DEPARTMENT OF HEALTH & HUMAN SERVICES

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

Memorandum

Date: August 26, 2022

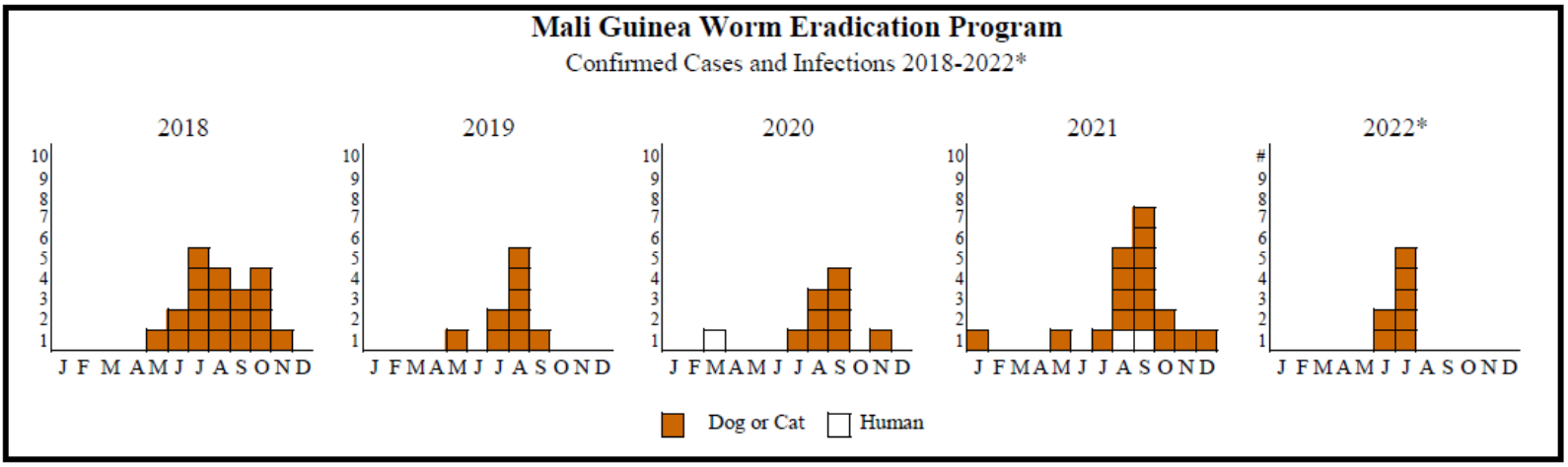
From: WHO Collaborating Center for Dracunculiasis Eradication, CDC

Subject: GUINEA WORM WRAP-UP #291

To: Addressees

Human Guinea worm cases are down 56% in January-July 2022.
Animal Guinea worm infections are down 36% in January-July 2022.

Figure 1



**Provisional*

MALI: 5 CONFIRMED DOG INFECTIONS; 2 CONFIRMED CATS

Mali has reported 5 dogs with confirmed Guinea worm infections in January-July this year (all contained), in addition to 2 confirmed infected cats (both uncontained) (Figure 1). As shown in Table 1, all these infected animals have ethnic Bozo owners. Mali has reported an average of 12.7 (range: 9-20) animal infections annually in 2016-2021, but only 3 human cases (1 in 2020, 2 in 2021) since 2015.

Table 1

MALI GWEP LISTING OF ANIMAL INFECTIONS: January - July 2022*															
#	Region	District	Health Zone	Village	Ethnicity	Profession	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	Tominian	Togo	Togo	Bozo	Teacher	Dog	Togo	4-Jun	07/Jue	No	Yes	Yes	Yes	1
2	Segou	Macina	Kolongo Bozo	Kolongo Bozo Hamlet	Bozo	Fisherman	Dog	Kolongo Bozo Hamlet	17-Jun	29-Jun	No	Yes	Yes	Yes	1
3	Mopti	Djenne	Djenne Central	Kanafa (Djenne)	Bozo	Household	Dog	Djenne	15-Jul	17-Jul	No	Yes	Yes	Yes	1
4	Segou	Macina	Macina Central	KE-BOZO	Bozo	Fisherman	Cat	Unknown	24-Jul	25-Jul	Likely	Yes	No	Yes	1
5	Segou	Macina	Macin Central	KE-BOZO	Bozo	Fisherman	Cat	Unknown	28-Jul	28-Jul	Likely	Yes	No	Yes	1
6	Segou	Macina	Kolongo Bozo	Kolongo Bozo Hamlet	Bozo	Farming	Dog	Kolongo Bozo Hamlet	30-Jul	30-Jul	No	Yes	Yes	Yes	1
7	Mopti	Djenne	Djenne Central	Sankore/Djenne Town	Bozo	Housewife	Dog	Djenne	4-Jul	31-Jul	No	No	Yes	Yes	2

**Provisional*

Kolongo Bozo hamlet is separated from Kolongo Bozo village by only a few yards (meters); together they contain a total of 63 dogs. This village and hamlet committed to proactive tethering of dogs in September 2021, had at least 30 dogs tethered in December 2021, and *proactive tethering* was already underway here this year when the first infected dog was detected in June 2022. Kolongo Bozo village had five dogs with known Guinea worm infections in 2021: 2 in August and 1 each in September, November, and December.

KE-Bozo village, with 2 provisional cat infections in Macina district, has a human population of about two thousand persons, ten dogs, and 92 cats, which are kept for catching rats; some cats are also consumed here. Cats are fed fish entrails here. The infected cats were put in cages, the district team treated all eligible ponds with Abate, and two meetings were organized at the local mosque to sensitize the population. *N.B.: Infected domestic cats may be less likely to contaminate water than infected dogs, given cats' aversion to water.*

The summary below of confirmed and suspected infections is an effort to be as precise as possible regarding what we do and don't know about the source and exposure of Guinea worm infections in Mali to help prevent future infections. This is a way to seek potential links between infections until we can compare DNA profiles of the infections. The line list of Mali's Guinea worm infections in 2021 is in *Guinea Worm Wrap-Up* #285.

INFECTION	PRESUMED SOURCE (location, timing)	APPARENT EXPOSURE (history)
Dog/Jun7/Togo	dog never left village(?), but no known GW in 2021	unknown
Dog/Jun29/KolongoBozohamlet	*indigenous*: **2 dogs 8/2021 in same village**	dog roamed freely in 2021
Dog/Jul15/Kanafa-Djenne	*indigenous*: **2 dogs 8/2021 in Djenne Central**	**discarded fish entrails**
Cat/Jul25/KE-Bozo/Macina Central	only known GW Macina Central in 2021 was in January	**cat eats fish entrails**
Cat/Jul28/KE-Bozo/Macina Central	ditto above	**cat eats fish entrails**
Dog/Jul30/KolongoBozohamlet	*indigenous*: **2 dogs 8/2021 in Kolongo Bozo hamlet**	dog roamed freely in 2021; sheep dog
Dog/Jul31/Djenne Town	*indigenous*: **1 cat 9/2021 in Djenne town**	dog roamed freely in 2021

The *Peace-Health Initiative,* which began in Tenenkou district of Segou Region in September 2020, was extended to three endemic health areas of Macina district (including Kolongo Bozo village and hamlet) and three others in Tominian district of Segou Region earlier this year.

CHAD: 4 HUMAN CASES, 329 ANIMAL INFECTIONS IN JANUARY-JULY

Chad has reported four confirmed human Guinea worm cases (2 contained) in January-July 2022. This is a 33% reduction from the 6 cases reported in January-July 2021. Chad's Guinea Worm Eradication Program also reported 329 infected animals (69% contained; 306 dogs and 23 cats), which is a 41% reduction from the 528 dogs and 26 cats reported during the same period of 2021.

A line listing of Chad's three human cases is in Table 2. Additional observations:

Case #1. 32-year-old man; worm emerged February 4. Presumed source of infection: *indigenous* (2 infected dogs in same village in February and March 2021, including the patient's own dog). Apparent exposure: *drinks unfiltered water (*no safe water in village); also *eats grilled fish with entrails*. N.B.: This village began proactive tethering in 2020; it had 37 infected dogs in 2019, 28 in 2020, 5 in 2021, and 2 infected dogs so far in 2022.

Case #2. 2-year-old girl; worm emerged February 27. Presumed source of infection: *indigenous* (6 infected dogs in same village in 2021, including uncle's dog in February). Apparent exposure: no safe water in village (water sources reportedly were treated with Abate regularly since January 2020, child's mother claims to filter her water); may have eaten undercooked fish.

Case #3. 29-year-old man; worm emerged June 21. Presumed source of infection: *unknown* (patient travels widely in area, has mental condition). Apparent exposure: *drinks unsafe water* (village has safe drinking water); eats grilled monitor lizards. No known Guinea worm in neighborhood in 2021.

Table 3 shows the number of dogs reported with Guinea worm infections in Chad by district in 2019-2021 and identifies which of those districts border Cameroon or Central African Republic. The map in Figure 2 shows the location and names of Chadian districts that border Cameroon or Central African Republic. The recent upsurge in reported dog infections in Guere district of Cameroon's Extreme North Province in 2022 was preceded by a 220% increase in dog infections just across the border in Chad's Bongor district of Mayo Kebbi Est Region between 2019 and 2021. The Guinea worm infections in Cameroon are believed to have been contracted in Chad, because the affected villages include families who live on both sides of the border. Two other Chadian districts that border Cameroon reduced their number of dogs reported with Guinea worm infections in 2019-2021: 9th arrondissement/N'Djamena (-27%) and Mandelia (-74%). Two of Chad's districts that border Central African Republic also reduced Guinea worm infections in dogs (Kyabe -76%, Biobe -35%), while the small number of infected dogs reported in Haraze district increased by 60%. *Late breaker: Chad reported Case #4 (uncontained) in late July 2022. Details in next issue.*

Table 2

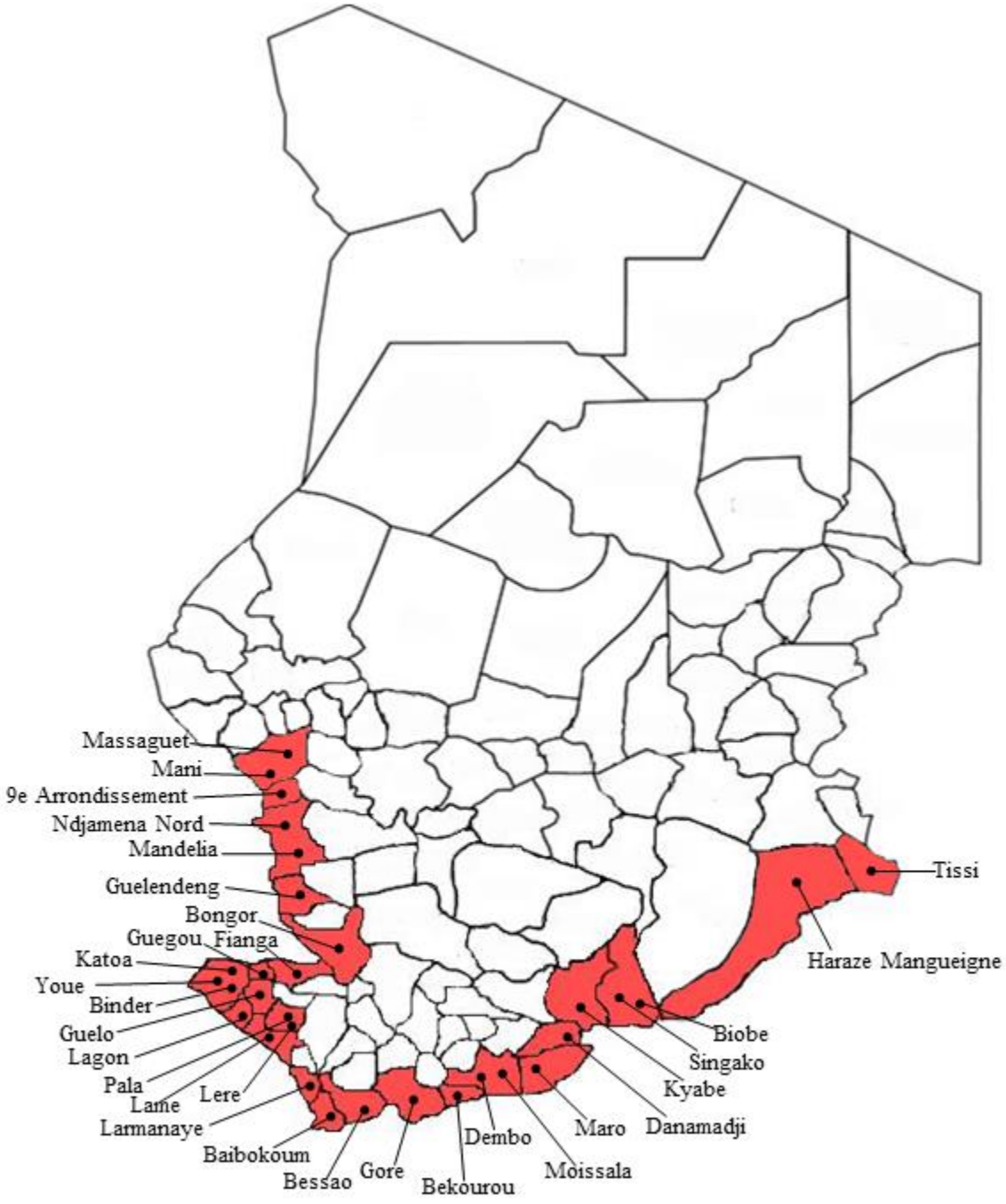
Chad Guinea Worm Eradication Program
Cases of Dracunculiasis: January – July 2022*

Case #	Age	Sex	Ethnicity	Occupation	Village of Detection	Zone	District	Region	Date					Isolated (Y/N)	Imported (Y/N)	Localization of Worm	Presence of safe water in village	Village Under Active Surveillance
									Detection	Emergence	Confirmation	Admitted to Health Center	Discharged from Health Center					
1.1	32	M	Sarakaba	Fisherman	Marabodoukoya 1	Marabe	Kyabe	Moyen Chari	Feb. 4	Feb. 4	Feb. 4	Feb. 4	Mar. 23	No	No	Left leg	No	Yes
2.1	2	F	Tounia	N/A	Madjyam	Marabe	Kyabe	Moyen Chari	Feb. 27	Feb. 27	Feb. 27	Feb. 27	Mar. 18	Yes	No	Right thigh	No	Yes
3.1	29	M	Ngambaye	Fisherman/ Farmer	Ngama Sara	Malo	Mandelia	Chari Baguirimi	June 18	June 21	June 22	June 21	In progress	No	Yes	Lower abdomen	Yes	No

**Provisional*

Figure 2

Chad districts that border Cameroon or Central African Republic*



*See Table 3 below

Table 3

Chad: Number of dogs with Guinea worm infections by district, 2019-2021

District/Region	2019	2020	2021	% Change
Bailli/CB[1]	359	235	89	-75%
Kyabe/MC[2]**	346	253	82	-76%
Guelendeng/MKE[3]	243	221	130	-47%
Sarh/MC (includes Balima)	238	265	148	-38%
Mandelia/CB*	156	122	40	-74%
Danamadji/MC	138	101	44	-68%
Bousso/CB	112	44	33	-71%
Massenya/CB	72	76	19	-74%
Korbol/MC	70	33	15	-79%
Biobe /MC**	62	62	40	-35%
Kouno/CB	30	22	17	-43%
Dourbali/CB	29	9	11	-62%
Moissala/MDL[4]	24	4	1	-96%
9e Arrondissement/NDJ[5]*	15	11	11	-27%
Bere/Tandjile	10	12	52	+420%
Bedaya/MDL	5	8	2	-40%
Bongor/MKE*	5	1	14	+220%
Haraze/SLM[6]**	5	4	8	+60%
Moulkou/MKE	4	6	4	0%
Ndjamena Sud/NDJ	4	8	0	-100%
Aboudeia/SLM	4	1	0	-100%
Korbol/CB	1	0	0	-100%
Benoye/LOC[7]	1	2	1	0%
Kouno/MC	1	0	0	-100%
Kolon/Tandjile	1	1	0	-100%
Mangalme/Guera	0	1	0	0%
Am Timan/SLM	0	2	1	∞
Kelo/Tandjile	0	1	0	0%
Lai/Tandjile	0	2	4	∞
Bekourou/MDL**	0	0	1	∞
TOTAL	1935	1507	767	-60%

*Borders Cameroon
**Borders Central African Republic

[1] CB-Chari Baguirimi
[2] MC-Moyen Chari
[3] MKE-Mayo Kebbi Est
[4] MDL-Mandoul
[5] NDJ-N'Djamena
[6] SLM-Salamat
[7] LOC-Logone Occidental

IN BRIEF:

Karmen Unterwegner and Mindze Nkanga of The Carter Center traveled to Cameroon at the end of July to assess the surveillance structures and provide support for strengthening surveillance and interventions.

Giovanna Steel of The Carter Center traveled to Angola in June. She met with disease control officials in the Department of Public Health, The World Health Organization Country Representative, and others, and attended the first meeting of the Interagency Coordination Committee for 2022 on June 28 before visiting Cunene Province in early July to follow up on the dog infections reported earlier this year and provide technical support to the Angolan and WHO teams.

INTERNATIONAL CERTIFICATION TEAM RETURNS FROM DRC

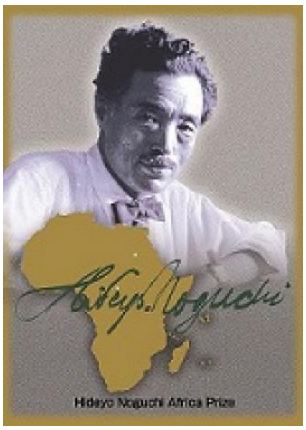
World Health Organization

The International Certification Team visited The Democratic Republic of the Congo (DRC) from 11 July to 6 August 2022. The mission was led by Prof. Robert Guiguemde of Burkina Faso, an ICCDE member, and comprised Mr. Boulama Ousmane an international independent consultant, former National Coordinator of GWEP of Niger. At the end of the mission, which was positive, the ICT debriefed the Minister of Health and made recommendations in line with the need to continue adequate surveillance until global eradication is declared. The final ICT report will be submitted to the ICCDE for consideration and final deliberation in the upcoming weeks.

Sudan:

A WHO mission is currently (August-September 2022) in Sudan to provide hands-on support to accelerate the country's readiness for certification. The mission comprises Dr. Ashok Kumar, an ICCDE Member from India, Dr. Supriya Warusavithana, from WHO/EMRO, and Ms. Farah J. Agua, from WHO/HQ. An ICT mission to Sudan is scheduled during the first 6 months of 2023.

CARTER CENTER WINS NOGUCHI PRIZE



On Wednesday, August 3, 2022, the Government of Japan announced in Tokyo that it had selected The Carter Center's Guinea Worm Eradication Program for the Hideyo Noguchi Africa Prize in the medical services category. The program won the award based on its long-time commitment and substantial progress toward the eradication of Guinea worm disease in Africa. The Japanese zipper manufacturer YKK, a long-time Carter Center supporter, along with Japan's Consul General in Atlanta, Kazuyuki Takeuchi, former Director General of the WHO Dr. Margaret Chan, Minister of Public Health and National Solidarity of Chad Dr. Abdoulaye Sabre Fadoul, and Former Minister of Health for the Republic of South Sudan Dr. Riek Gai Kok, nominated the GWEP

for the prize. Every three years after nominations are made, the Japanese prime minister selects the final winners. The prize includes an honorarium of 100 million yen, currently equivalent to about US$750,000, which The Carter Center will use towards the goal of Guinea worm eradication. Program Director Adam Weiss will personally accept the award at the Tokyo International Conference on African Development in Tunis on August 28.

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 4

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	1 / 2	0 / 0	0 / 0	0 / 0	0 / 1	0 / 1						1 / 4	25 %
SOUTH SUDAN	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 / 0	N / A
ETHIOPIA	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0						0 / 0	N / A
ANGOLA	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0						0 / 0	N / A
TOTAL*	0 / 0	1 / 2	0 / 0	0 / 0	0 / 0	0 / 1	0 / 1						1 / 4	N / A
% CONTAINED	N / A	50 %	N / A	N / A	N / A	0 %	0 %						25 %	

Provisional

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

Numbers indicate how many cases were contained and reported that month.

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	1 / 1	0 / 0	6 / 8	75 %
ETHIOPIA	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 %
SOUTH SUDAN	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 %
ANGOLA	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	1 / 1	0 / 0	9 / 15	60 %
% CONTAINED	N / A	100 %	100 %	50 %	N / A	N / A	50 %	0 %	100%	50 %	100 %	N / A	60 %	

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

Numbers indicate how many cases were contained and reported that month.

DONATIONS

The Carter Center is grateful for the continued support of the Bill & Melinda Gates Foundation, particularly its recent grant of USD$45 million for Guinea worm disease eradication efforts through January 2025. With this new support, the foundation has generously provided $253 million to the eradication campaign since May 2000.

RECENT PUBLICATIONS

Makri A, 2022. After smallpox, can other diseases be eradicated? Nat Med. https://doi.org:10.1038/s41591-022-01914-z

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. Dieudonné Sankara of WHO.

WHO Collaborating Center for Dracunculiasis Eradication, Center for Global Health, Centers for Disease Control and Prevention, Mailstop H24-3, 1600 Clifton Road NE, Atlanta, GA 30329, USA, email: gwwrapup@cdc.gov, fax: 404-728-8040. The GW Wrap-Up web location is https://www.cdc.gov/parasites/guineaworm/wrap-up
Back issues are also available on the Carter Center web site in English, French, and Portuguese and 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

http://www.cartercenter.org/news/publications/health/guinea_worm_wrapup_portuguese.html