

Date: January 16, 2018

From: WHO Collaborating Center for Dracunculiasis Eradication, CDC

Subject: GUINEA WORM WRAP-UP #252

To: Addressees

SOUTH SUDAN REPORTS NO GUINEA WORMS IN 2017!!!

“The worm will be the judge of the quality of our work last year.”

MAKOY Samuel Yibi



As of December 31, 2017, South Sudan reached the major milestone of thirteen months since its most recent case of Guinea worm disease (GWD) was reported in November 2016. For the



first time since it began in 2006, in 2017 the South Sudan Guinea Worm Eradication Program (SSGWEP) has provisionally reported zero cases in an entire calendar year (Figures 1 and 2) despite submitting 27 worm specimens to CDC, none of which were confirmed as *Dracunculus medinensis*. South Sudan’s latest case, a thirteen-year-old Lou girl from the village of Khor Jamus in Jur River County of Western Bahr al Ghazal State, had her worm emerge on November 20, 2016.

Figure 1

**SOUTH SUDAN GUINEA WORM ERADICATION PROGRAM
NUMBER OF REPORTED CASES OF DRACUNCULIASIS:
2006-2017***

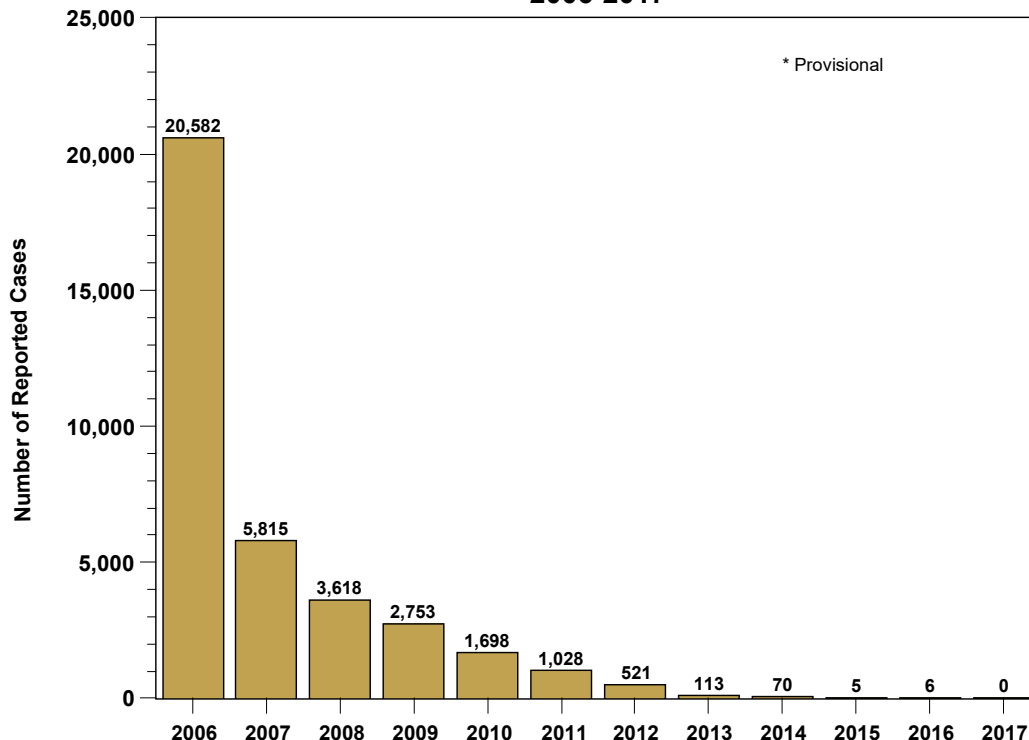


Figure 2

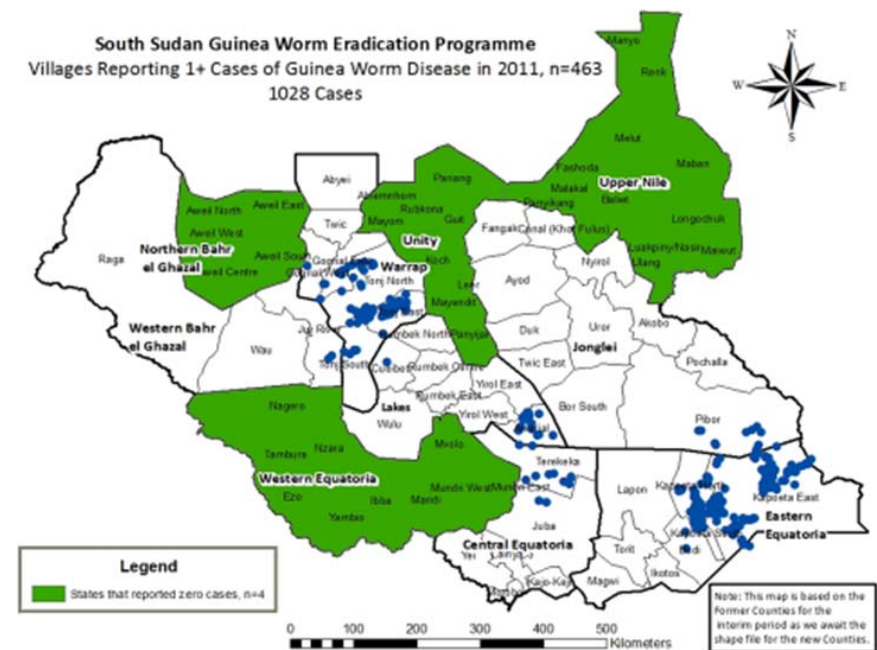
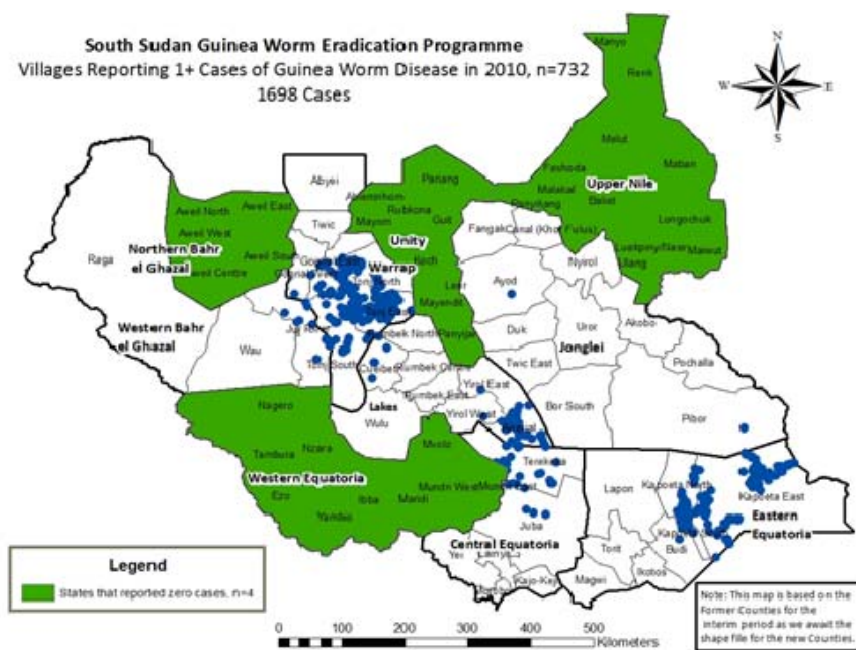
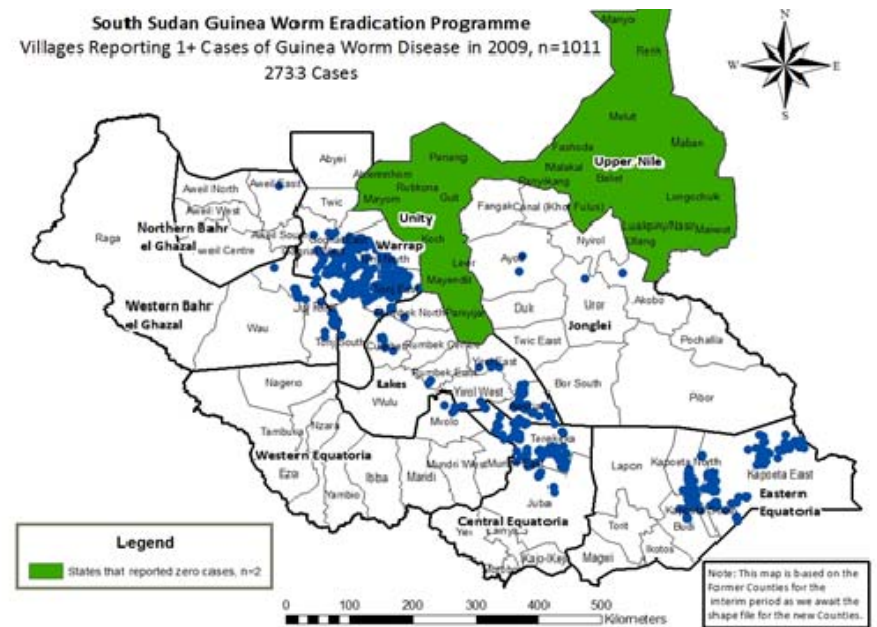
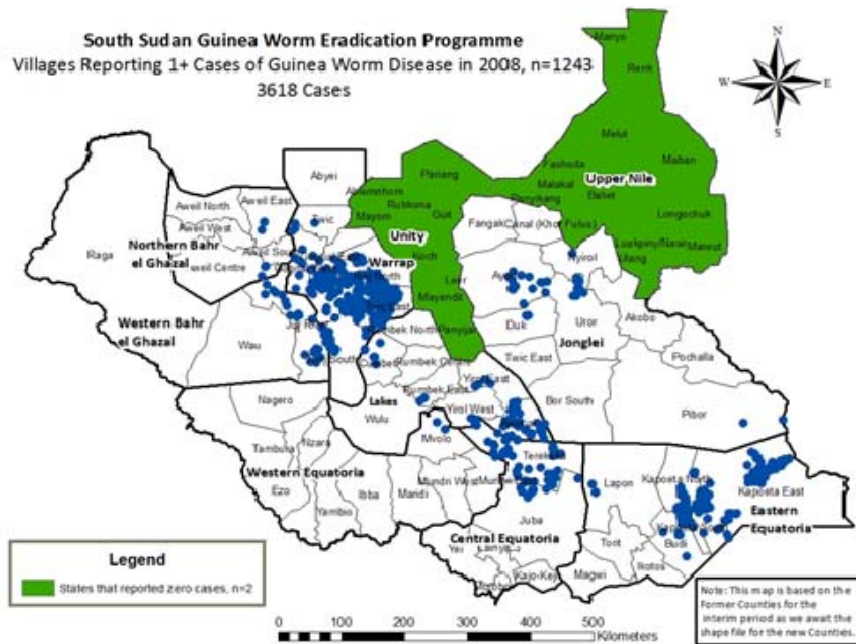


Figure 2 (cont.)

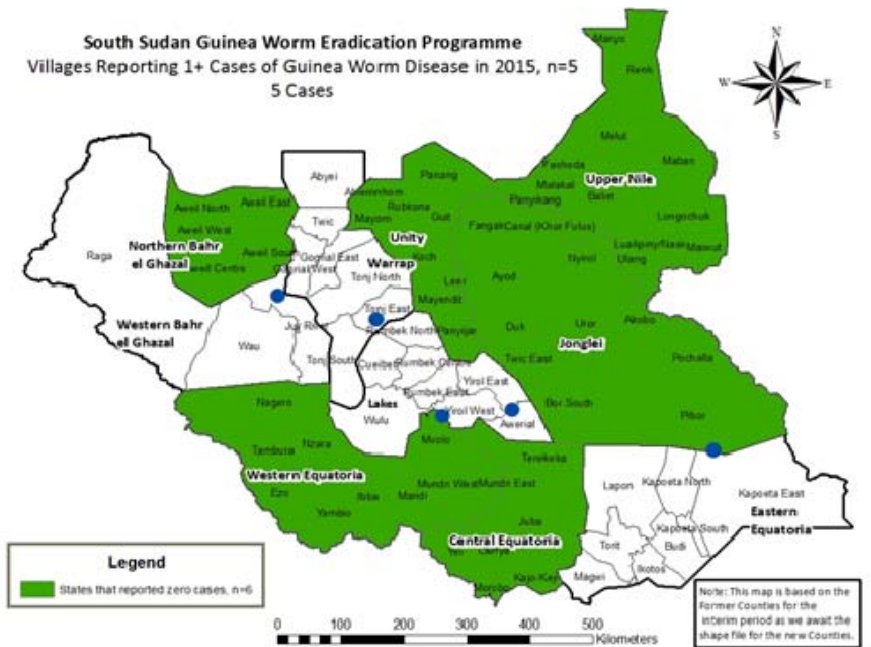
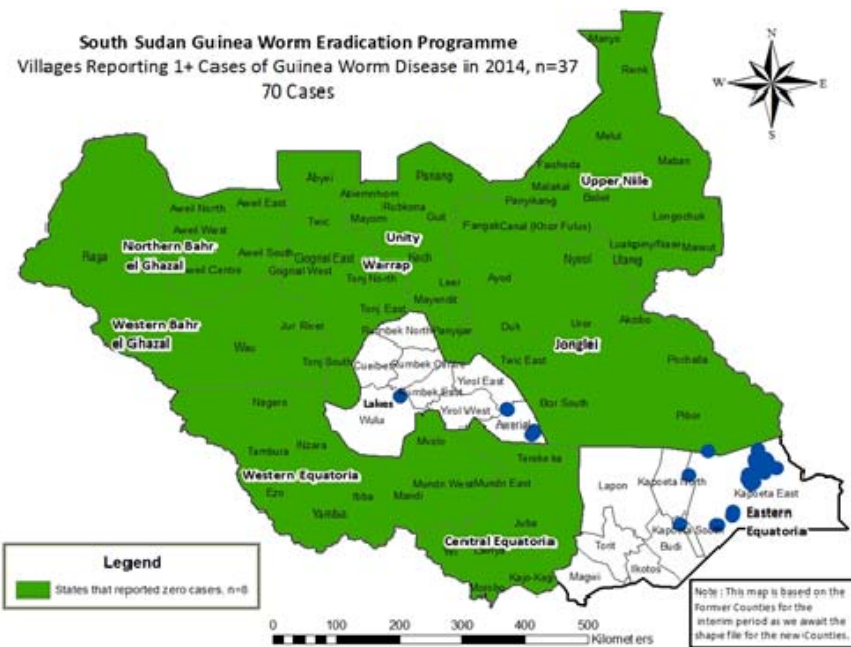
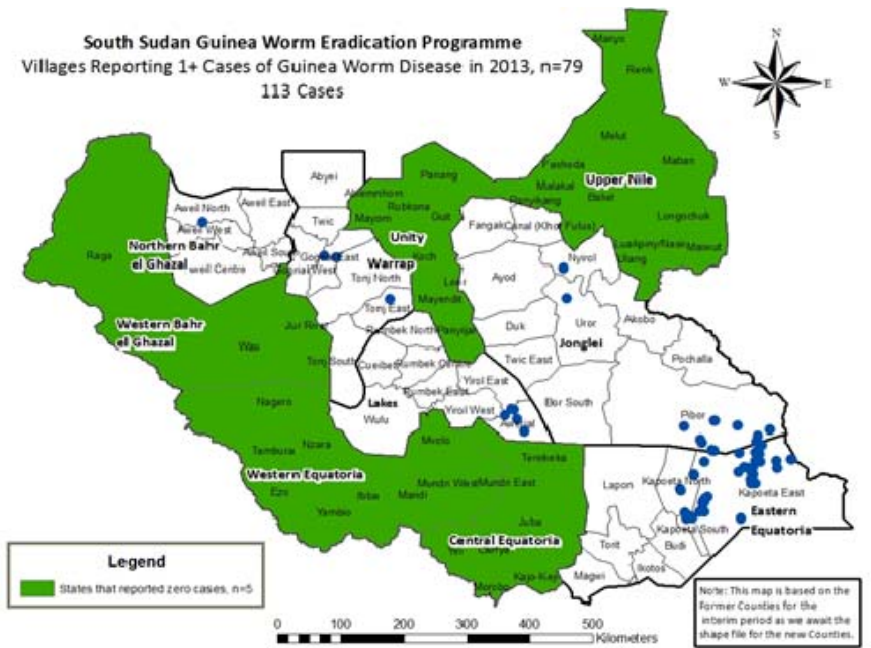
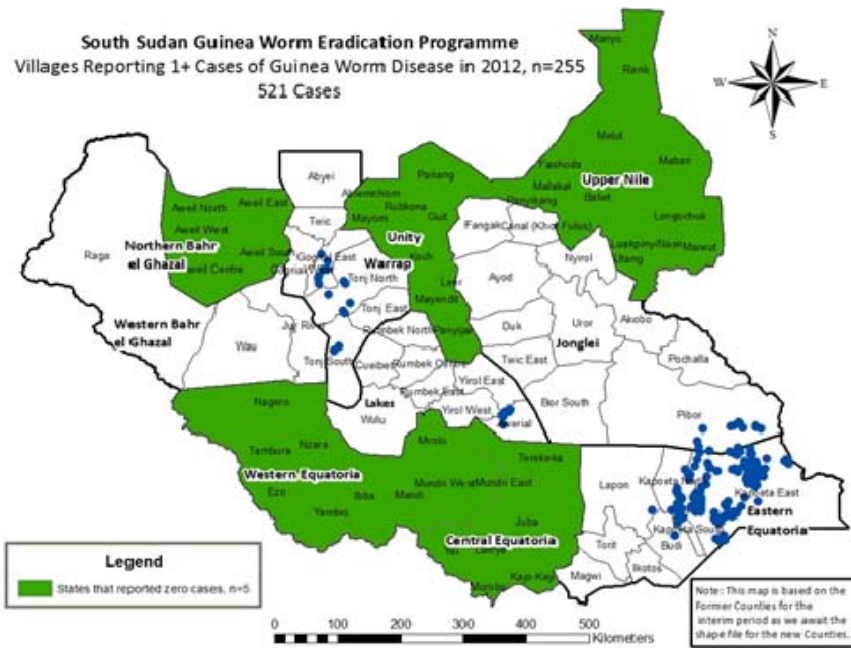


Figure 2 (cont.)

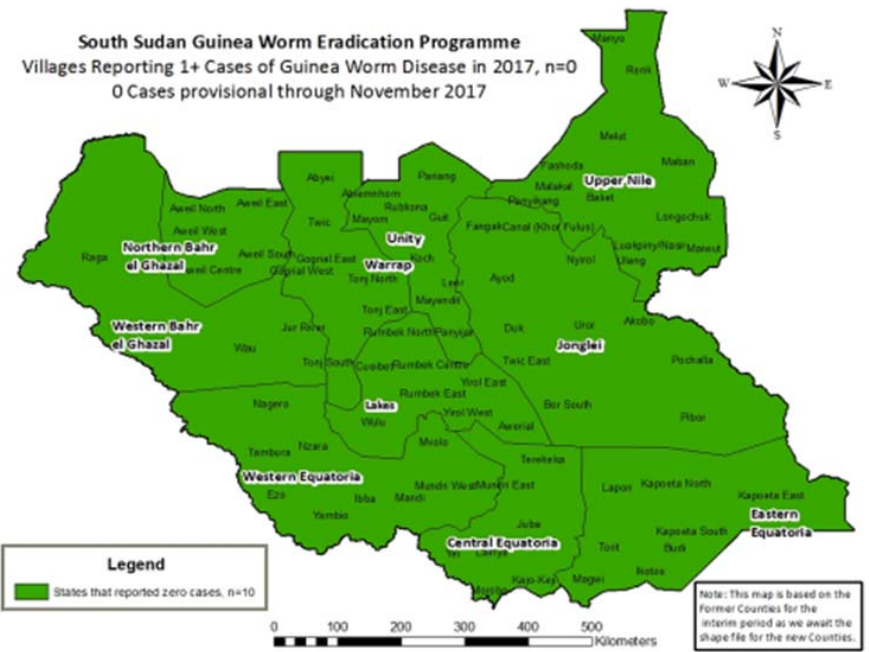


Table 1

Number of Laboratory-Confirmed Cases of Guinea Worm Disease, and Number Reported Contained by Month during 2017*
(Countries arranged in descending order of cases in 2016)

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	1 / 1	1 / 2	2 / 2	1 / 2	2 / 2	0 / 1	0 / 2	1 / 1	0 / 0	1 / 1	10 / 15	67%
SOUTH SUDAN	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0%
ETHIOPIA [^]	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	2 / 8	0 / 4	1 / 2	0 / 1	3 / 15	20%
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%
TOTAL*	0 / 0	1 / 1	1 / 1	1 / 2	2 / 2	1 / 2	2 / 2	0 / 1	2 / 10	1 / 5	1 / 2	1 / 2	13 / 30	43%
% CONTAINED	0%	100%	100%	50%	100%	50%	100%	0%	20%	20%	50%	50%	43%	

*Provisional [^] Only one of the 12 cases confirmed to date. Laboratory confirmation of worms emerging from other patients pending.

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

Cells shaded in yellow denote months when one or more cases of GWD did not meet all case containment standards.

[§]Reports include Kayes, Koulikoro, Segou, Sikasso, and Mopti, Timbuktu and Gao Regions; contingent on security conditions during 2017 the GWEP continued to deploy one technical advisor to Kidal Region to oversee the program.

Number of Laboratory-Confirmed Cases of Guinea Worm Disease, and Number Reported Contained 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 one or more cases of GWD did not meet all case containment standards.

[§]Reports include Kayes, Koulikoro, Segou, Sikasso, and Mopti, Timbuktu and Gao Regions; contingent on security conditions during 2016, the GWEP continued to deploy one technical advisor to Kidal Region to oversee the program.

All six cases from 2016 were monitored throughout 2017. South Sudan reported a single dog infected with a Guinea worm in Jur River County in September 2015 in the same household as case #3 that year, but the SSGWEP has found no other dog infected with a Guinea worm since the program started in 2006.

South Sudan's stellar achievement of reporting no cases in an entire calendar year only 10 years after beginning with 20,582 reported cases in 2006 rivals those of Nigeria, which began with 653,492 cases of GWD in 1988 and took 21 years to stop transmission, and Uganda, which began with 126,369 cases in 1992 and stopped transmission in 12 years. Although Uganda's program had to overcome significant insecurity in most of its endemic area, the SSGWEP prevailed despite the most complex Guinea worm transmission among humans of any country, peak prevalence during a long rainy season, vast territory, and poor infrastructure, as well as on-going post-war insecurity. The SSGWEP began operations after the Comprehensive Peace Agreement to end the two-decade long civil war was signed in 2005, but benefitted also from the almost six month-long "Guinea Worm Cease-Fire" negotiated by President Jimmy Carter in 1995 which allowed limited interventions to start and continue before the war ended. The main factors in the SSGWEP success however were the exceptionally strong and consistent political support provided to the program by the Government of South Sudan, including South Sudanese President Salva Kiir Mayardit and national Ministers of Health, including Dr. Riek Gai Kok and his predecessors, and the inspired operational direction of SSGWEP's director Mr. MAKOY Samuel Yibi. The program has continued to function effectively under Mr. Makoy's leadership despite the evacuation of most of its expatriate staff for over a year.

South Sudan introduced a cash reward of 5,000 south Sudanese Pounds (~US\$100) for reporting a case of GWD in April 2014, which it increased to 10,000 SSP in May 2017, and will increase to 50,000 SSP (~US\$400) as of January 2018. It began offering a cash reward of 2,500 (~US\$23) for reporting an infected dog in May 2017. In addition to offering cash rewards for reporting humans or dogs infected with Guinea worms, the SSGWEP had 4,046 villages under active surveillance in 2017, and it launched a nationwide communication campaign in October 2017, with assistance from Kyne Inc. and The Carter Center, to publicize the rewards and Guinea worm prevention. The SSGWEP plans to begin implementing its communication campaign in areas of Kapoeta State, former Jur River county of Western Bahr el Ghazal State, and former Tonj East county of Warrap State in January 2018 and expand the campaign nationwide by June 2018. The goal is to increase awareness of the cash rewards to at least 80% of the population throughout South Sudan. A survey of 50,612 persons in former Jur River and Tonj East counties in September 2017 found 36,479 (72%) were aware of the reward. The program recorded a provisional total of 21,116 rumors of cases in January-October 2017, of which 99% were investigated within 24 hours. The World Health Organization (WHO) is helping to monitor South Sudanese refugees in Ethiopia, Uganda and other neighboring countries for Guinea worm cases.

The SSGWEP held a rousing annual program review, its 12th, at the Crown Hotel in Juba on December 11-12, 2017. Participants included First Vice-President of the Republic of South Sudan General Taban Deng Gai, Federal Minister of Health Dr. Riek Gai Kok, Ministry of Health Undersecretary Dr. Makur Matur Kariom, Federal Minister of Wildlife Conservation Mrs. Jemma Nunu Jumba, Federal Minister of Water and Irrigation Mrs. Sophia Pal, the Ministers of Health from all 32 Federal States of South Sudan, and SSGWEP Director Mr. Makoy, as well as Dr. Ernesto Ruiz-Tiben, Mr. Craig Withers, and Mr. Adam Weiss from Carter Center headquarters, and Carter Center Country Representative Ms. Sarah Yerian and Deputy Country Representative Ms. Giovanna Steel. WHO was represented by its Acting Country Representative Mr. Evans Lyosi, and UNICEF by its Acting Deputy Country Representative Ms. Lillian Okwirry. The meeting recommended that South Sudan establish a national certification commission by June 2018 and that the program enhance its collaboration with the Ethiopian Dracunculiasis Eradication Program. Senior members of The Carter Center team joined Minister Dr. Riek, Undersecretary Dr. Makur and SSGWEP Director Mr. Makoy in a courtesy visit to President Salva Kiir on December 12. President Kiir presented

certificates of appreciation for President and Mrs. Carter and Dr. Donald Hopkins, and to Dr. Ernesto Ruiz-Tiben and Mr. Craig Withers of The Carter Center during the meeting. *Bravo South Sudan!*

MALI: NO CASES FOR SECOND YEAR



Mali reported no cases of GWD in humans for the second consecutive year in 2017. It reported its last indigenous case in November 2015. All five cases reported in 2015 were monitored throughout 2016 and 2017. The program detected 9 dogs and 1 cat with Guinea worm infections (80% contained) in 2017, vs 11 infected dogs (73% contained) in 2016. We congratulate Mali on stopping transmission of GWD to humans since 2015, but Malians will still be at risk so long as the parasite continues to infect dogs, and Mali is unlikely to be certified as Guinea worm-free until infections in dogs are also stopped. Mali's GWEP is monitoring the sites in Tominian district of Segou and Mopti Regions where dogs are sold and it is applying Abate preventively in areas of the district where infected dogs were found. Mali introduced a cash reward equivalent to US\$20 in March 2016 for reporting and containing an infected dog. In January-November 2017 an average 86% of 4,778 persons queried were aware of the cash reward for reporting a case of GWD in a human, and 78% of 1,523 persons queried were aware of the cash reward for reporting an infected dog. The program recorded 455 rumors of Guinea worm cases in January-November 2017, and investigated all of them within 24 hours. Some districts of Mopti Region (adjacent to Tominian District in Segou Region), where infected dogs were detected are not fully accessible to the program because of insecurity. In October, bandits attacked a Guinea worm team at formerly endemic Tanzikratene locality in Ansongo district of Gao Region and stole their rented vehicle and personal valuables.

Mali's GWEP continues the mass communication campaign which it launched with assistance from Kyne Inc. and The Carter Center in March 2017. The national radio station continued airing the "Guinea Worm Heroes" song by the Malian star Djeneba Seck in October, as well as campaign radio spots in Bambara at least twice weekly since late August. The "Guinea Worm Heroes" video clip also plays on the national television channel once a week and theater performances continued in Mopti, Koulikoro and Sikasso Regions, having been performed earlier in Gao, Segou and Timbuktu Regions. GWEP secretariat teams made supervisory visits to Kayes Region in November to assess the status of reports about rumors and documentation of rumor investigations at 50 health centers in Yelimani and Diema districts of Kayes in December. The National Committee for Certification of Guinea worm eradication held its second meeting of 2017 in October, and is currently visiting Gao Region in January. *Bravo Mali!*

ETHIOPIA REPORTS 15 GW CASES IN HUMANS, 11 INFECTED DOGS & 4 BABOONS



As of the end of December, The Ethiopian Dracunculiasis Eradication Program (EDEP) had reported a provisional total of 15 cases of GWD (3 contained) in humans in 2017, all of which occurred in September-December in an outbreak among migrant laborers from Oromia Region who drank contaminated water on or near a commercial farm (Goyi) in adjacent Abobo district of Gambella Region. Specimens from 13 of the cases were confirmed as *D. medinensis* by the laboratory at CDC. No specimens were obtained from cases 10 and 11, but they are included as part of this outbreak because of their medical history, signs of Guinea worm infection, and the timing of their employment at the same commercial farm as the other cases (Table 2).

Although most of the cases were not officially contained, 14 (54%) of the 26 Guinea worms emerging were contained, and the EDEP made 24 Abate applications in areas of Abobo district associated with persons from this outbreak in October 2017 and 27 applications in November. Surface sources of water in the home areas associated with these cases in Anfilo district of Oromia Region were all flowing, unsuitable habitat

Table 2

**ETHIOPIA DRACUNCULIASIS ERADICATION PROGRAM
LINE LISTING OF CASES OF GWD REPORTED DURING 2017***

Patient & Worm Serial Number	Region	Zone	Woreda	Kebele	Village of Detection	Age	Sex	Occupation	Clan/Tribe	Date Worm Emerged	Date Worm Detected	Date Bandaging Started	Date Supervisor Confirmed Case	Date Worm Completely Removed or Cut	Cut or Completely Removed?	Is this the first worm on this patient this year?	Detected within 24 hours?	Bandaged within 24 hours?	Confirmed by Supervisor within 7 days?	Did the Case Enter the Water?	Date Abate Applied	Worm Contained?	Case Contained?	Imported? (Y=1, N=0)	If imported, what is the suspected village of transmission?	Imported Village Code	Patient Movement History	Possible Infected Water Sources
1.1	Gambella	Agnua	Itang Spec	Adwong	Mohammed	32	M	Farmer	Oromo	25/Sep/17	25/Sep/17	25/Sep/17	26/Sep/17	27/Sep/17	Completely Removed	1	1	1	1	1	28-Oct-17	0	0	1	Goyi Farm, Terkudi Kebele, Abobo Woreda	NVAGA45	Patient traveled to Goyi Farm in NOV2016, drank tank water at Goyi farm. He also traveled to Joro pond to bathe.	In NOV2016, Joru Pond in front of Muaba Farm. In 2017, possibly contaminated Rock Pit Ponds at Mohammed Crasher.
1.2										15/Oct/17	15/Oct/17	15/Oct/17	15/Oct/17	15/Nov/17	Completely Removed	0	1	1	1	0	None, at CCC	1	0	1				
1.3										25/Oct/17	25/Oct/17	25/Oct/17	25/Oct/17	18/Nov/17	Cut	0	1	1	1	0	None, at CCC	1	0	1				
1.4										9/Nov/17	9/Nov/17	9/Nov/17	9/Nov/17	18/Nov/17	Cut	0	1	1	1	0	None, at CCC	1	0	1				
1.5										21/Nov/17	21/Nov/17	21/Nov/17	21/Nov/17	29/Nov/17	Cut	0	1	1	1	0	None, at CCC	1	0	1				
2.1	Gambella	Special	Gambella	Kebele 02	Gambella T	19	M	Farmer	Amhara	26/Sep/17	28/Sep/17	28/Sep/17	28/Sep/17	3/Oct/17	Completely Removed	1	0	0	1	1	Flowing stream, no abate	0	0	1	Goyi Farm, Terkudi Kebele, Abobo Woreda	NVAGA45	Patient traveled to Goyi Farm in NOV2016.	In NOV2016, Joru Pond in front of Muaba Farm.
2.2										22/Dec/17	22/Dec/17	22/Dec/17	28/Sep/17	22/Dec/17	Completely Removed	0	1	1	1	1	Flowing stream, no abate	0	0	1				
3.1	Oromia	Kalem	Anfillo	Yeti	Gomi Village	20	M	Farmer	Oromo	Late AUG to early SEP	30/Sep/17	30/Sep/17	30/Sep/17	20/Oct/17	Cut	1	0	0	0	1	No abate used, Gomi River flowing	0	0	1	Goyi Farm, Terkudi Kebele, Abobo Woreda	NVAGA45	Patient traveled to Goyi Farm in NOV2016.	In NOV2016, Joru Pond in front of Muaba Farm.
4.1	Oromia	Kalem	Anfillo	Yeti	Gomi Village	23	M	Farmer	Oromo	12/Sep/17	30/Sep/17	30/Sep/17	30/Sep/17	10/Oct/17	Cut	1	0	0	0	1	No abate used, Gomi River flowing	0	0	1	Goyi Farm, Terkudi Kebele, Abobo Woreda	NVAGA45	Patient traveled to Goyi Farm in NOV2016.	In NOV2016, Joru Pond in front of Muaba Farm.
4.2						23	M	Farmer	Oromo	16/Oct/17	30/Sep/17	30/Sep/17	30/Sep/17	22/Oct/17	Cut	0	1	1	1	0	None, at CCC	1	0	1				
5.1	Oromia	Kalem	Anfillo	Yeti	Gomi Village	24	M	Farmer	Oromo	8/Sep/17	30/Sep/17	30/Sep/17	30/Sep/17	16/Oct/17	Cut	1	0	0	0	1	No abate used, Gomi River flowing	0	0	1	Goyi Farm, Terkudi Kebele, Abobo Woreda	NVAGA45	Patient traveled to Goyi Farm in NOV2016.	In NOV2016, Joru Pond in front of Muaba Farm.
5.2										13/Oct/17	14/Oct/17	14/Oct/17	14/Oct/17	26/Oct/17	Cut	0	1	1	1	0	None, at CCC	1	0	1				
5.3										14/Oct/17	14/Oct/17	14/Oct/17	14/Oct/17	30/Oct/17	Cut	0	1	1	1	0	None, at CCC	1	0	1				
6.1	Oromia	Kalem	Anfillo	Yeti	Gomi Village	20	M	Farmer	Oromo	25/Sep/17	30/Sep/17	30/Sep/17	30/Sep/17	13/Oct/17	Cut	1	0	0	1	1	No abate used, Gomi River flowing	0	0	1	Goyi Farm, Terkudi Kebele, Abobo Woreda	NVAGA45	Patient traveled to Goyi Farm in NOV2016.	In NOV2016, Joru Pond in front of Muaba Farm.
6.2										1/Oct/17	1/Oct/17	1/Oct/17	1/Oct/17	2/Nov/17	Completely Removed	0	1	1	1	0	None, at CCC	1	0	1				
7.1	Oromia	Kalem	Anfillo	Yeti	Gomi Village	20	M	Farmer	Oromo	12/Oct/17	30/Sep/17	30/Sep/17	30/Sep/17	1/Nov/17	Cut	1	1	1	1	0	Contained, NA	1	1	1	Goyi Farm, Terkudi Kebele, Abobo Woreda	NVAGA45	Patient traveled to Goyi Farm in NOV2016.	In NOV2016, Joru Pond in front of Muaba Farm.
7.2										19/Oct/17	19/Oct/17	19/Oct/17	19/Oct/17	21/Nov/17	Cut	0	1	1	1	0	Contained, NA	1	1	1				
8.1	Oromia	Kalem	Anfillo	Yeti	Gomi Village	28	M	Farmer	Oromo	8/Oct/17	30/Sep/17	6/Oct/17	9/Oct/17	16/Oct/17	Cut	1	1	1	1	0	Case didn't enter water	1	1	1	Goyi Farm, Terkudi Kebele, Abobo Woreda	NVAGA47	Patient traveled to Goyi Farm in NOV2016.	In NOV2016, Joru Pond in front of Muaba Farm.
9.1	Oromia	Kalem	Anfillo	Yeti	Duri Village	25	M	Farmer	Oromo	14/Oct/17	14/Oct/17	14/Oct/17	16/Oct/17	28/Oct/17	Cut	1	0	1	1	1	Case didn't enter water	0	0	1	Goyi Farm, Terkudi Kebele, Abobo Woreda	NVAGA47	Patient traveled to Goyi Farm in NOV2016.	In NOV2016, Joru Pond in front of Muaba Farm.
9.2										16/Oct/17	15/Oct/17	14/Oct/17	16/Oct/17	20/Oct/17	Completely Removed	0	0	1	1	0	Case didn't enter water	1	0	1				
10.1	Oromia	Kalem	Anfillo	Yeti	Duri Village	40	M	Farmer	Oromo	15/Sep/17	16/Oct/17	16/Oct/17	Not confirmed	No worm collected	Cut	1	0	0	0	1	Water flowing, not abated	0	0	1	Goyi Farm, Terkudi Kebele, Abobo Woreda	NVAGA48	Patient traveled to Goyi Farm in NOV2016.	In 2016, Joru Pond in front of Muaba Farm. In 2017, possibly contaminated water in Gerre Farm, Abobe Woreda.
11.1	Oromia	Kalem	Anfillo	Yeti	Duri Village	25	M	Farmer	Oromo	23-Sep-17	16/Oct/17	16/Oct/17	Not confirmed	No worm collected	Cut	1	0	0	0	1	Water flowing, not abated	0	0	1	Goyi Farm, Terkudi Kebele, Abobo Woreda	NVAGA49	Patient traveled to Goyi Farm in NOV2016.	In NOV2016, Joru Pond in front of Muaba Farm.
12.1	Gambella	Agnua	Abobo	Terkudi	Gutok	16	M	Hunter, farmer	Agnuak	22-Sep-17	17-Oct-17	18/10/2017	17/10/2017	25/10/2017	Completely Removed	1	0	0	1	1	21-Oct-17	0	0	1	Goyi Farm	NVAGA45	During period of infection he traveled to Goyi Farm in Terkudi Kebele for work.	Gutok Village water sources
12.2										28-Oct-17	28-Oct-17	28-Oct-17	28-Oct-17	23/11/2017	Cut	0	1	1	1	0	21-Oct-17	1	0	1				
13.1	Oromia	Kalem	Anfillo	Yeti	Gomi Village	20	M	Farmer	Oromo	26-Nov-17	28-Nov-17	28-Nov-17	28-Nov-17	4/12/2017	Completely Removed	1	0	0	1	1	Water flowing, not abated	0	0	1	Goyi Farm	NVAGA45	During period of infection he traveled to Goyi Farm in Terkudi Kebele for work.	Gutok Village water sources
14.1	Oromia	Kalem	Anfillo	Yeti	Gomi Village	47	M	Farmer	Oromo	2-Dec-17	27-Nov-17	27-Nov-17	2-Dec-17	2/12/2017	Completely Removed	1	1	1	1	0	Case didn't enter water	1	1	1	Goyi Farm	NVAGA45	During period of infection he traveled to Goyi Farm in Terkudi Kebele for work.	In NOV2016, Joru Pond in front of Muaba Farm.
15.1	Oromia	East Harer	Goru Gutu	Horo Wolk	Amegolo	40	M	Farmer, day la	Oromo	20-Dec-17	20-Dec-17	20-Dec-17	20-Dec-17	20-Dec-17	Cut	1	1	1	1	0	Water flowing, not abated	0	0	1	Goyi Farm		During period of infection he traveled to Goyi Farm in Terkudi Kebele for work.	In NOV2016, Joru Pond in front of Muaba Farm.
15.2										21-Dec-17	21-Dec-17	20-Dec-17	20-Dec-17	21-Dec-17	Completely Removed	0	1	1	1	0	Water flowing, not abated	0	0	1				

for copepods. So far 82% of 249 persons identified as laborers in Goyi commercial farm during 2016, have been located and interviewed regarding signs and symptoms of GWD during 2017. Of 695 persons interviewed in two areas of Oromia, including Anfilo district, in October 2017, 335 (48%) were aware of the cash reward for reporting a case of Guinea worm disease. Overall, 83% of 13,017 persons interviewed in Level I & II surveillance areas of Gambella and SNNPR Regions in January-November this year were aware of the cash reward, while only 22% of 1,474 persons queried in Oromia (Level III) in March-October 2017 were aware of the reward. The EDEP recorded a total of 11,709 rumors in January-November 2017, of which 99% were investigated within 24 hours.

A line listing of the 11 infected dogs (6 contained) and 4 infected baboons reported provisionally for 2017 is given in Table 3. All of the infected dogs and baboons were detected in Gog district of Gambella Region and specimens from all were confirmed as *D. medinensis* by the laboratory at CDC. Veterinarian Dr. James Zingeser of The Carter Center was in Addis Ababa and Gambella November 27-December 19, 2017 to work with Ethiopian veterinarians and public health officials in preparation for a baboon-dog epidemiology and ecology project to begin early in 2018, and to attend the annual Program Review. For the first time in at least seven years no Guinea worm cases were reported in humans in Gog district during 2017. As in Mali, humans will continue to be at risk of GWD in Gog district until transmission is stopped in animals.

Table 3

ETHIOPIA DRACUNCULIASIS ERADICATION PROGRAM
Reported Animal Infections in 2017 - Abobo, Gog and Lare Woreda (Level I only)

Animal #	Animal Type	Woreda	Kebele	Village of detection	Month	Infection Contained	Case Imported	Lab Confirmed	Reward Given
1	Baboon	Gog	Atheti	Ablen	Jan	No	No	Yes	NA
2	Baboon	Gog	Atheti	Wichini	Apr	No	No	Yes	NA
3	Dog	Gog	Atheti	Ablen	May	Yes	No	Yes	Yes
4	Dog	Gog	Atheti	Atheti	May	Yes	No	Yes	Yes
5	Dog	Gog	Atheti	Atheti	Jun	No	No	Yes	Yes
6	Dog	Gog	Okedi	Kidane Farm-Athibir	Jun	No	Yes?	Yes	Yes
7	Dog	Gog	Atheti	Wichini	Jun	No	Yes?	Yes	Yes
8	Dog	Gog	Atheti	Wichini	Jun	Yes	Yes?	Yes	Yes
9	Baboon	Gog	Atheti	Abawiri	Jun	No	No	Yes	NA
10	Baboon	Gog	Gog Dipach	Duli	Jun	No	No	Yes	NA
11	Dog	Gog	Atheti	Wichini	Jul	Yes	Yes?	Yes	Yes
12	Dog	Gog	Atheti	Wichini	Jul	Yes	Yes?	Yes	Yes
13	Dog	Gog	Atheti	Atheti	Aug	Yes	No	Yes	Pending
14	Dog	Gog	Pugnido Town	PRC Agnuak	Sept	No	Yes?	Yes	Pending
15	Dog	Gog	Atheti	Wichini	Sept	No	No	Yes	Pending
TOTALS	11 dogs					6 contained		11 confirmed	
	4 baboons					0 contained		4 confirmed	

The EDEP held its 22nd annual Program Review in the regional capital of Gambella on December 5-6. The list of distinguished participants included the Honorable Federal Minister of Health Dr. Yifru Berhane, Guinea Worm Eradication Goodwill Ambassador the Honorable Dr. Tebebe Demane Berhan, Dr. Alpaka A. Kalu WHO Country Representative, President of Gambella Region Mr. Gatluak Tut, EPHI Director General Dr. Ebba Abate and EDEP national coordinator Mr. Getaneh Abraha. Dr. Dieudonne Sankara, Team Leader for Guinea Worm Eradication at World Health Organization headquarters also represented WHO. The Carter Center delegation was led by Vice President for Health Dr. Dean Sienko, Guinea Worm Eradication Program Director Dr. Ernesto Ruiz-Tiben, Country Director Dr. Zerihun Tadesse, Mr. Craig Withers, Mr. Adam Weiss and Dr. James Zingeser. Among several outcomes, the meeting recommended that contact tracing and follow up of people exposed at the Goyi Farm and other at risk farms be expedited,

and that the reward for reporting a human case be increased to 10,000 Ethiopian birr (~US\$360) from 2,000 birr, and the reward for reporting an infected dog be increased from 250 birr (~ US\$10) to 500 birr (~ US \$20) for reporting dog-GW infections and to 1000 birr (~ US \$40) for detecting and tethering infected dogs prior to worm emergence until all worms are extracted. With assistance from Kyne Inc. and the Carter Center, the EDEP launched its nationwide communication campaign on December 8 at the Ethiopia Public Health Institute in Addis Ababa with great fanfare and about 300 persons in attendance, under the theme “Let Our Journey Not Be Interrupted By Guinea Worm”. Keynote speakers at the ceremony were Dr. Tebebe Berhan, Dr. Dean Sienko and Dr. Alpaka A. Kalu. The EDEP had begun enhanced health education activities in affected areas of Oromia already in October in response to the outbreak. *Onward Ethiopia!*

CHAD: FEWER DOG INFECTIONS; ROLLING OUT ABATE, COMMUNICATION CAMPAIGNS



Chad has provisionally reported a total of 15 confirmed cases of GWD in humans in 2017, of which 10 (67%) were contained. In January-December 2017 Chad has provisionally reported 817 infected dogs (77% contained) and 13 infected cats (38% contained), compared to 1,011 infected dogs (66% contained) and 11 infected cats (55% contained) during the same period of 2016 (Figures 3 and 4). Although this is a reduction of 19% in the number of infected animals, the impact of interventions on number of infected dogs, Guinea worms emerging, and level 1 villages under active surveillance (VAS) reporting dog-GW infections is best estimated among a cohort of 919 VAS under level 1 surveillance during 2016 and 2017 in Table 4. Among this cohort, the number of dog infections declined by 26%, the number of GWs emerging from infected animals declined by 38%, and the number of VAS reporting dog infection declined by 12% in 2017 compared to the preceding year; the first year since dogs with Guinea worm infections were detected in Chad in 2012 that the number of infected dogs has declined compared to the previous year. The infected animals were reported from a cumulative total of 267 villages as of the end of November. Table 3 is a line list of the 15 confirmed cases of GWD (67% contained) during 2017.

As of December 2017, the Chad GWEP had 1,860 villages under active surveillance, and had reported 3,103 rumors during January-November, of which 2,966 (96%) were investigated within 24 hours. Surveys conducted by the program during January-November have found 596 (59%) of 1,005 persons interviewed in level 1-3 surveillance areas were aware of the cash reward for reporting a case of the disease, while 77% of 374 persons in level 1 areas were aware of the cash reward. Similarly, 478 (50%) 960 persons interviewed in levels 1-3 surveillance were aware of the cash rewards for dogs, while 71% of 254 persons in level 1 areas were aware of the infected dog cash reward. As of November, 82% of 11,955 residents surveyed during 2017 in level 1 VAS practiced burial of fish guts.

Chad’s GWEP began rolling out its campaign to intensify monthly use of Abate in stagnant sources of water holding 1,000 cubic meters or less volume in 45 villages reporting 5 or more dog-GW infections in 2016 and/or 2017 in Guelendeng areas. During November, 22 eligible ponds in 13 (29%) of 45 villages received Abate treatments, and there were no contamination events reported from elsewhere requiring use of Abate. During January-October 154 contamination events were recorded, and Abate was applied in 150 (97%), and applied within 14 days in 134 (87%) of them. The program aims to expand these monthly treatments to areas in and around Sarh early in 2018 after water levels there recede to treatable levels. Chad began applying Abate in cordoned areas of lagoons in 2014 in response to contamination events.

Minister of Health Mme. Carmel Ngarbatina Sou IV launched Chad’s nationwide communication campaign to increase awareness of the cash reward for reporting a case of the disease and to publicize information about how to prevent the infection in humans and dogs at N’Djamena in July 2017. The program began in Level 3 (low risk) surveillance areas (Moukrou, Bongor, Fianga districts) in southwest Mayo Kebbi Est

Table 3

**CHAD GUINEA WORM ERADICATION PROGRAM
LINE LISTING OF CASES OF GWD DURING 2017**

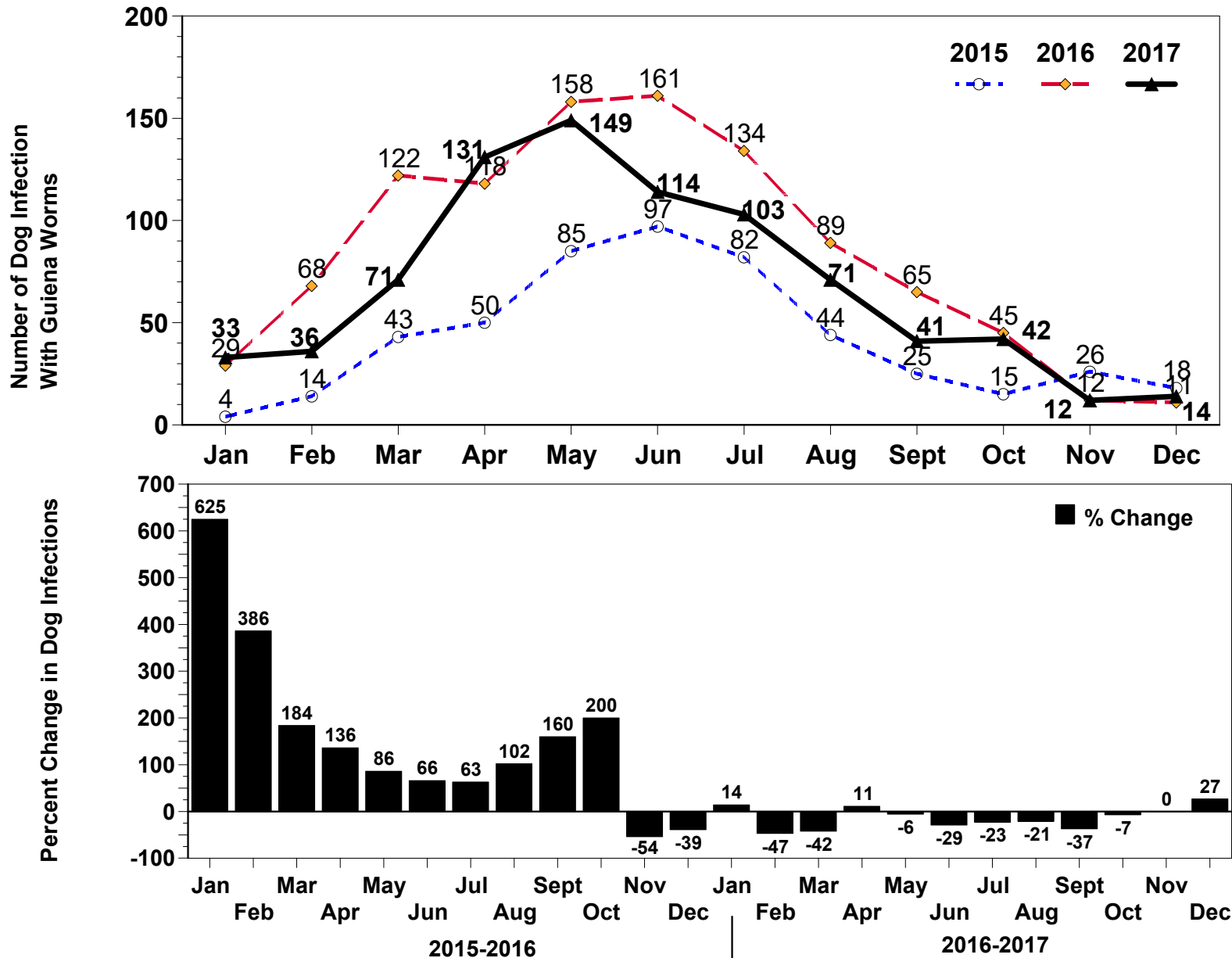
Case #	Village or Locality of detection			District	Region	Patient			Case Contained?		1 = imported 2 = indigenous	Home Village or Locality			Presumed Source of infection identified?		Presumed Source of infection is a known VAS?	
	Name	1 or 2 = VAS	3 = VNAS			Age	Sex	Date GW emerged (D/M/Y)	(Yes, No, or Pending)	If no, date of Abate Rx		Name	1 or 2 = VAS	3 = VNAS	(Yes or No)	Name	(Yes or No)	Actions/ Comments?
1.1	Loumia	1		Mandelia	Chari Baguirmi	10	F	27-Feb-17	Yes	-	2	Loumia	1		No	N/A	N/A	Patient and family eat frogs and catfish (<i>Synodontis</i>) as well as Nile water monitors (<i>Varanus</i>).
1.2	Loumia							5-Mar-17	Yes	-			1					
2.1	Kakale Mberi	1		Guelendeng	Mayo Kebbi Est	6	F	22-Mar-17	Yes	-	2	Kakale Mberi	1		No	N/A	N/A	Patient's dog had two worms emerge during the same week.
3.1	Bougoumene 1	2		Dourbali	Chari Baguirmi	10	M	31-Mar-17	Yes	-	2	Bougoumene 1	2		No	N/A	N/A	Patient household is between those of two infected dogs.
4.1	Tarangara	1		Danamadji	Moyen Chari	7	M	27-Apr-17	No	6-May-17	2	Tarangara	1		No	N/A	N/A	Patient resides in a quartier where 100% of the known dog population was infected in 2016.
5.1	Kira	1		Sarh	Moyen Chari	12	M	11-May-17	Yes	-	2	Kira	1		No	N/A	N/A	18 animal infections were reported in Kira in 2016, as well as 1 human case in 2014
6.1	Choukara	1		Amtiman	Salamat	43	M	2-Jun-17	Yes	-	2	Choukara	1		No	N/A	N/A	
7.1	Bembaya	1		Sarh	Moyen Chari	62	M	10-Jun-17	Yes		2	Bembaya			No	N/A	N/A	Patient's nephew is Case 5 and they swim and participate in the collective fishing together. Pt also lives in close proximity to 3 infected dogs
7.2	Bembaya	1		Sarh	Moyen Chari	62	M	13-Jun-17	Yes		2	Bembaya			No	N/A	N/A	
7.3	Bembaya	1		Sarh	Moyen Chari	62	M	6-Jul-17	Yes		2	Bembaya			No	N/A	N/A	
8.1	Ngargue Marche	1		Bouso	Chari Baguirmi	35	M	22-Jun-17	No	29-Jun-17	2	Ngargue Marche	1		No	N/A	N/A	
9.1	Djoballa 4	1		Bouso	Chari Baguirmi	42	M	27-Jul-17	Yes	-	2	Djoballa 4	1		No	N/A	N/A	
10.1	Gouari	2		Sarh	Moyen Chari	50	F	29-Jul-17	Yes	-	2	Gouari	2		No	N/A	N/A	4 infected dogs were reported in Gouari in 2016
10.2	Gouari	2		Sarh	Moyen Chari	50	F	19-Aug-17	Yes	-	2	Gouari	2		No	N/A	N/A	
11.1	Birme		3	Massenya	Chari Baguirmi	34	F	25-Aug-17	No	-	2	Birme		3	No	N/A	N/A	
11.2	Birme		3	Massenya	Chari Baguirmi	34	F	2-Sep-17	No	-	2	Birme		3	No	N/A	N/A	
12.1	Woin	2		Korbol	Moyen Chari	25	F	4-Sep-17	No	-	2	Woin	2		No	N/A	N/A	1 infected dog reported in Woin in 2016
12.2	Woin	2		Korbol	Moyen Chari	25	F	19-Sep-17	No	-	2	Woin	2		No	N/A	N/A	
12.3	Woin	2		Korbol	Moyen Chari	25	F	6-Oct-17	No	-	2	Woin	2		No	N/A	N/A	
13.1	Anguitey		3	Amtiman	Salamat	20	F	21-Sep-17	No	-	2	Anguitey		3	No	N/A	N/A	
14.1	Woin	2		Korbol	Moyen Chari	29	M	1-Oct-17	Yes	-	2	Woin	2		No	N/A	N/A	1 infected dog reported in Woin in 2016
15.1	Bongoroko	1		Sarh	Moyen Chari	13	F	26-Dec-17	No	-	2	Bongoroko	1		No	N/A	N/A	11 infected dogs reported in Bongoroko in 2016. Pt crossed the river to travel to health center

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

VNAS = village not under active surveillance, level 3 areas

Figure 3

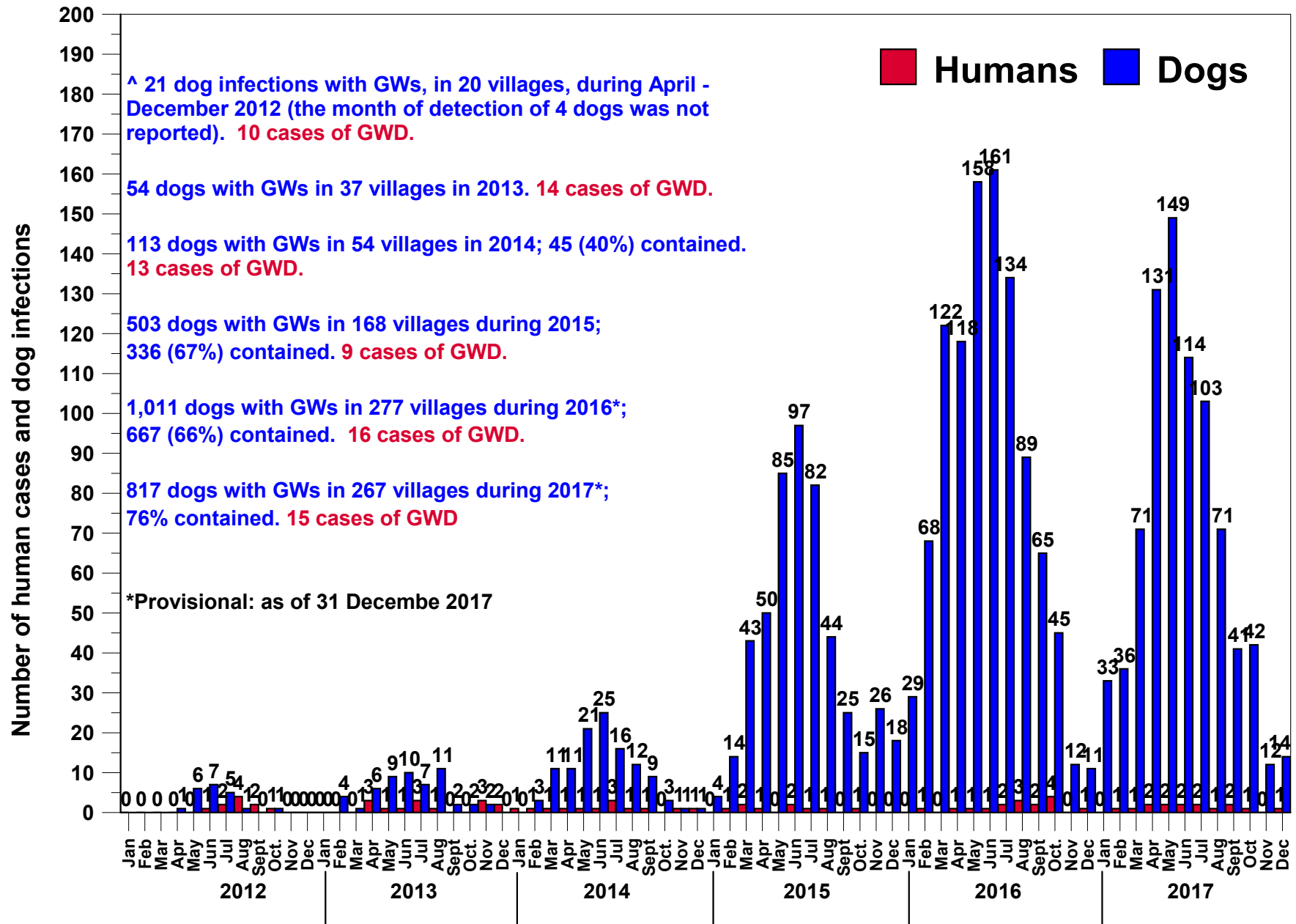
Chad Guinea Worm Eradication Program Dog Guinea Worm Infections, and Percent Change Month-to-Month During 2015 - 2016, and 2016 - 2017*



*Provisional, as of 31 December 2017

Figure 4

CHAD GUINEA WORM ERADICATION PROGRAM FREQUENCY OF DRACUNCULIASIS AMONG HUMANS AND DOGS BY MONTH DURING 2012[^]-2017*



Province that are located nearest to GW-affected areas. By the end of October, the campaign had worked with 57 health centers (13 other centers were inaccessible due to floods) there. After Mayo Kebbi Est, the campaign will continue to other Level 3 areas in the southeast (Salamat) nearest GW affected areas by January 2018. The national coordinator, Dr. Tchindebet Ouakou, is assisting the dissemination of this campaign. *Onward Chad!*

Table 5

IMPACT OF INTERVENTIONS ON NUMBER OF DOG INFECTIONS REPORTED, NUMBER OF GWS EMERGING, AND NUMBER OF VILLAGES REPORTING DOG INFECTIONS AMONG A COHORT OF 919 VILLAGES UNDER ACTIVE SURVEILLANCE (LEVEL 1 VAS) DURING JANUARY - NOVEMBER 2016 AND 2017*

VAS Reporting Status (Jan.-Nov. 2016 & 2017)	VAS [^]	# of Dog Infections		% Change in dog infections	# GWS Emerging		% Change in GWS Emerging	VAS Reporting Dog Infections		% Change in VAS
		2016	2017		2016	2017		2016	2017	
0 dog infections in 2016 and in 2017	728	0	0	0%	0	0	0%	0	0	0%
0 dog infections in 2016 and 1+ in 2017	44	0	56	~	0	83	~	0	44	~
1+ dog infections in 2016 and in 2017	86	335	266	-21%	598	415	-31%	86	86	0%
1+ dog infections in 2016 and 0 in 2017	61	101	0	-100%	211	0	-100%	61	0	-100%
ALL REPORTS	919	436	322	-26%	809	498	-38%	147	130	-12%

*Provisional. This cohort of VAS exclude 88 VAS where Advocate[®] (Bayer) and 7 where Heartgard[®] (Merial) medications are being evaluated.

[^]In 2016, 5 at-risk (Level 2 surveillance) villages reported 7 dogs, and thus became level 1 village under active surveillance (VAS) receiving all interventions aimed at stopping transmission of Guinea worms (GWs). These 7 dogs (from 5 villages) subsequently had 11 worms emerge after the villages became level 1 (VAS). Similarly, 3 at-risk level 2 villages in 2017 reported 3 GW-infected dogs prior to becoming level 1. These 3 dogs (from 3 villages) subsequently had 3 worms emerge after the villages became level 1 (VAs).

728 (79%) of 919 VAS reported zero dog-GW infections during 2016 and 2017;

44 (5%) reported zero dog infections in 2016 and 1+ infections during 2017;

86 (9%) reported 1+ dog infections during 2016 and 2017; and

61 (7%) reported dog infections in 2016 and zero dog infections during 2017.

ICT FINDS KENYA READY FOR CERTIFICATION



After a two week long in-country evaluation in November-December, an International Certification Team (ICT) led by International Commission for the Certification of Dracunculiasis Eradication (ICCDE) member Dr. Joel Bremen, and WHO Consultant Dr. Ashok Kumar found no evidence of Guinea worm transmission in Kenya in the past three years. The team verified that Kenya has adequate surveillance and follow up of rumors of cases, and they will recommend that the ICCDE endorse the conclusion that Kenya is Guinea worm-free at its next meeting in February 2018 and convey that recommendation to WHO. Kenya interrupted indigenous transmission of GWD in 1994, and successfully contained several cases imported from Sudan and South Sudan over the next decade. In Kenya the ICT evaluation teams visited 21 counties including the three former endemic counties, 88 health facilities, 159 communities, and interviewed 1,691 persons. Overall, approximately 60% of Kenyans interviewed nationally knew about GWD and 88% were aware of the cash reward for reporting an infected person. Kenya and Sudan are the two formerly-endemic countries that now remain to be certified as Guinea worm-free by WHO. The six other countries remaining to be certified are Angola and Democratic Republic of Congo, which have not had indigenous GWD since before the eradication program began, as well as (see above) Chad, Ethiopia, Mali and South Sudan. *Congratulations, Kenya!*

CROWN PRINCE OF ABU DHABI HONORS FIVE GUINEA WORM HEROES

In an elaborate ceremony held during a forum “Reaching the Last Mile: Mobilizing Together to Eliminate Infectious Diseases” in Abu Dhabi on November 15, 2017, the Crown Prince of Abu Dhabi His Highness Sheikh Mohamed bin Zayed Al Nahyan, personally presented the first ever REACH (Recognizing Excellence Around Champions of Health) Awards to five stalwarts in the fight to eradicate GWD (photograph below):

- Former U.S. President Jimmy Carter’s *Lifetime Achievement Award* was accepted on his behalf by his son James E. Carter III.
- Former national program coordinator for Sudan’s Guinea Worm Eradication Program Dr. Nabil Aziz received the *Courage Award*.
- Former Zonal Consultant in Nigeria’s Guinea Worm Eradication Program Dr. Adamu Sallau received the *Last Mile Award*.
- Former village volunteer and social mobilizer Ms. Regina Lotubal Lomare Lochilangole and former village volunteer and program officer Mr. Daniel Madit Kuol, both of South Sudan’s Guinea Worm Eradication Program, each received an *Unsung Hero Award*.

Other prominent attendees at the Award Ceremony included United Nations Secretary General Antonio Guterres, President Idriss Deby of Chad, President Ibrahim Boubacar Keita of Mali, WHO Director General Dr. Tedros Adhanom Ghebreyesus, World Bank President Dr. Jim Young Kim, Chadian Minister of Health Mme. Carmel Ngarbatina Sou IV, Ethiopian Minister of Health Prof. Yifru Berhane Mitke, Malian Minister of Health Prof. Samba O. Sow, Guinea Worm Eradication Goodwill Ambassador the Honorable Dr. Tebebe Demane Berhan, the Director of South Sudan’s Guinea Worm Eradication Program Mr. Makoy Samuel Yibi, Carter Center Vice President for Health Dr. Dean Sienko, WHO Guinea Worm Eradication Team Leader, Dr. Dieudonne Sankara, and many others. Drs. Sienko, Ruiz, and Dr. Frank Richards of The Carter Center and Hon. Dr. Tebebe met with Ethiopian Minister of Health Mitke to discuss issues related to Carter Center-assisted health programs in Ethiopia.



Award winners L-R Adamu Keana Sallu, Nabil Aziz Awad Alla, Regina Lotubai and Daniel Madit Madut at Reaching the Last Mile conference in Abu Dhabi on Wednesday, November 15. Chris Whiteoak / The National

The one day long global health forum, which was hosted by the Crown Prince Court of Abu Dhabi in partnership with The Carter Center and the Bill & Melinda Gates Foundation (BMGF), convened over 200 high level representatives from international agencies, government, the private sector, philanthropy, and global health to explore what will be required to eradicate GWD(dracunculiasis) and polio, and to eliminate other preventable infectious diseases such as river blindness (onchocerciasis), lymphatic filariasis, and malaria. His Highness the Crown Prince and BMGF co-founder Mr. Bill Gates launched two joint initiatives of the Crown Prince Court and the Bill & Melinda Gates Foundation: a disease elimination research institute in Abu Dhabi, and the “Reaching the Last Mile Fund”, a proposed US\$100 million Neglected Tropical Diseases Fund initially focused on supporting regional efforts to eliminate river blindness and lymphatic filariasis. The Fund currently has a total of US\$24 million pledged by the two sponsoring entities. During a plenary session at the Forum, Dr. Ernesto Ruiz-Tiben of The Carter Center participated in an interview with Dr. Larry Brilliant of the Skoll Global Threats Fund to discuss progress of the global Guinea worm eradication campaign and what needs to be done during the “Final Inch” of the campaign. Asked what is needed to eradicate Guinea worm disease, Dr. Ruiz replied: “peace and security”.

MEETINGS

- Mali’s annual Guinea worm program review will be held in Bamako on January 18-19, 2018.
- Chad’s annual Guinea worm program review will be held in N’Djamena on January 23-24, 2018.
- The International Commission for the Certification of Dracunculiasis Eradication will meet at World Health Organization headquarters in Geneva, Switzerland on February 15-16, 2018.
- The 22nd International Meeting of Guinea Worm Eradication Program Managers will be held at The Carter Center in Atlanta, USA on March 21-23, 2018.

RECENT PUBLICATIONS

Hopkins DR, Ruiz-Tiben E, Eberhard ML, Roy SL, Weiss AJ, 2017. Progress toward global eradication of dracunculiasis, January 2016-June 2017. Morbidity and Mortality Weekly Report 66:1327-1331.

World Health Organization, 2017. Monthly report on dracunculiasis cases, January-October 2017. Weekly Epidemiol Rec 92:779-780.

Summary of the 27th Meeting of the International Task Force for Disease Eradication, which reviewed the Guinea Worm Eradication Program and related research on October 17:

https://www.cartercenter.org/resources/pdfs/news/health_publications/itfde/itfde-summary-101717.pdf

Figure 5

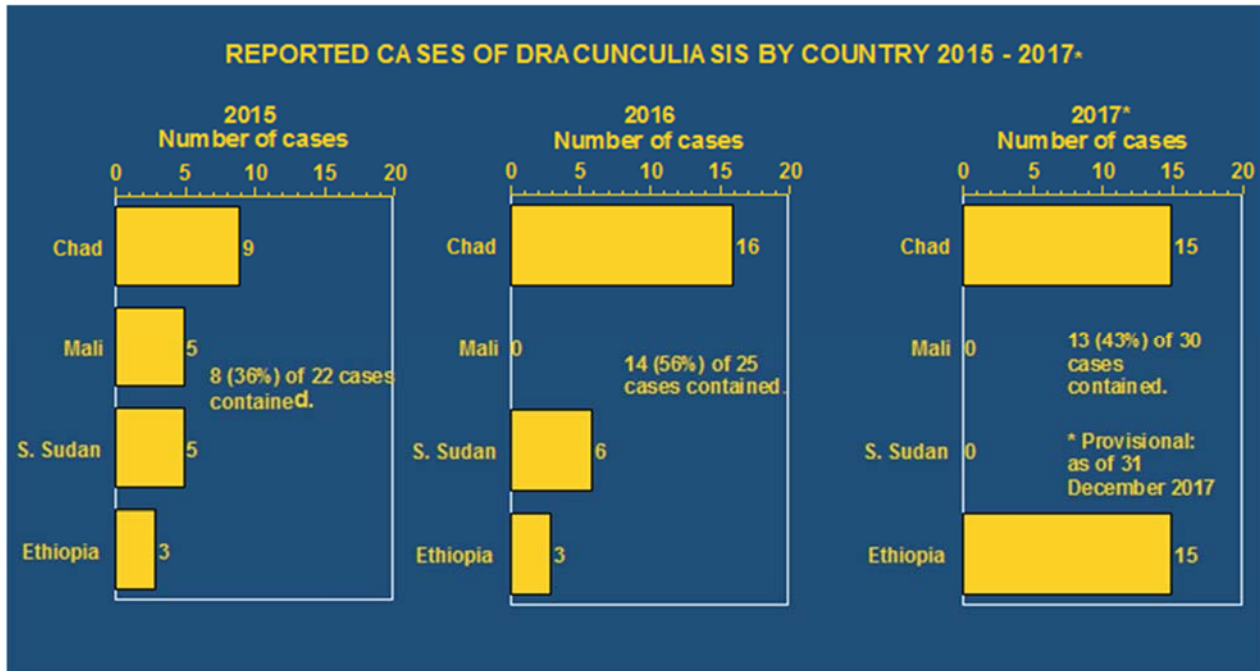
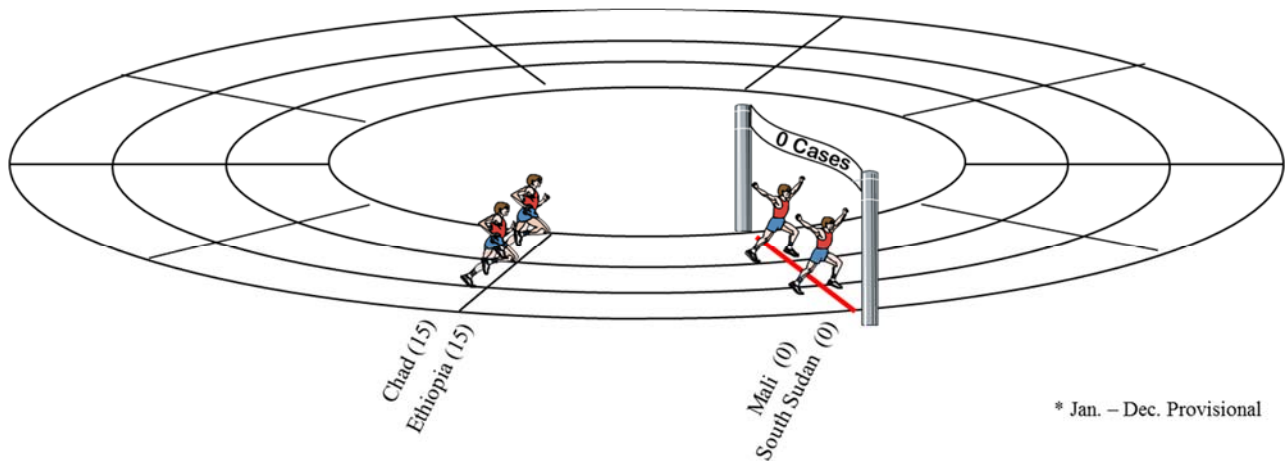


Figure 6

GUINEA WORM RACE: 2017*

Who will cross the finish line last?



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, Dr. Sharon Roy of CDC, Dr. Dieudonné Sankara of WHO, and Dr. 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 30329, 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



**World Health
Organization**

CDC is the WHO Collaborating Center for Dracunculiasis Eradication