DEPARTMENT OF HEALTH & HUMAN SERVICES

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

Memorandum

Date: December 3, 2021

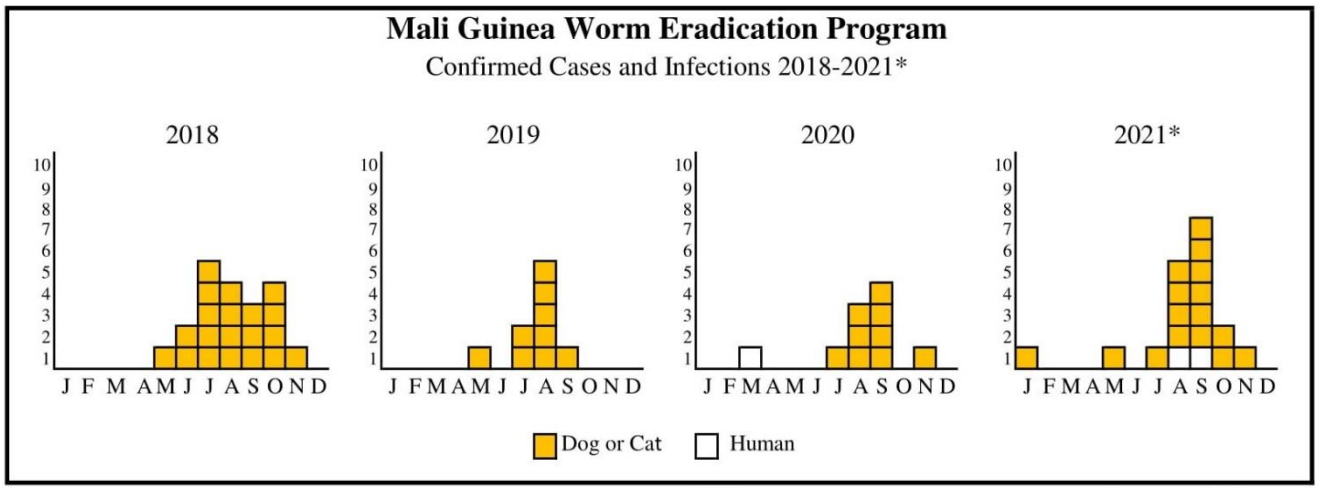
From: WHO Collaborating Center for Dracunculiasis Eradication, CDC

Subject: GUINEA WORM WRAP-UP #283

To: Addressees

Contain and explain every Guinea worm!

Figure 1



**Provisional January – November*

MALI AIMS TO STOP DOGS' EXPOSURE TO GUINEA WORM

Despite achieving zero known Guinea worm cases in humans for 51 months over four consecutive years, 2016-2019, Mali's Guinea Worm Eradication Program (MGWEP) still detected Guinea worms in domestic dogs during that period. Since then, dog infections continue to be reported as well as one human case in 2020 and two human cases in 2021 (Figure 1). For most of the past decade, almost all of Mali's Guinea worm infections in humans, dogs and cats have occurred in the inland delta of the Niger River, an area of about 120x120mi (200x200km) comprising parts of Mopti and Segou Regions (see maps in *Guinea Worm Wrap-Up* #280 & #259). The MGWEP currently has 2,215 villages under active surveillance with trained local Guinea worm workers and offers widely known rewards of US$340 and US$20 equivalent for reporting a human case and reporting and tethering an infected animal, respectively, which has allowed it to detect and contain most Guinea worm infections and cases promptly, even in areas of on-going insecurity.

Table 1

MALI GWEP LISTING OF HUMAN CASES AND DOG INFECTIONS: YEAR 2021

#	Region	District	Health Zone	Village	Ethnicity	Profession of Owner or Host	Host	Probable Origin	Date of Detection	Date of Emergence	Entered Water?	Abate Applied? (Y/N)	Contained? * (Y/N)	Confirmed Y/N	Total # of GW
1	Segou	Macina	Macina Central	Nemabougou/ Bellah Wèrè	Touareg	Imam	Dog	Nemabougou (Macina Ville)	13/Jan.	13/Jan.	No	Yes	Yes	Yes	1
2	Segou	Markala	Babougou	Barakabougou	Bozo	Fisherman	Dog	Unknown	3/May	4/May	No	Yes	Yes	Yes	2
3	Mopti	Djenne	Sofara	Malabano/ Kaka	Bozo	Fisherman	Dog	Unknown	31/July	31/July	Yes	Yes	No	Yes	1
4	Segou	Markala	Sansanding	Walawala Bozo King (Sansanding)	Bozo	Fisherman	Human	Unknown	3/Aug.	3/Aug.	Yes	No	No	Yes	1
5	Mopti	Djenne	Djenne Central	Tolober (Djenne)	Dogon	Trader	Dog	Djenne Town	5/Aug.	5/Aug.	No	No	Yes	Yes	1
6	Mopti	Djenne	Djenne Central	Doteme (Djenne Town)	Sonrhai	Retiree	Dog	Djenne Town	16/Aug.	20/Aug.	No	No	Yes	Yes	1
7	Segou	Macina	Kolongo	Kolongo Bozo (Hamlet)	Bozo	Farmer	Dog	Kolongo Bozo Hamlet	19/Aug.	20/Aug.	Yes	Yes	No	Yes	1
8	Segou	Macina	Kolongo	Kolongo Bozo (Hamlet)	Sarakole	Mechanic	Dog	Kolongo Bozo Hamlet	20/Aug.	20/Aug.	Yes	Yes	No	Yes	1
9	Segou	Tominian	Yasso	Lakuy	Bobo	Farmer	Dog	Unknown	3/Sep.	3/Sep.	No	Yes	Yes	Yes	1
10	Segou	Tominian	Lanfiala	Kona Hembereni	Bobo	Farmer	Dog	Unknown	7/Sep.	7/Sep.	No	Yes	Yes	Yes	1
11	Segou	Macina	Kolongo	Kolongo Bozo (Dagagnini)	Bozo	Farmer/ Fisherman	Dog	Kolongo Bozo	9/Sep.	10/Sep.	No	Yes	Yes	Yes	1
12	Segou	Markala	Sansanding	Sansanding	Bozo	Fisherman	Human	Unknown	15/Sep.	15/Sep.	No	Yes	Yes	Yes	1
13	Mopti	Djenne	Senossa	Wekara/ Senossa	Bozo	Fisherman	Dog	Djenne Town	11/Sep.	11/Sep.	Yes	Yes	No	Yes	1
14	Mopti	Djenne	Senossa	Wekara/ Senossa	Bozo	Fisherman	Dog	Djenne Town	12/Sep.	12/Sep.	No	Yes	Yes	Yes	1
15	Mopti	Djenne	Djenne Central	Kanafa (Djenne Town)	Peulh	Housewife	Cat	Djenne Town	22/Sep.	21/Sep.	Probable	Yes	No	Yes	1
16	Segou	Tominian	Ouan	Bathiridougou	Bobo	Farmer	Dog	Unknown	1/Oct.	1/Oct.	No	Yes	Yes	Yes	2
17	Mopti	Djenne	Djenne Central	ATT Bougou (Djenne Town)	Dogon	Teacher	Dog	Djenne Town	7/Oct.	7/Oct.	Probable	Yes	No	Yes	1
18	Segou	Macina	Kolongo	Kolongo Bozo	Bozo	Farmer/ Fisherman	Dog	Kolongo Bozo	4/Nov.	4/Nov.	No	No	No	Yes	1

*See definition of *Contained* on pg. 8

The MGWEP has detected 15 infected dogs, 2 human cases, and one infected cat in 14 villages/localities so far in 2021, ten (56%) of which were contained (Table 1). Both human cases are fishermen living in the same area and are related (#12 uncle and #4 nephew). This is the highest number of infected dogs reported in Mali except in 2018 (18 dogs reported). Two of the dogs, #16 and #17, 12 months old and 10 months old respectively, were raised 8 km (5mi) apart from each other in Djenne health zone and had their Guinea worms emerge on October 1 and October 7, 2021. Dog #16 had been imported as a puppy to Diabolo in Djenne district of Mopti Region from Bathiridougou in Tominian district of Segou Region in about December 2020 and had a worm to emerge on October 1, the day after the dog merchant returned the dog to its owner in Bathiridougou after "fattening" in Djenne. *Some dog consumers and traders send or bring dogs to Djenne from Tominian for fattening by feeding them fish and fish entrails (and other food) and allowing them to scavenge fish and fish entrails, which are not readily available in Tominian, which is outside of the inland Niger Delta area with its opportunities for fishing and rice cultivation*. Tominian is one of the districts where the Bobo ethnic group, who eat dog meat, lives. Djenne district and other areas in Mopti Region are home to the Bozo ethnic group, "masters of the river", who are predominantly fishermen.

Evidence from Chad, where ecology in the endemic area is similar to the endemic inland Niger Delta area of Mali, strongly suggests that dogs are infected by eating raw fish, fish guts, and perhaps other aquatic animals such as frogs. The pattern of scattered, sporadic infections occurring mostly in a new cohort of villages each year in Mali, with a few exceptions, is also similar to Chad. In September 2020 Mali's Ministry of Health, regional health leaders in Mopti, and local authorities in Tenenkou district, which is one of the insecure districts where many dogs are bred and likely infected, began an initiative which has been well received to discuss local peace, conflict, and health issues and is helping address priorities expressed by the communities. In June 2021 the MGWEP began discussing proactive tethering of all domestic dogs and cats during the peak transmission season with villagers in at risk areas and subsequently began implementing the new approach with receptive communities. The national program made a supervisory visit to Djenne and Tominian districts on October 21-27.

On October 29, 2021, Mali's Ministry of Health convened a meeting to discuss how to deal with on-going Guinea worm transmission to humans and domestic animals in Mali. The meeting was chaired by the minister's Public Health Advisor, Dr. Abdoulaye Guindo, and included Vice-President of the National Committee for Certification of Dracunculiasis Eradication (NCCDE) Dr. Alhousseini Maiga, President of the Intersectoral Group for Dracunculiasis Eradication Mr. Dia Mamadou Boukari, Carter Center Country Representative Mr. Sadi Moussa, a representative of the National Center for Information, Education and Communication for Health (*CNIECS*), and about ten others. National Program Coordinator Dr. Cheick O. Coulibaly made a presentation on the MGWEP before the meeting discussed how to tackle the residual Guinea worm transmission in the country. Participants at the meeting agreed to prioritize interruption of Guinea worm transmission in humans and animals; specifically to immediately begin or intensify new strategies to reduce the risk of exposure of dogs to Guinea worm infection, including proactive tethering of dogs, caging of cats, safe disposal of fish entrails (including possible use for feeding chickens), full engagement of dog traders and owners for surveillance, visits of administrative and health authorities to endemic zones, and focus on person-to-person communication about Guinea worm prevention. Veterinarians participate in field investigations, in quarterly meetings with *relais* in endemic districts, and on the NCCDE.

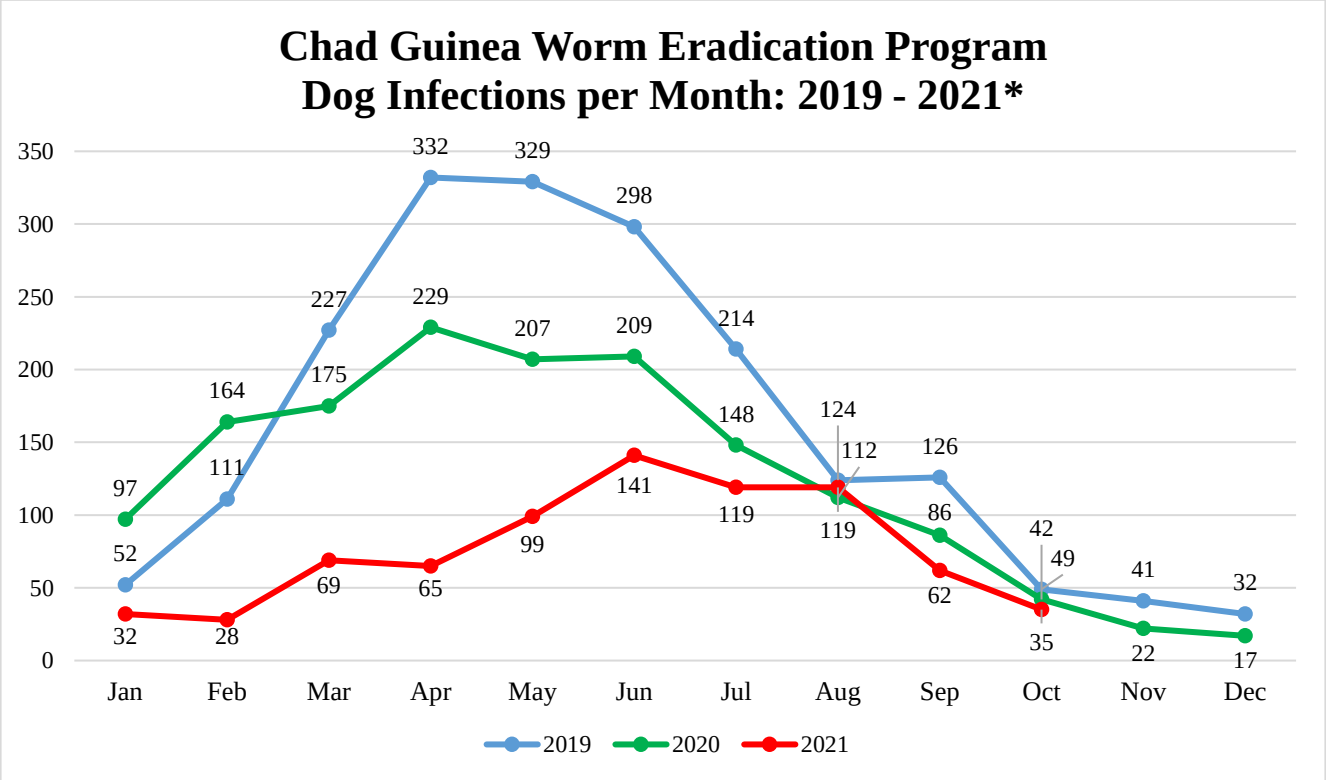
Obituary

We regret to report the passing of intrepid Guinea Worm Warrior Dr. Adama SOBINGO on October 23, 2021. He was a dedicated Malian physician and technical advisor to the MGWEP in Kidal Region since before 2014. Dr. Adama was withdrawn to Bamako briefly for his safety shortly after the regional health director and his driver were attacked by insurgents in 2016, but he immediately conducted a supervisory visit to GWEP workers when he returned to the region the next month. We honor his valuable service and extend our condolences to his family, colleagues, and friends.

CHAD

Chad has reported a provisional total of 769 dogs (81% contained), 61 cats (80% contained), and 7 humans (71% contained) with Guinea worm infections between January and October 2021. This is a 48% decrease in infected animals and a 50% decrease in human cases compared to the same period of 2020. The uptick in dog infections in August 2021 (+2%) (Figure 2) vs. August 2020 is probably due to only 61 Abate treatments conducted in October 2020 compared to 3,197 and 2,086 treatments in September and November 2020, respectively. The disruption in Abate treatments resulted from a miscommunication about Chadian labor law, which requires a pause in contracting before reissuing a contract, a requirement that applies to local staff contracted to scale up Abate treatments.

Figure 2



**Provisional January - October*

The Director of The Carter Center Guinea Worm Eradication Program, Adam Weiss, MPH conducted a supportive visit to Chad on October 25-November 3, 2021. He participated in a four-day training workshop with national and international Technical Advisors (TAs) to Chad's Guinea Worm Eradication Program, which was a welcome opportunity to interact with the TAs, some of whom joined the program during the COVID-19 pandemic. National Coordinator Dr. Tchindebet Ouakou gave several presentations during the training. Adam Weiss, Dr. Chris Cleveland and Dr. Ellen Haynes from University of Georgia, wildlife veterinarian consultant Dr. John Bryan II, and Carter Center Country Representative Dr. Hubert Zirimwabagabo held a briefing with the national coordinator about enrollment of dogs in the pandemic-delayed research study which has just begun to evaluate the possible effect of Flubendazole administered in a single higher dose to prevent Guinea worm infections in dogs. Weiss, Dr. Tchindebet, and Dr. Zirimwabagabo met with the Secretary General for the Ministry of Health, Dr. Ismael Barh Bachar. Weiss and Dr. Zirimwabagabo also met with WHO Country Representative, Dr. Jean Bosco Ndihokubwayo, and with the U.S. Agency for International Development Country Representative to Chad during this supportive visit.

Notes from the Field

"Who could imagine that tethering dogs could also build a school for our kids?" – a story of how the Chad Guinea Worm Eradication Program (GWEP) shifted the cash reward system from individual-based to community-based.

A village volunteer asked during an annual training in July, "When Guinea worm is eradicated, what else will you leave behind for us?" That question was hard to answer as we invest a lot of time and money each month to tether animals, treat water sources, distribute filters, and educate communities on how to interrupt the cycle of transmission. We felt like the program was providing so much to the communities already, but that question got everyone thinking. In one small, isolated, endemic village, they found an answer. They completely shifted the GWEP's financial reward system from being exclusively individual based to also serving the community. Each month, households who agree to tether their cats and dogs to prevent transmission are rewarded individually with cash (US$20 equivalent). After several meetings discussing a way for this reward to also benefit the community, and not just those with tethered animals, they finally came to a compromise. They agreed to give part ($1/6^{th}$) to a community fund and keep the rest for themselves. This was a huge step. The results are already tangible. Only three months later, several communities have started building schools with local materials, paid for teachers, and bought teaching materials, while other communities are saving up to build storage rooms for their harvest. Communities created either special committees to handle the fund or put their chief in charge. In these villages, the community is taking more and more ownership of the GWEP's activities as they have tangible community goals coming from these cash rewards. Those who don't tether their animals one month, and therefore don't receive a reward, are encouraged by the community to change their behavior and do better next month. The communities, for whom it is sometimes difficult to

The first classroom made from local materials in Naray, Chad.

grasp the stakes of Guinea Worm Eradication, are very motivated to see that their efforts to eradicate the disease can, in fact, result in different development initiatives. A village chief commented, "Who would imagine that tethering dogs could also build a school for our kids."

The good news is that it's spreading fast! Each month, the Chad GWEP is being asked to hold meetings in other villages and more are adopting this approach. Our hope is for communities to be more motivated, take more ownership, and drive us one step closer to eradication.

- *Claire Aubry, Technical Advisor, Chad*

ETHIOPIA

Ethiopia has reported only 1 human case, 1 cat infection, 1 dog infection, and 0 infected baboons in January-October 2021, vs. 11 human cases, 8 cat infections, 3 dog infections, and 4 baboon infections detected in the same period of 2020. An outbreak of COVID-19 among national and international baboon researchers in Ethiopia caused the research project to suspend operations as the study was set to resume in Gambella Region in early November. All had mild or no symptoms and have recovered. Expatriate staff were evacuated from the country. The project plans to reinitiate baboon trapping as soon as the situation allows. Preliminary results of using Maxer Remote Sensing technology to detect hidden water sources beneath forest canopy are promising: six of nine GPS readings of suspected water sources were found to possibly hold water. The Ethiopia Dracunculiasis Eradication Program will hold its annual National Program Review virtually at the end of December. The exact date will be determined soon.

A joint field mission was conducted in Abobo and Gog woredas (districts) from 19-22 October 2021 by the National technical working group members (Ethiopian Public Health Institute, Ministry of Water and Energy, Ethiopian Wildlife Conservation Authority, Ministry of Agriculture, Ministry of Education, WHO and The Carter Center) in collaboration with Gambella Regional Health Bureau. The purpose of the visit was to assess the overall GWEP interventions in villages and health facilities, monitor the documentation system and provide feedback on areas that require improvement and further interventions by the stakeholders. A total of 11 villages and 7 health facilities were visited. The standard WHO questionnaire (household, village, district, and regional level) for assessing pre/certification activities was utilized.

The following were among the major findings of the field visits:

- The awareness assessment finding showed, out of the interviewed 106 individuals 97% and 89% knew the correct amount for human and animal cash reward, respectively. Almost all visited households had cloth filters and majority of eligible individuals have received pipe filters.
- In all visited health facilities, surveillance focal persons and Health Extension Workers have received GWD training. Rumor registers and weekly public health emergency management reporting are also available. All health facilities are integrating GWD case search with mass drug administration and immunization campaigns as well as health education activities within health facilities.
- Lack of intersectoral and stakeholder collaboration particularly in Gog woreda with partners and woreda water office. Broken boreholes were reported from villages were not maintained timely and forcing the community to use from unsafe water sources.

- Majority of commercial farms still do not have safe water sources and there is gap in enforcing by the relevant regional authority as this has been a long outstanding issue for some time now.
- Lack of proper documentation of GWEP interventions in health facilities compounded by the limited engagement of woreda health offices in the eradication efforts with no regular plan and visit to support health facilities.
- Huge ponds created due to the road construction in Gog woreda thereby exacerbating exposure to unsafe water sources and making it extremely difficult to abate those ponds.

The following key recommendations were provided at the end of the field mission to all actors during the de-briefings at Woreda and Regional health bureau:

- Regional Health Bureau should work collaboratively with the regional road authority to drain the huge ponds created due to road construction. Regional health and water bureaus should work closely with investment bureau to avail safe water sources in commercial farm areas.
- Woreda health offices need to step up their engagement in GWEP; develop regular health facility visit plan and support the lower-level health centers and health posts which includes strengthening the documentation system.
- Woreda water offices need to act in a sense of urgency for all bore hole maintenance requests from villages with due emphasis in high-risk areas.

IN BRIEF:

South Sudan has reported four Guinea worm cases in 2021:

1. 13-year-old female, worm emerged on July 23 in Pieri, Uror County/Jonglei State. Not contained, source unknown.
2. 13-year-old female, worm emerged on July 23 in a cattle camp in Rumbek North County/Lakes State. Contained, source unknown.
3. 53-year-old female, worm emerged on August 28 in Apukdit, Tonj East County/Warrap State. Contained, source unknown.
4. 9-year-old male, worm emerged on October 6 in Panakech, Awerial County/Lakes State. Not contained, source unknown.

The South Sudan Guinea Worm Eradication Program (SSGWEP) is investigating whether case #3 in Tonj East County is linked to a case in Tonj East County in July 2020 and/or to case #2 in nearby Rumbek North County. The SSGWEP will hold its annual in-country Program Review at Juba on December 9-10, 2021. The South Sudan National Committee for Documentation of Dracunculiasis Elimination will meet on December 8.

Angola reinforced community-based supervision and surveillance in October, visiting six additional villages in areas at-risk Levels 2 and 3. The program trained 30 persons, including 21 new community health workers and 9 other health workers. It also investigated and ruled out one suspected human Guinea worm case. A WHO technical support mission on strengthening vector control, is currently being hosted by the Angolan GWEP. The mission is planned to end in mid-December 2021.

DEFINITION OF A PRESUMED SOURCE OF GUINEA WORM INFECTION

A presumed source/location of a human dracunculiasis case is considered identified if:
The patient drank unsafe water from the same source/location (specify) as other human case(s) or an infected domestic animal 10-14 months before infection, or

The patient lived in or visited the (specify) household, farm, village, or non-village area of (specify) a Guinea worm patient or infected domestic/peri-domestic animal 10-14 months before infection, or

The patient drank unsafe water from (specify) a known contaminated pond, lake, lagoon or cut stream 10-14 months before infection.

If none of the above is true, the presumed source/location of the infection is unknown. Whether the patient's residence is the same as the presumed source/locality of infection or not should also be stated in order to distinguish indigenous transmission from an imported case.

DEFINITION OF 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. A village volunteer or other health care provider 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.

*The criteria for defining a contained case of Guinea worm disease in a human should be applied also, as appropriate, to define containment for an animal with Guinea worm infection.

JOB ANNOUNCEMENT

The Carter Center is seeking an epidemiologist to work in the Guinea Worm Eradication Program. For more information, please see The Carter Center LinkedIn page:
https://www.linkedin.com/feed/update/urn:li:activity:6871458300962111489

Number of Laboratory-Confirmed Cases of Guinea Worm Disease, and Number Reported Contained by Month during 2021*
(Countries arranged in descending order of cases in 2020)

COUNTRIES WITH TRANSMISSION OF GUINEA WORMS	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	0 / 0	0 / 0	1 / 2	0 / 0	0 / 0	1 / 1	/	/	5 / 7	71%
ETHIOPIA	0 / 0	1 / 1	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	/	/	1 / 1	100%
SOUTH SUDAN	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	1 / 2	1 / 1	0 / 0	0 / 1	/	/	2 / 4	50%
ANGOLA	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	/	/	0 / 0	N/A
MALI	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 1	1 / 1	0 / 0	/	/	1 / 2	50%
TOTAL*	0 / 0	2 / 2	1 / 1	1 / 2	0 / 0	0 / 0	2 / 4	1 / 2	1 / 1	1 / 2	0 / 0	0 / 0	9 / 14	64%
% CONTAINED		100%	100%	50%			50%	50%	100%	50%				

Provisional

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

Shaded cells denote months when one or more cases of GWD did not meet all case containment standards.

Number of Laboratory-Confirmed Cases of Guinea Worm Disease, and Number Reported Contained by Month during 2020
(Countries arranged in descending order of cases in 2019)

COUNTRIES WITH TRANSMISSION OF GUINEA WORMS	NUMBER OF CASES CONTAINED / NUMBER OF CASES REPORTED													% CONT.
	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL	
CHAD^	1 / 1	0 / 2	0 / 3	1 / 2	2 / 2	0 / 0	0 / 1	0 / 1	0 / 0	1 / 1	0 / 0	0 / 0	5 / 13	38%
SOUTH SUDAN	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	1 / 1	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	1 / 1	100%
ANGOLA	0 / 0	0 / 0	0 / 1	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 1	0%
ETHIOPIA	0 / 0	0 / 0	0 / 0	7 / 7	0 / 0	0 / 0	0 / 0	2 / 2	1 / 1	1 / 1	0 / 0	0 / 0	11 / 11	100%
MALI §	0 / 0	0 / 0	0 / 1	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 1	0%
TOTAL	1 / 1	0 / 2	0 / 5	8 / 9	2 / 2	0 / 0	1 / 2	2 / 3	1 / 1	2 / 2	0 / 0	0 / 0	17 / 27	63%
% CONTAINED	100%	0%	0%	89%	100%	100%	50%	67%	100%	100%	100%	100%	63%	

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

Shaded cells 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. The GWEP continued to deploy one technical advisor to Kidal Region to oversee the program.

^ Cameroon reported one case in February that was most likely infected in Chad.

RECENT PUBLICATIONS

Guagliardo S.A.J., Thiele E., Unterwegner K., Nanguita N.N., et.al., 2021. Epidemiological and molecular investigations of a point-source outbreak of *Dracunculus medinensis* infecting humans and dogs in Chad: a cross-sectional study. The Lancet Microbe
https://authors.elsevier.com/sd/article/S2666-5247(21)00209-3

Hopkins D.R., Weiss A.J., Roy S.L., Yerian S., Cama V.A., 2021. Progress toward global eradication of dracunculiasis, January 2020-June 2021. MMWR 70(44):1527-1533.
http://dx.doi.org/10.15585/mmwr.mm7044a1

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 Adam Weiss (adam.weiss@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, Dr. Donald Hopkins and Adam Weiss of The Carter Center, Dr. Sharon Roy of CDC, and Dr. Dieudonne Sankara of WHO.

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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 Dracunculiasis Eradication