman	NO	NO
Chad #16	07 Dec 2016	Lai / Tandjile	NO	NO
South Sudan #1	4 Jun 2016	Rumchieth / Tonj East	NO	Rumchieth
South Sudan #2	9 June 2016	Angon / Jur River	YES	Angon
South Sudan #3	25 June 2016	Angon / Jur River	YES	Angon
South Sudan #4	27 June 2016	Angon / Jur River	YES	Angon
South Sudan #5	11 Sept 2016	Parieng CC / Tonj East	NO	NO
South Sudan #6	20 Nov 2016	Khor Jamus / Jur River	NO	NO
Ethiopia #1	20 May 2016	Olane / Gog	YES	NO
Ethiopia #2	30 Jun 2016	PRC Agnuak / Gog	YES	NO
Ethiopia #3	20 Sept 2016	Kubri / Lare	NO	NO

Chad also reported 1,013 infected animals 65% contained*.

South Sudan reported 0 infected animals*.

Ethiopia also reported 14 infected animals 71% contained*.

Mali also reported 11 infected animals 82% contained*.

* Provisional

MEETINGS

- South Sudan GWEP review: January 12, 2017 in Kampala, Uganda
- Chad GWEP review: January 19-20, 2017 in N'Djamena
- Mali GWEP review: January 25-26, 2017 in Bamako
- Inauguration of exhibit “Countdown to Zero” at Carter Center Presidential Library: January 11, 2017
- 21st International Review Meeting of GWEP Program Managers: March 20-21, 2017 in Atlanta

RECENT PUBLICATIONS

Rodríguez, HM, Martín-Garre, García P, Del Campo. (2016) Unexpected hosts: imaging parasitic diseases. *Insights Imaging*. 2016 [Epub ahead of print Nov 23.]

ANNIVERSARY

November 21, 2016 marked the 30th anniversary of The Carter Center’s entry into the campaign to eradicate Guinea worm disease. On that date in 1986 the Center hosted an all-day workshop on Guinea worm eradication in Pakistan, with senior representatives from the Government of Pakistan, the Centers for Disease Control and Prevention, and The Carter Center, including former U.S. President Jimmy Carter, who participated in the meeting in the Center’s Zaban Room for two and a half hours. Assisted by CDC, where the GW eradication initiative began in October 1980, The Carter Center began helping Pakistan to organize and implement its national campaign immediately after the meeting (see *Guinea Worm Wrap-Up #226*).

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 of CDC, Dr. Dieudonné Sankara of WHO, and Mark Eberhard.

WHO Collaborating Center for Dracunculiasis Eradication, Center for Global Health, Centers for Disease Control and Prevention, Mailstop C-09, 1600 Clifton Road NE, Atlanta, GA 30333, USA, email: gwwrapup@cdc.gov, fax: 404-728-8040. The GW Wrap-Up web location is

<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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