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

Memorandum

Date: October 31, 2018

From: WHO Collaborating Center for Dracunculiasis Eradication, CDC

Subject: GUINEA WORM WRAP-UP #257

To: Addressees

*Think ahead. Where are the most Guinea worms?*

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**ETHIOPIA REPORTS NO HUMAN CASES, 17 CONFIRMED ANIMAL INFECTIONS**

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Guinea worm parasites among humans in favorable Ethiopian settings. In September, the EDEP reported a suspect case in a six-year-old Nuer boy from Uror County/Jonglei State of South Sudan who was seen in a refugee camp in Benishangul Gumez Region of Ethiopia on September 6. Despite daily controlled immersion no worm emerged, and the diagnosis of suspected Guinea



Ethiopia has appointed a new Guinea Worm Eradication Case Team Leader (National Program Coordinator), Mr. Mesfin Wossen, as of early October 2018. He earned a Masters of Public Health degree from Debre Markos University in 2015 and a Bachelor of Science degree in environmental health from Hawassa University in 2009. Mr. Wossen served most recently as Public Health and Emergency Preparedness and Response Officer in the Addis Ababa Regional Health Bureau and previously as Sanitation, Hygiene (WASH) and Health Extension Program Officer in the same Regional Health Bureau. Welcome, Ato Wossen!

For prompt reporting of suspected cases and cases of Guinea worm by the refugee community, Guinea worm promotional materials were developed and disseminated in the camps so as to boost the awareness level on the new cash reward among refugees in Gambella and Benishangul Gumuz regions (12,000 posters, 1200 GW ID cards, 600 T-shirts and 6 Billboards).

Proper follow up of GW suspect was conducted by the Ethiopian Guinea worm eradication program team after notification of a potential suspected case from South Sudan who reportedly crossed into the Gambella region of Ethiopia in September 2018. The team shared the report immediately with the South Sudan Guinea Worm Eradication Program team for their further follow up and action as he left Ethiopia immediately by vehicle without contaminating ponds; in the event that it was a genuine GW it would not have posed a risk to the Ethiopian side. To this end, cross border collaboration with South Sudan is sustained.

### **MALI REPORTS NO HUMAN CASES, 8 CONFIRMED ANIMAL INFECTIONS IN JANUARY-SEPTEMBER**



For the third consecutive year Mali's GWEP has reported no cases of Guinea worm disease in humans so far, in January-September 2018. During the same three years however, Mali reported 11 infected dogs in 2016, 9 dogs and 1 cat in 2017, with 6 confirmed GW-infected dogs and 2 confirmed cats so far in 2018.

Three (38%) of the 8 confirmed animal infections were contained. A line-list of Mali's infected animals is in Table 2, which includes 7 additional dogs (all contained) whose infections are pending laboratory examination by CDC. Mali reported 8 infected dogs and 1 infected cat in the same period of 2017.

Addressing the problem of residual Guinea worm infections in domestic dogs and cats in Mali for the past three years is now badly constrained by insecurity in much of the endemic area. As summarized in the article on new indices elsewhere in this issue, only one of the seven districts of most concern to Mali's GWEP is fully accessible to the program (Markala/Segou Region). Four are partly accessible (Tominian & Macina/Segou; Mopti & Djenne/Mopti Region), and two are inaccessible (Tenenkou & Yowarou/Mopti), for an estimated overall 43% safe accessibility to Guinea worm-affected or at-risk areas. Mali has just deployed a national technical assistant in Djenne district, where 18 of the 23 health areas are accessible. Much of the inland Niger delta region where dogs are being bred and becoming infected before being transported to Segou Region for sale is inaccessible (Figure 2). The total area of concern in Mali is approximately 120 x 120 miles (200 x 200 km).

Mali reports an average 75% reward awareness for reporting of infected humans (80%) and dogs (69%) so far this year in Level I and II active surveillance areas, with 298 rumors of infected humans provisionally reported in January-September, all of which were investigated within 24 hours. A total of 903 villages are under active surveillance (VAS). Abate has been applied in 6 (40%) of 15 Level I villages under active surveillance so far in 2018. The reasons for not applying Abate in the other 9 Level I villages are diverse: two villages in Djenne district (Kouakourou, Djimatogo) are inaccessible because of insecurity; two villages had no surface water; two infections were detected in town; and three villages had only flowing water. In total, 93% of Level I VAS have at least one source of safe drinking water (Figure 3).

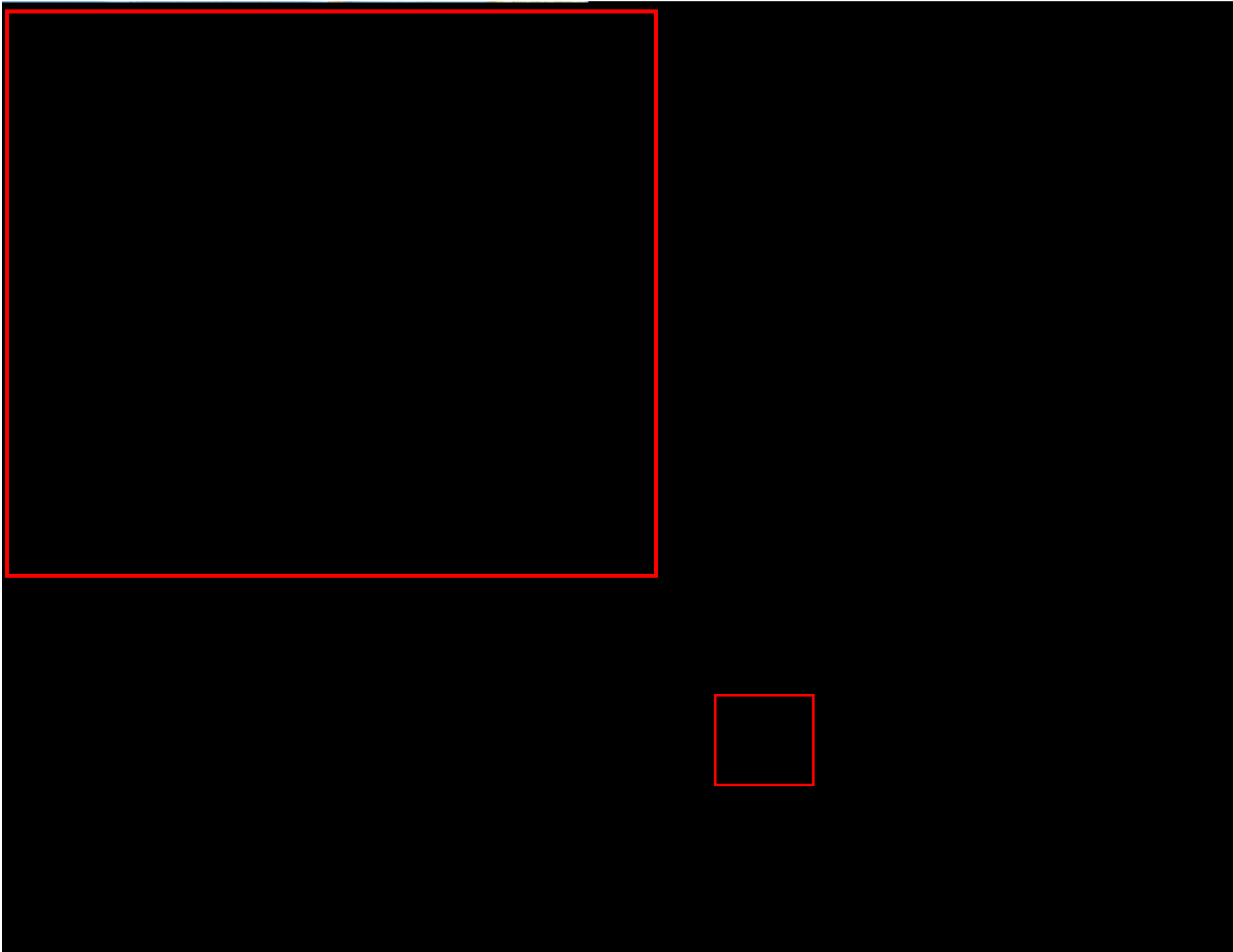
A team from the secretariat of Mali's GWEP that included the new National Program Coordinator Dr. Cheick Oumar Coulibaly and Carter Center Country Representative Mr. Sadi Moussa made supervisory visits on September 2-8 to Tominian, San and Markala districts of Segou Region, and Mopti and Djenne districts of Mopti Region.



A team from the World Health Organization (Dr. Andrew Seidu Korkor and Ms. Junerlyn Farah Agua) led an external evaluation of Mali's GWEP from 10 September to 8 October, 2018. at the request of the Ministry of Health, the purpose of which was to confirm interruption of GW transmission and assess the level of preparations during the pre-certification phase. The team visited 9 regions (including Gao, Kidal and Timbuktu), 21 districts, 59 health centers, 121 villages, and interviewed 1,263 persons. At a debriefing with the ministry, they reported on several areas needing improvement, such as discrepancies between data reported to the GWEP and to the national health information system, low knowledge of the cash reward in formerly and never endemic zones, mismanagement of archives at health centers, low coverage of safe drinking water in the north of the country, absence of rumor registers in health centers, and low notification and documentation of rumors in formerly and never endemic zones. Among the recommendations was the urgent need to disseminate information about the new reward scheme (200 000 CFA (~\$340 US) and 10 000 CFA (~\$17 US) respectively for giving information leading to the detection/reporting of confirmed human and dog infection with GW); improve collaboration and coordination between the National Guinea Worm Eradication Program, Integrated Disease Surveillance and Response (IDRS), and Health Management Information systems (HMIS); as well as ensure integration of GWEP reporting into the weekly and monthly reporting at all levels. The team heard only three rumors of cases in humans in two villages of Segou Region and one village in Gourma Rharous district of Timbuktu Region during their visit. The rumors were investigated and found not to be Guinea worm cases.

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## **SOUTH SUDAN: SEVEN CASES IN MAY-SEPTEMBER**

The South Sudan Guinea Worm Eradication Program (SSGWEP) has reported 7 confirmed cases of Guinea worm disease (one contained) in May-August 2018. The cases are reported from five counties: Rumbek Center (2 cases), Rumbek North (2 cases), and Yirol East (1 case) Counties in Western Lakes (former Lakes) State; and 1 case each in Tonj North County (former Warrap State) and Nyirol County (former Jonglei State) (Table 3). The first six cases are highly mi! e homiSbses WWo a ne



Table 3

**South Sudan Guinea Worm Eradication Program  
Line Listing of Confirmed Cases of Confirmed Dracunculiasis in 2018\***

Case #	Age	Sex	Worm contained? (Yes/No)	Patient		Date ABATE applied (DD/MM/YY)	Source* State					_____ of infection established? (Yes/No)
				contaminated sources of water (Yes/No)	Boma							
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## **CHAD: 11 CONFIRMED HUMAN CASES, 24 CATS, 965 DOGS**

Chad's GWEP has reported 11 confirmed human cases (5, or 45% contained) in January-September 2018, compared to 13 cases reported during the same period of 2017, a decrease of 15%. Table 4 is a line-list of the human cases. The 965 infected domestic dogs and cats are an increase of 29% over the 749 infected dogs and 13 cats reported during January-September 2017. Worm specimens from two other suspect cases are pending examination by the laboratory at CDC. As of August 2018, Chad had 1,878 villages under active surveillance (VAS), including 1,397 level I

Table 4

**Chad Guinea Worm Eradication Program  
GWEP Line Listing of Confirmed Cases: Year 2018\***

#	Date	Sex	Age	Location			District	Health Facility	Case #	Status
				Village	Commune	Province				
	7/10/2018	M	15	U	M	U	K			
	7/10/2018	M	15	M	M	U	7			
	U	V	8	M	U	U				
	U	U	U	"	"	U				
	7	k	=	"	"	U	K	V		
	U	"	)	"	"	U	K	V		
						U	K			
		7	7	)	"	U				
						U				
						U				
		7	k	=	"	U	K	V		
						U		V		
		U	)	=	"	U	K	V		
						U	K	V		
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## MODIFIED INTERVENTION INDICES TO REFLECT VARIABLE MODES OF TRANSMISSION

With *D. medinensis* infections occurring in animals in three of the final four endemic countries (South Sudan is the exception) and evidence mounting to suggest that the infection is being transmitted to humans and animals not just by drinking water, as before, but likely also by people and animals eating raw or undercooked transport hosts such as small fish (up to 2-3 inches/5-7.5 cm long) and/or raw fish guts, as well as perhaps by eating undercooked aquatic paratenic hosts such as frogs and larger fish, Guinea Worm Eradication Programs have adopted new interventions to counter the new challenges. Given this new situation we suggest that national GWEPs monitor a modified set of operational indicators. Among the former indicators, trained village volunteers, regular health education and reporting by villages under active surveillance, including endemic villages, can be assumed as at or near 100%. Coverage with cloth filters protects against contaminated drinking water, such as in Ethiopia in 2017, but not against eating an infected transport or paratenic host, which may now be the most common mode of infection for humans and animals in Chad, Ethiopia and Mali. The suggested indicators now are:

**Reward awareness.** Combined results for VAS levels I & II (endemic and high risk villages), for human and dog infections: % aware of persons surveyed. *Detect infections quickly.*

**Containment of infected humans and animals.** % of infected humans and animals contained or tethered. *Prevent contamination.*

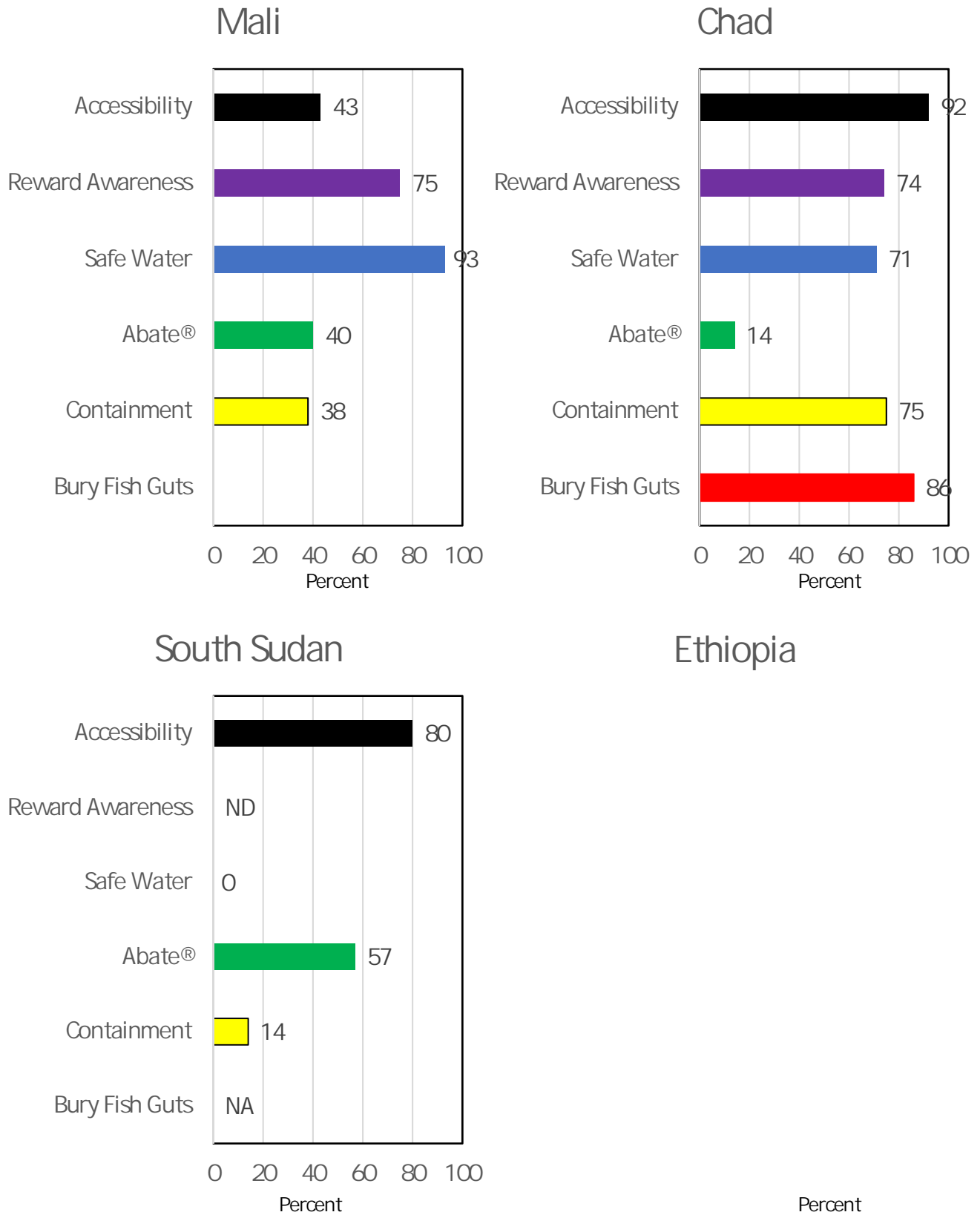
**Abate coverage.** % cumulative villages where Abate applied this year in villages with infections in current or previous year. Water bodies may be ineligible for Abate treatment from time to time when they become too large (>1000mx3) or dry up. *Prevent infection and contamination.*

**Bury fish guts.** % of people surveyed in VAS level I with demonstrated fish gut burial practice. *Prevent infection.*

**Safe water source.** % of villages with access to safe water source.

Figure 3

# Bury Fish Guts Guinea Worm Eradication Program Indices Coverage\*



\* 3 3

Percent

Table 5

	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL*	
CHAD	1 / 1	1 / 1	1 / 1	0 / 0	1 / 1	0 / 0	1 / 6	0 / 1	0 / 0	/	/	/	5 / 11	45%
ETHIOPIA	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 / 2	0 / 1	1 / 3	0 / 1	0 / 0	/	/	/	1 / 7	14%
MALI §	0 months when 0% or more cases of GWD did not meet all case containment standards.												0 / 0	0%
ANGOLA^	/	/	/	0 / 1	/	/	/	/	/	/	/	/	0 / 1	0%
TOTAL*	1 / 1	1 / 1	1 / 1	0 / 1	1 / 3	0 / 1	2 / 9	0 / 2	0 / 0	0 / 0	0 / 0	0 / 0	6 / 19	32%
% CONTAINED														

\*Provisional

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

	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	came infected in 2016, and has had signs and symptoms of GWD at the same time as others										0	

## GUINEA WORM RESEARCHERS MEET IN SEATTLE

On September 10-11, approximately 45 participants including Guinea worm researchers, representatives from the Bill & Melinda Gates Foundation, The Carter Center, World Health Organization, Centers for Disease Control and Prevention, the Ministries of Health of Ethiopia and South Sudan, and other experts were co-convened by the Gates Foundation and Carter Center in Seattle, Washington in a “Call to Action”. The main purpose of the meeting, which reviewed the current status of the eradication campaign and related on-going research efforts, was to seek ways to accelerate understanding of the dynamics of *Dracunculus medinensis* transmission and identify new interventions and tools to enhance surveillance, diagnostics, and containment of the infection in humans and animals. Among many recommendations the meeting suggested prioritizing as most urgent on-going research to develop a serological test for identifying infected hosts, and to investigate small fish as probable transport hosts of the parasite. It also prioritized new research to study the impact of Flubendazole on development of GW larvae, to identify a substitute for raw fish guts as a food source for dogs (such as processing techniques to kill larvae), and to investigate use of satellite imagery for establishing connections between populations and surface water sources.

Among recent research findings of potential immediate use to programs for targeting Abate applications are GPS tracking data by Prof. Robbie McDonald's group from the University of Exeter indicating that ponds within 200 meters of households with dogs in **Chad** are only a small

## **MEETINGS**

The South Sudan Guinea Worm Eradication Program will hold its annual Program Review in Juba on December 6-7, 2018.