DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Centers for Disease Control

And Prevention (CDC)

Memorandum

Date: April 25, 2022

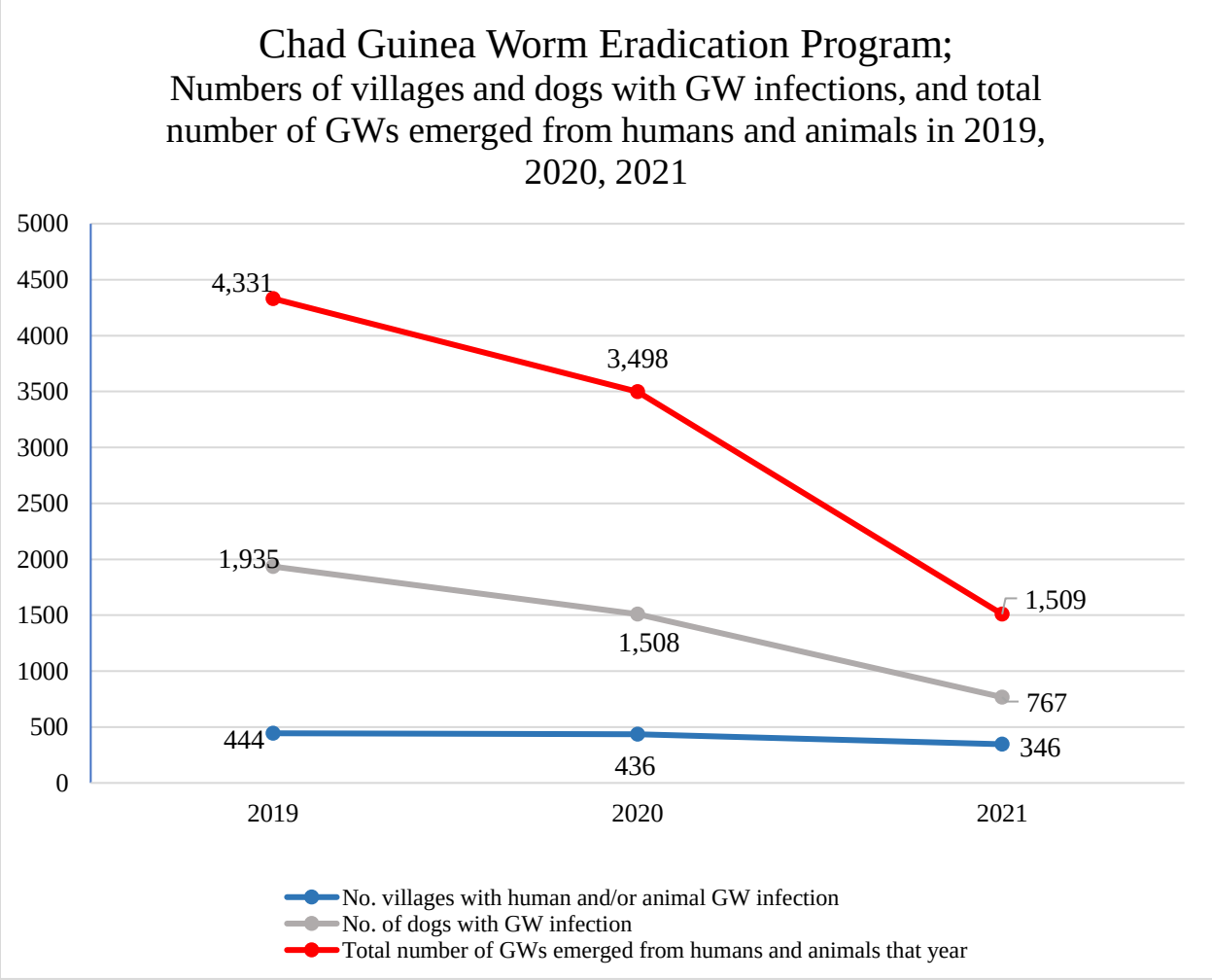
From: WHO Collaborating Center for Dracunculiasis Eradication, CDC

Subject: GUINEA WORM WRAP-UP #287

To: Addressees

Find, contain, and explain every Guinea worm!

Figure 1



CHAD: 2 CONFIRMED CASES; REDUCING THE FORCE OF INFECTION

A line list of the two confirmed Guinea worm cases reported in Chad in the first quarter of 2022 is in Table 1. Both cases occurred in Kyabe district of Moyen Chari Region in February. Although only one of the two cases was contained, Abate was applied to all known appropriate water sources in the uncontained case's home village within two weeks of worm emergence. The two functional borehole wells in that village are about 7 kilometers (~4 miles) from the patient's neighborhood. The presumed source of each case's infection is linked epidemiologically to water sources likely contaminated by one or more infected dogs in the patient's home village during the period of infection a year earlier. The first patient's village, Marabodokouya 1-Rinda, had 5 infected dogs in 2021 (including the patient's own dog, which had an emerging Guinea worm in March 2021) and 28 dog infections in 2020, when it was among 118 Chadian villages targeted to initiate the proactive tethering strategy. No infected dogs have been detected in this village so far in 2022. The second patient's village, Madjyam, had 6 infected dogs in 2021 (including a dog--owned by the patient's uncle--with emerging worms in February and April 2021) and 22 infected dogs in 2020, when it also initiated the proactive tethering strategy. One infected dog has been detected in this village so far in 2022. Rinda's quarter of Marabodokouya 1 and Madjyam villages received Abate treatments throughout 2021, but the distribution of filters in those affected areas was not consistent.

Figure 1 shows the reductions in villages with infected humans and/or animals, in numbers of infected dogs, and in the total numbers of Guinea worms that emerged in humans and animals in Chad in 2019, 2020, and 2021. While the number of villages with Guinea worm-infected humans and/or animals declined by 22% over those years (including 109, 103, and 75 newly infected villages in 2019, 2020, and 2021 respectively), the number of infected dogs fell by 60% and the number of emergent Guinea worms plummeted even more, by 65%. As of week 16 in 2022 (ending April 16), Chad's GWEP reported a provisional total of 69 infected dogs, which is a reduction of 60% from the 173 dogs reported during the same period of 2021.

Cameroon has detected no confirmed Guinea worm infections in humans or animals for twelve consecutive months, since it reported ten infected dogs in Guere health district of Extreme North Province in February-March 2021. As described in *Guinea Worm Wrap-Up* #285, the infections in Cameroon were part of an epidemiological cluster comprising families living on both sides of Cameroon's border with endemic Bongor district in Chad and were probably infected in Chad. Bongor district has reported Guinea worm infections in 3 dogs and 2 cats in January-March 2022, compared to 3 infected dogs in January-March 2021. Further to the implementation of proactive tethering of dogs, twenty suspect dog infections were reported recently in the same border area. The suspected infections are being followed up by the Cameroon Ministry of Health, with support from the World Health Organization.

Table 1

Chad Guinea Worm Eradication Program
Cases of Dracunculiasis: January – March 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

**Provisional*

MALI

Mali's Guinea Worm Eradication Program (MGWEP) has reported no infection in a human or animal in January-March 2022, compared to one infected dog in January-March 2021. Mali's peak transmission season begins in June. Since the MGWEP began in 1991, it has eliminated Guinea worm disease from almost all endemic areas, comprising mostly the southern half of the country below the sparsely populated, non-endemic northern tier in the Sahara Desert (see maps in Guinea Worm Wrap-Up #275). Following its most recent common-source water-borne outbreak of Guinea worm in humans in 2014 and its first confirmed Guinea worm in a dog in 2015, Mali reported an average of 12.7 animal infections (range: 9-20; mostly domestic dogs and a few domestic cats) and 0-5 human cases annually in 2016-2021, including zero human cases for four consecutive years, 2016-2019. A line list of 19 Guinea worm infections in humans and animals in Mali that yielded a total of 21 Guinea worms in 2021 is included in *Guinea Worm Wrap-Up* #285; the MGWEP Surveillance Snapshot for 2021 is in *Guinea Worm Wrap-Up* #286.

The limited endemic area remaining in Mali's Inland Delta of the Niger River features a riverine ecology like the endemic zone along the Chari River in Chad, but with local transmission dynamics in Mali complicated by transport of dogs to and from fertile farming and fishing areas in the inland delta of Mopti Region where dogs are fattened and become infected, and parts of adjacent Segou Region (also some areas of Mopti Region itself) where dogs are consumed, as well as by local pockets of insecurity since 2012. The MGWEP's main interventions have long included health education, distribution of cloth and pipe filters, containment of human cases and animal infections, and application of Abate to appropriate water sources in endemic communities. Over the past decade it also has applied Abate as a "preventive measure" to limited water sources in communities with recent previous infections. Late in 2021 Mali began pilot testing proactive tethering of all dogs in cooperating endemic communities during the peak transmission season. Workers from the MGWEP conduct health education of dog traders and inspect dogs at markets regularly, reporting encounters with a total of 122 dog traders and 925 dogs in Macina, Tominian, and San districts of Segou Region in January and February 2022, for example.

A recent review of the pilot Peace-Health Initiative with health authorities, political leaders, and local community members that began in Tenenkou district of Segou Region in September 2020 to foster dialogue and help mitigate insecurity (see *Guinea Worm Wrap-Up* #279) has shown promising early results, including increased reporting of Guinea worm rumors (105 in 2021 vs. none in 2020), more supervisory visits (11 vs. 7), fewer violent incidents (average 1 per month vs. 10+), increased inclusion of women, minority groups, and youth, and improved perception of government by 60% of persons surveyed. This initiative will be extended to Yowarou district in Mopti Region and Tominian and Macina districts of Segou Region in 2022.

Mali's National Committee for Certification of Dracunculiasis Eradication held its first meeting of 2022 on March 24 to discuss its Action Plan for the year. The members discussed advocacy visits to local partners of the MGWEP and to Segou and Mopti Regions, reassessment of Guinea worm status in endemic and at-risk districts, operational research on the dog value chain,

collaboration with veterinary services, and a televised debate about Guinea worm eradication in Mali.

ETHIOPIA: ONLY 4 GWs FOUND IN 2021

The Ethiopia Dracunculiasis Eradication Program (EDEP) detected only 4 *D. medinensis* Guinea worms in the entire country in 2021. Four infections, each with one worm, occurred in four different localities in February (in a human), August (cat), October (dog), and November (dog) (see line lists in *Guinea Worm Wrap-Up* #284). Ethiopia reportedly contained the first three infections and applied Abate within a few days of the fourth infection, and it identified a presumed source of each infection. It found no infected baboon for the first time in eight years. The precipitous decline to only four known chains of infection in 2021, all linked epidemiologically to previously known sources of infection, occurred after the EDEP found 126 Guinea worms in 11 humans, 8 cats, 4 baboons, and 3 dogs, in 13 localities in 2020. Ethiopia has detected no Guinea worms so far in 2022 despite robust surveillance in areas at-risk (see Ethiopia Surveillance Snapshot 2021 in the previous issue). The next few months will reveal whether Guinea worm transmission continued undetected somewhere in Ethiopia in 2021.

The Texas Biomedical Research Institute is hosting four delegates from the Ethiopian Public Health Institute in April 2022 for a month-long training supported by The Carter Center, including didactics on baboon biology, veterinary medicine, and pathology as well as hands-on sessions covering clinical evaluation and sampling, biosafety/biosecurity, health assessment and monitoring, necropsy, and reporting. Located in San Antonio, Texas, the Texas Biomedical Institute has the only breeding colony of baboons in the United States.

SOUTH SUDAN: ONLY 4 GWs FOUND IN 2021

South Sudan's Guinea Worm Eradication Program (SSGWEP) detected only 4 *D. medinensis* Guinea worms in the entire country in 2021. Four infections, each with one worm, all occurred in humans in four different localities in July (2 cases), August, and October (see *Guinea Worm Wrap-Up* #283). The SSGWEP reportedly contained one of the cases, in July, and applied Abate promptly in response to all four cases. It was unable to link any of the infections in 2021 epidemiologically to the single infection detected in the country in another locality in 2020. Guinea worm surveillance in South Sudan in recent years, while intensive for humans and animals in areas at risk, is challenged by sporadic insecurity and extreme mobility of cattle herders (see South Sudan Surveillance Snapshot in the previous issue). South Sudan has reported only one animal infected with Guinea worm ever, a dog in a household with two human cases, in 2015.

The SSGWEP has hired additional staff in the four Guinea worm-endemic counties (Uror County/Jonglei State, Rumbek/N-Lakes, Tonj/E-Warrap, Awerial/Lakes) for the 2022 Guinea worm endemic season, which typically runs from May through November. Water and sanitation projects are also underway in the same four counties. The Ministry of Health recently added Dr.

Sarah Ijang to the Guinea worm team, to focus on Level 2 and Level 3 surveillance areas. Dr. Ijang earned her medical degree at the University of Juba and a Master of Public Health degree from Al Ahfad University for Women in Khartoum. She worked previously as a Senior Medical Officer at Victorious Medical Center and at Al Sabah Children's Hospital in Juba, and more recently did capacity building at national and state level as Public Health Officer at GRACe, an academic center for training and research in reproductive health and gender at Al Ahfad University for Women.

THE ABU DHABI DECLARATION

The text of the Abu Dhabi Declaration, which as described in the previous issue of *Guinea Worm Wrap-Up*, was adopted on March 22, 2022, at the conclusion of the Guinea Worm Summit in Abu Dhabi, United Arab Emirates, is included below. The Declaration was signed by ministers and ministerial representatives of Angola, Cameroon, Chad, Democratic Republic of the Congo, Ethiopia, Mali, Sudan, and South Sudan in the presence of Sheikh Shakhbout bin Nayan Al Nayan, Minister of State at the Ministry of Foreign Affairs and International Cooperation, United Arab Emirates, Chair of The Carter Center Board of Trustees Mr. Jason Carter, and World Health Organization Director General Dr. Tedros Ghebreyesus.

Abu Dhabi Declaration on the Eradication of Guinea Worm Disease

We, the representatives/Ministers of Health of Angola, Tchad, Ethiopia, Mali, and South Sudan, the only countries still endemic for dracunculiasis (Guinea worm disease); Sudan and the Democratic Republic of the Congo, the two pre-certification countries; and Cameroon, a country impacted by cross-border dracunculiasis infection; meeting on 22 March 2022 in Abu Dhabi, United Arab Emirates;

Recalling World Health Assembly Resolutions WHA34.25, WHA39.21, WHA42.29, WHA44.5, WHA50.35, WHA57.9, AND WHA64.16;

Noting the more than 99.9% reduction in human dracunculiasis cases from an estimated 3.5 million in 1986 to 15 in 2021, an all-time low in the campaign to eradicate the second human disease in history;

Appreciating the more than three decades of leadership from former U.S. President Jimmy Carter and former First Lady Rosalynn Carter and since 1990 from the United Arab Emirates, which began under the UAE's late founder, Sheikh Zayed bin Sultan Al Nahyan, and has continued under President His Highness Sheikh Khalifa bin Zayed Al Nahyan and His Highness Crown Prince Mohamed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi;

Noting that the World Health Organization (WHO) has certified 199 countries and territories free of dracunculiasis transmission and that five endemic and two non-endemic countries remain to be certified;

Acknowledging with deep concern the potential threat to sustaining progress and completing eradication posed by the challenges of animal infections in Chad, Ethiopia, and Mali and insecurity in many affected areas;

Recognizing that intensive efforts and further resources are required to interrupt human and animal transmission in all countries by 2026 and to achieve certification of global eradication by 2030, as globally endorsed in the WHO Neglected Tropical Disease Road Map;

Appreciating the importance of evaluation and measurable impact by reconvening at least annually to evaluate country progress, in partnership with implementing partners,

Hereby commit to lead urgent technical, political, and financial efforts toward the elimination of Guinea worm disease in endemic countries by endeavoring to ensure:

1. Bold involvement of political leaders, including heads of state, to lead community-targeted advocacy visits at least annually;

2. Strengthen capacity of local leaders and frontline health workers to reinforce and improve prevention activities, elevate morale, and accelerate interruption of transmission;

3. Maintenance of sufficient funds for national dracunculiasis elimination programs;

4. Intensified surveillance for dracunculiasis in endemic, at-risk and non-endemic areas;

5. Expansion and execution of all appropriate interventions, which could include health education, proactive tethering of dogs and cats at risk of infection, containment of cases, responsible application of larvicide, proper use of filters, and raising awareness of the cash reward;

6. Rapid provision of safe water to all dracunculiasis-endemic villages by 2024 and advocacy for increased provision of safe drinking water, prioritizing populations at risk of transmission and strengthening local health systems;

7. Vigorous efforts to ensure safe passage and working conditions for all health workers in areas of conflict; and

8. Encouragement of all country programs to maintain immediate and transparent communications in cross-border zones and organize routine meetings regarding dracunculiasis.

Adopted in Abu Dhabi, United Arab Emirates
22 March 2022

Table 2

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

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

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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.

RECENT PUBLICATIONS

Burki T, 2022. Countries recommit to Guinea worm eradication by 2030. www.thelancet.com/infection 22:597-598.

World Health Organization, 2022. Monthly report on dracunculiasis cases, January 2022. Wkly Epidemiol Rec 97(9):78-79.

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 A-06, 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