

Memorandum



Date: February 23, 2022
From: WHO Collaborating Center for Dracunculiasis Eradication, CDC
Subject: GUINEA WORM WRAP-UP #285
To: Addressees

It always seems impossible until it's done.
 Nelson Mandela

ETHIOPIA HOLDS ANNUAL PROGRAM REVIEW



The Ethiopia Dracunculiasis Eradication Program (EDEP) held its 26th Annual Review Meeting virtually on January 25-26, which was joined by over 60 participants. In officially opening the meeting the Honorable Minister of Health Dr. Lia Tadesse expressed *frustration* that the eradication campaign in Ethiopia has taken so long, *determination* on behalf of the EDEP because there is “no choice” but to stop Guinea worm transmission, and *optimism* that the effort will soon succeed. She affirmed and acknowledged the support of her ministry, the Ethiopia Public Health Institute (EPHI), Regional Health Bureaus, and partners; noted the need to increase advocacy for safe water supply in the affected areas; and issued a call to action by locals, nationals, and internationals alike. The head of the Gambella Regional Health Bureau, Mr. Rout Gatwech, delivered a keynote address, and the EDEP National Program Coordinator, Mr. Kassahun Demissie, gave a thorough overview of the program’s impressive performance in 2021. Between 2020 and 2021, the EDEP reduced human Guinea worm cases by 91% (from 11 to 1), and Guinea worm infections in animals by 80%, from 15 (3 dogs, 8 cats, 4 baboons) to 3 (2 dogs, 1 cat).

The EDEP has 198 villages (VAS) as well as 192 non-village-areas (NVAs) under active surveillance. It queried more than 360,000 persons about Guinea worm during integrated surveys, responded to almost 24,000 rumors of infection, found 96% of persons queried during spot checks in active surveillance areas to be aware of the cash reward for reporting Guinea worm, proactively tethered 1,720 dogs and 261 cats, and applied over 9,400 Abate[®] treatments in 2021. Seventy-two percent of the 16 VAS/NVAs with Guinea worm cases or infections in 2020-2021 had at least one safe source of drinking water. The World Health Organization (WHO) is assisting surveillance for Guinea worm disease in nine refugee camps; The Carter Center is assisting in two camps in Level I surveillance areas. Ethiopia’s National Dracunculiasis Certification Committee met three times in 2021 (February, May, and October).

CHAD HOLDS ANNUAL PROGRAM REVIEW



The Chad Guinea Worm Eradication Program (CGWEP) held its annual Program Review in N’Djamena on February 2-3, 2022. The meeting, which was opened by Dr. Ishmael Barh Bachar, Secretary General, Ministry of Public Health and National Solidarity, was attended by approximately 170 persons, including Vice-Presidents Dr. Kashef Ijaz and P. Craig Withers Jr., and Guinea Worm Eradication Program Director Adam Weiss of The Carter Center; Dr. Dieudonné Sankara (virtually), Drs. Ibrahim Djeomboro and Honoré Djimrassengar of the World Health Organization; and Dr. Jordan Tappero of the Bill & Melinda Gates Foundation. CGWEP National Program Coordinator Dr. Tchindebet Ouakou summarized the program’s progress in 2021. The CGWEP provisionally reduced the number of human Guinea worm cases by 42% (from 12 to 7) and the number of animal infections by 47% (from 1,571 to 832) in 2021. Five (71%) of the human cases were contained, and the presumed sources of infection were determined for five (71%) of them. Eighty-one percent (623/767) of the dog infections and 74% (48/65) of the cat infections were contained. Eighty-nine percent of the dog infections occurred in only three provinces: Moyen Chari (329), Chari Baguirmi (209), and Mayo Kebbi Est (148). Chad’s GWEP had 2,309 villages under active surveillance in 2021 and it investigated 108,857 rumors of animal infections and 77,118 rumors of human cases, over 97% of them within 24 hours. The program treated about 600-660 villages with Abate® larvicide monthly, and more than doubled the number of dogs and cats tethered proactively (from ~6,000 to over 16,000 and from about 200 to 6,000 respectively) in 2021. A line list of human Guinea worm cases in 2021 is in Table 1.

Table 1

Human Guinea worm cases in Chad, 2021												
Case #	Province	District	Zone*	Village of Detection	Age	Sex	Date of Emergence	Contained? (Yes/No)	Imported case? (Yes/No)	Known source of infection? (Yes/No)	Water contaminated? (Yes/No)	Abate® applied in 7 days? (Yes/No)
1	SLM	Amtiman	Gozdjarat	Amdabri	22	F	01 Feb	Yes	No	Yes	No	N/A
2	MC	Kyabe	Marabe	Bodobo 1	3	F	30 Mar	Yes	Yes	Yes	No	N/A
3	SLM	Aboudeia	Liwi	Bogam	7	M	14 Apr	Yes	No	Yes	No	N/A
4	MDL	Moissala	Beboro	Balimba	7	M	19 Apr	No	No	No	No	N/A
5	MKE	Guelendeng	Guelendeng 1	Medegue	3	F	22 July	Yes	No	Yes	No	N/A
6	SLM	Amtiman	Mirere	Alhilela	6	M	29 July	No	No	Yes	Yes	Yes
7	CB	Bouso	Mogo	Mogo	41	M	09 Oct	Yes	No	Yes	No	N/A

*All zones are Level 1 surveillance

As part of the strengthening of surveillance in refugee camps, the capacities of 363 community relays were strengthened on Guinea worm disease surveillance, 3650 people were sensitized, and 130 camp leaders were briefed in 20 camps.

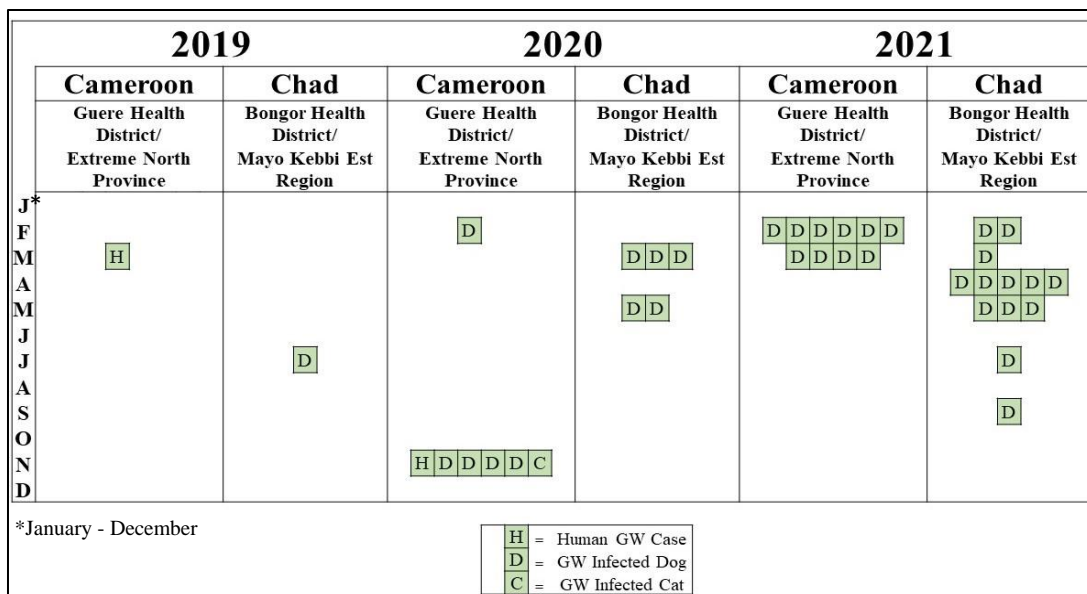
In October 2021, researchers from The Carter Center and the University of Georgia/USA traveled to Chad and joined colleagues from Chad’s GWEP and the *Institut de Recherche en Elevage pour le Developpement* (IRED) to initiate a new trial investigating the efficacy of Flubendazole for the prevention and/or treatment of Guinea worm infection in dogs. The new trial uses a single subcutaneous injection of a concentrated formulation of the drug. Flubendazole was administered to 649 dogs in 29 villages; 561 dogs in 27 other villages did not receive the drug, serving as controls.

CAMEROON-CHAD BORDER

Cameroon ended indigenous transmission of Guinea worm disease in 1997, was certified by WHO as Guinea worm-free in 2007 and reported no Guinea worm infections in 2008-2018. It has since reported 1 human case of Guinea worm disease (uncontained) in 2019; 1 human case (uncontained), 5 infected dogs (0 contained), and 1 infected cat (uncontained) in 2020; and 10 infected dogs (10 contained) in 2021 (Figure 1). All 18 infections (56% contained) occurred during the dry season, in November-March, in Nouldaina (8), Dabana (5), and Bastebe (5) villages of Guere health district of Extreme North Province. Cameroon reported no Guinea worm infections in animals before 2020. This area of Cameroon has had few security concerns due to Boko Haram and is mostly accessible during the dry (transmission) season, but harder to access during the rainy season because of road conditions.

Figure 1

Known Guinea Worm Infections in Cameroon-Chad Border Area, 2019 – 2021

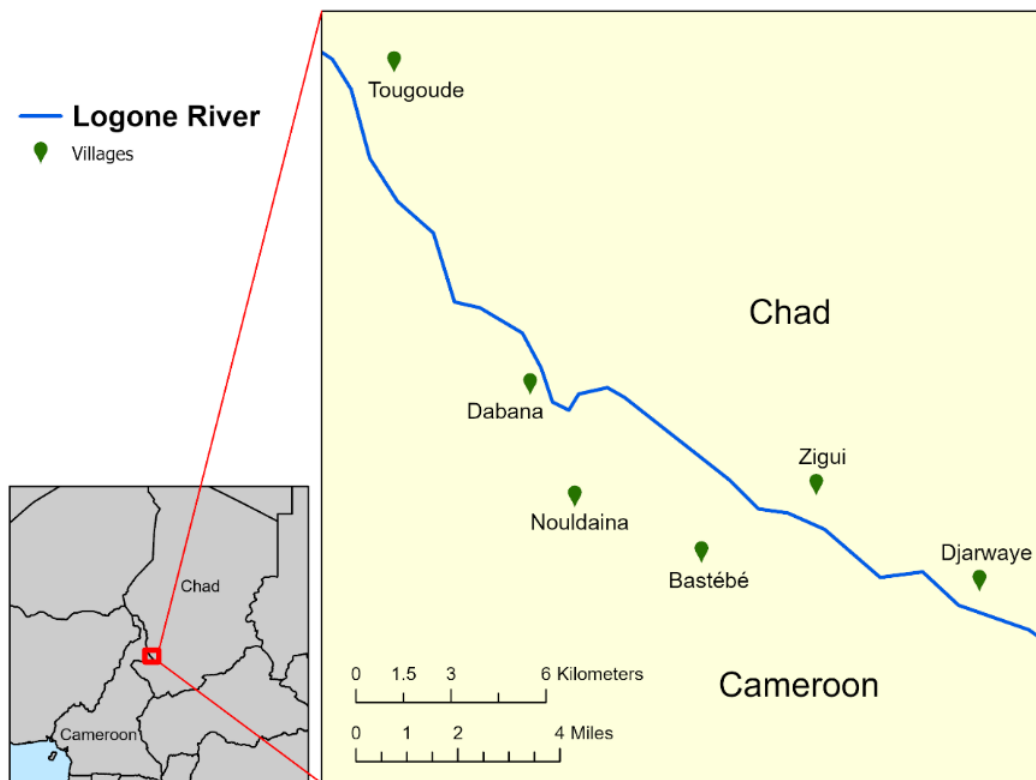


Chad detected cases of Guinea worm disease in 2010 after reporting no cases in the decade before that. It reported Guinea worm infections in dogs for the first time in 2012 and dog infections have greatly exceeded Guinea worm cases in humans since then. Bongor health district in Chad's Mayo Kebbi Est Region reported 1 infected dog (contained) in 2019, 5 infected dogs (2 contained) in 2020, and 13 infected dogs (7 contained) in 2021 (Figure 1). These 19 infections (53% contained) in Bongor health district occurred in 3 villages (10 in Djarwaye, 7 in Zigui, 2 in Tougoude). Chad's Guinea worm infections in Bongor health district occur mostly late in the dry season, and insecurity has not been a problem for conducting Guinea worm activities.

The villages reporting Guinea worm infections in Cameroon are part of a local epidemiological cluster of communities comprising families living on both sides of the Chad-Cameroon border in this area. All of the villages with known Guinea worm infections are located close to the Logone River, which is the border between Guere health district in Cameroon and Bongor health district in Chad (Figure 2). The two human cases in Cameroon (a 49-year-old woman and a 4-year-old girl) and owners of the known infected animals in the three border communities on each side all belong to the Massa ethnic group and all are fishermen/farmers except for the child, who had a history of staying in Chad during the ten months prior to her worm emerging in Cameroon in November 2020.

Figure 2

**Known Guinea worm-affected villages in border area of Bongor district/
Chad and Guere district/Cameroon, 2019-2021**



Chad's GWEP began strengthening active community-based surveillance and interventions in Bongor district beginning with response to the first of these border infections in 2019. The Chadian villages of Zigui, Djarwaye, and Tougoude are under preventive Abate[®] treatments, and Zigui and Djarwaye are tethering dogs proactively. To reinforce cross border surveillance, since January 2022 Chad opened active surveillance in about 50 villages in Bongor district opposite to Nouldaina zone in Guere district/Cameroon, in addition to 27 villages in Chad's Djarwaye zone that were already under active surveillance.

The health team in Cameroon's Guere health district and the GWEP of Chad have been collaborating actively for case investigations and interventions in this border area, supported by WHO and The Carter Center. In May 2019, a Chadian delegation including GWEP Deputy National Program Coordinator (NPC) Tchonfienet Mounda and Assistant Technical Advisor (TA) Diguim Boutsina assisted the Guere district health team in a Guinea worm case investigation in Batsebe village. In February 2020, Chad's Deputy NPC, WHO Focal Person Dr. Ibrahim Djeomboro, and the same Assistant TA helped train the Guere health district team in Abate[®] application and GW surveillance. Cameroon began applying Abate[®] to water bodies in Nouldaina, Dabana, and Bastebe villages that same month. In November 2021, a Chadian delegation consisting of NPC Dr. Tchindebet Ouakou, Senior TA Narcisse Ndoyengar, the Assistant TA, and the WHO Focal Person visited Gobo, Cameroon to discuss improving surveillance with the Guere district health team, the MoH regional Guinea worm focal person Mr. Ibrahim Mgbatou, and Dr Etienne Nnomzo'o, Cameroon WHO country office focal point for GWE. Cameroon has held fifteen advocacy meetings about Guinea worm with administrative, religious, and traditional authorities and opinion leaders in the 15 health districts bordering Chad, visited 1,670 households as part of community-based surveillance activities, and sensitized persons in markets, churches, and mosques in the active surveillance zones for Guinea worm.

Cameroon reportedly contained none of its 8 GW infections in 2019-2020, but it reportedly contained 100% of its 10 infections in 2021 after it started tethering dogs proactively that year in all villages that reported animal infections since 2019. Chad reported containing its single infection in 2019, 40% of its 5 infections in 2020, and 54% of its 13 infections in 2021. The increase in known infections on both sides of the border in 2021 may reflect improved surveillance in the area, while the improved containment rates reported in 2021 should sharply reduce infections in 2022.

MALI HOLDS ANNUAL PROGRAM REVIEW



The Mali Guinea Worm Eradication Program (MGWEP) held its annual Program Review meeting in Bamako, with some participants joining virtually, on February 8-9, 2021. The meeting was opened by Dr. GUINDO Abdoulaye, the Minister of Health's Public Health Advisor, representing the Minister of Health. Among others, the meeting was attended by The Carter Center Country Director, Mr. Sadi Moussa; The Carter Center representative from Atlanta, Ms. Karmen Unterwegner; Dr Aboubacar Sidibé, NPO WHO Mali, Dr. Dieudonné Sankara (virtually), WHO HQ as well as National Certification Commission members, including Dr Alhousseini Maiga. National Program Coordinator Dr. Cheick Oumar Coulibaly summarized the status of the program as of the end of 2021. Mali reported 2 Guinea worm cases (one contained, presumed sources of infection unknown for both) in humans and 17 confirmed animal infections (16 dogs, 1 cat; 11/17 (65%) contained) in 2021, which is a 90% increase from the 1 human case and 9 infected dogs reported in 2020. The review meeting briefly discussed the pilot testing of proactive tethering of 200 dogs and cats in Djenne town/Mopti Region, and the Peace through Health Initiative in Tenenkou Sanitary district/Segou Region as a catalyst for improved surveillance, investigations of Guinea worm cases, and access in the district. Thirty dogs were also proactively tethered in Kolongo Bozo village of Macina district/Segou Region in December where both human infections occurred in 2021. MGWEP staff in Macina, Tominian, and San districts of Segou Region met with dog traders in December. A line list of Mali's Guinea worm cases and infections in 2021 is in Table 2.

Table 2

MALI GWEP LISTING OF HUMAN CASE AND DOG INFECTIONS: YEAR 2021															
#	Region	District	Health Zone	Village	Ethnicity	Profession	Host	Probable Origin	Date of Detection	Date of Emergence	Entered water? (Y/N)	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	04/Nov.	04/Nov.	No	No	No	Yes	1
19	Segou	Macina	Kolongo	Kolongo Bozo	Bozo	Farmer/Fisherman	Dog	Kolongo Bozo	25/Dec.	25/Dec.	No	No	Yes	Yes	1

*See definition of *Contained* on pg. 9

ANGOLA: NO GUINEA WORM FOUND IN 22 MONTHS



During WHO-supported pre-certification surveillance activities and case searches, a girl with Guinea worm disease was unexpectedly discovered in Angola in 2018, Angolan health authorities with WHO assistance detected a second human case and an infected dog in 2019, and another human case in 2020. WHO declared Angola officially endemic after the case in the third consecutive year. The Guinea worm infections were detected in four villages in southern Angola's Cunene Province, which borders Namibia.

Since August 2020 Angola has extended community-based surveillance (CBS) to include villages of municipalities neighboring Cunene Province. By May 2021, a total of 61 villages covering over 65,800 inhabitants were under active surveillance, and by the end of 2021, Angola visited, monitored, and supervised 110 communities and villages and 38 health units out of 155 from Cunene's 6 municipalities to assess CBS activities. With WHO and Carter Center assistance, Angola identified and trained 503 community volunteers and workers on Guinea worm and integrated disease surveillance, including 27 COVID-19 Community Mobilizers, and some on use of Abate[®] larvicide for vector control. These in turn have helped sensitize more than 18,600 community members about Guinea worm disease. The program has identified and mapped 121 water supply sources, including 111 in November-December 2021, and distributed more than 3,030 cloth filters to 1,121 families. Angola is also integrating active surveillance for Guinea worm into other public health activities, including Angola-Democratic Republic of Congo cross-border assessments of leprosy, Buruli ulcer, yaws, and human trypanosomiasis; Knowledge-Attitude-Practices (KAP) malaria surveys; and deworming impact evaluations. The WHO Country Office in Angola supports assistance to the Namibian Ministry of Health for Guinea worm surveillance in the two northern regions of Namibia that share borders with Angola. Response to the COVID-19 pandemic has been a challenge, due to re-directing health professionals and limiting distribution of cloth filters.

Since 2020, Angola's national program has publicized nationwide a cash reward equivalent to US\$450 for voluntarily reporting a confirmed human case of Guinea worm disease. Despite the improved surveillance, Angola has not reported a Guinea worm case in a human or Guinea worm infection in an animal since March 29, 2020.

DEMOCRATIC REPUBLIC OF CONGO

The Democratic Republic of Congo (DRC) has readied its dossier for submission to the World Health Organization to request certification of the country as free of dracunculiasis transmission. DRC is poised to be considered by the International Commission for the Certification of Dracunculiasis Eradication (ICCDE) at its next meeting, which is likely to be held by July 2022.

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 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.

Table 3
Number of Laboratory-Confirmed Cases of Guinea Worm Disease, and Number Reported Contained by Month during 2022*
 (Countries arranged in descending order of cases in 2021)

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	0/0											0/0	
ETHIOPIA	0/0	0/0											0/0	
SOUTH SUDAN	0/0	0/0											0/0	
ANGOLA	0/0	0/0											0/0	
MALI	0/0	0/0											0/0	
TOTAL*	0/0	0/0											0/0	
% CONTAINED	N/A	N/A												

**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 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	0/0	0/0	5/7	71 %
SOUTH SUDAN	0/0	1/1	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	1/1	100 %
ANGOLA	0/0	0/0	0/0	0/0	0/0	0/0	1/2	0/1	0/0	0/1	0/0	0/0	1/4	25 %
ETHIOPIA	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	N/A
MALI	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/1	1/1	0/0	0/0	0/0	1/2	50 %
TOTAL	0/0	2/2	1/1	1/2	0/0	0/0	2/4	0/2	1/1	1/2	0/0	0/0	8/14	57 %
% CONTAINED	N/A	100 %	100 %	50 %	N/A	N/A	50 %	0 %	100%	50 %	N/A	N/A	57 %	

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.

RECENT PUBLICATIONS

Goodwin CED, Lechenne M, Wilson-Aggarwal JK, Koumetio SM, Swan GJF, Moundai T, Ozella L, McDonald RA, 2021. Seasonal fishery facilitates a novel transmission pathway in an emerging animal reservoir of Guinea worm. *Curr Biol* Dec 9;S0960-9822(21)01609-2.

<https://doi.org/10.1016/j.cub.2021.11.050>

World Health Organization, 2022. Monthly report on dracunculiasis cases, January-December, 2021.

Wkly Epidemiol Rec 97:47-48.

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, Adam Weiss, and Andrew Nute of The Carter Center, Dr. Sharon Roy of CDC, and Dr. Dieudonné 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