DEPARTMENT OF HEALTH & HUMAN SERVICES

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

Memorandum

Date: July 30, 2024

From: WHO Collaborating Center for Dracunculiasis Eradication, CDC

Subject: GUINEA WORM WRAP-UP #311

To: Addressees

For each GW case or infection:
Where did this GW come from (source)?
Who/what else was at risk there?
What/who has this GW contaminated or exposed now?

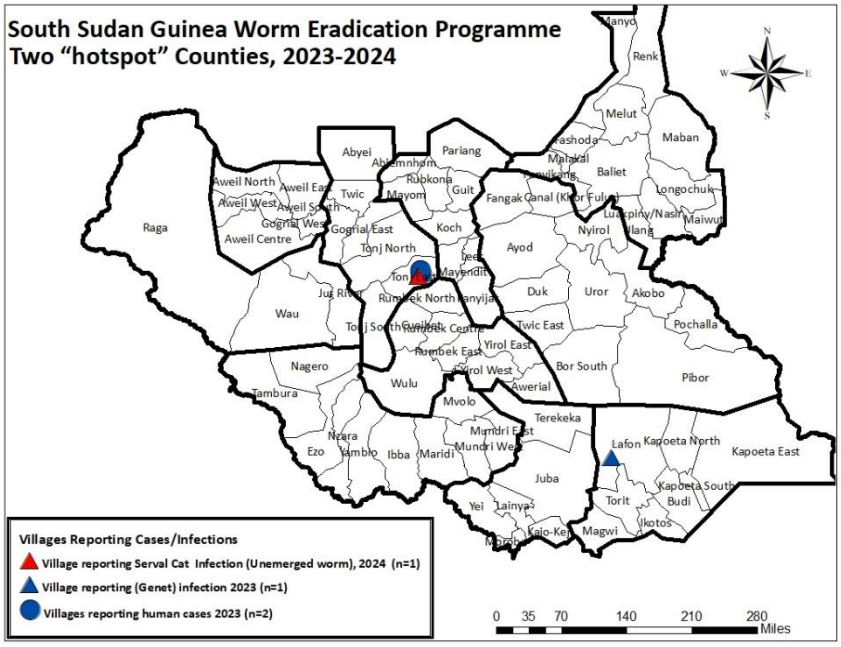

Figure 1. Two hotspot counties in South Sudan in 2023 and 2024.

SOUTH SUDAN: SEEKING *DRACUNCULUS MEDINENSIS*

South Sudan's Guinea Worm Eradication Program (SSGWEP) recently detected Guinea worm infections in two wild animals for the first time, a genet with a hanging worm and a serval cat with an un-emerged worm, in Lafon County/Eastern Equatoria State and Tonj East County/Warrap State, respectively, on November 19, 2023, and April 5, 2024. These two counties are about 300 miles (500 km) apart (Figure 1). In 2015-2023 the SSGWEP reported Guinea worm infections in 37 humans, 2 dogs, and 1 genet, for an average of only 4.3 (range: 0-

6) GW cases or infections per year (Table 1). In the three years (2012-2014) before that, South Sudan reported 704 human cases, for an average of 234.7 cases per year.

Table 1. South Sudan Guinea Worm Eradication Program Number of GW Cases or infections, 2019 - 2024

Definitive Host	2019	2020	2021	2022	2023	2024 YTD*
Human	4	1	4	5	2	0
Dog	0	0	0	1	0	0
Cat	0	0	0	0	1**	0***
Total	4	1	4	6	3	0
Uncontained	2	0	3	2	3	0
Total GWs	11	1	4	11	3	1

* January - June, provisional
** Genet (Lafon County)
*** Serval cat (Tonj East County); un-emerged worm

During the past decade South Sudan has seen mostly sparse human cases appearing unexpectedly in areas without recent known endemicity, and without presumed sources of infection identified after careful epidemiological investigation and preliminary genetic analysis, except for a small common source outbreak in Awerial County in 2022. This pattern of sporadic, low-level GW infections from unknown sources suggests the usual mode of *D. medinensis* transmission to humans and rarely animals in South Sudan in recent years is probably by eating undercooked or raw infected aquatic animals rather than by drinking contaminated water. The exceptionally high detection of Spargana infections in South Sudan, which are also transmitted by eating undercooked aquatic animals, seems to support this hypothesis, even though only 24% of South Sudanese villages under active surveillance had access to safe drinking water in 2023.

The proportions of known GW cases/infections in different definitive hosts suggest humans may be sustaining GW transmission in South Sudan, unlike other remaining endemic countries, where infected domestic dogs appear to drive or have driven GW transmission in recent years. The small number of known human cases, however, suggests GW transmission in South Sudan is nearly interrupted and/or is being sustained by undetected infections in humans and/or animals. The two infected wild animals detected in 2023 and 2024 (un-emerged infection) were detected in South Sudan's two apparent "hot spot" counties remaining: Lafon, which reported GW in a human and a genet in 2022 and 2023, and Tonj East, which reported 3 humans and a dog in 2021, 2022, and 2023, either because surveillance was most intense in those two hot spot counties or because those two foci are Guinea worm's last stand in South Sudan. (Awerial, Rumbek North, and Uror Counties reported the only other cases (7) in 2021 and 2022.)

Under its Director Samuel Yibi MAKOY, the SSGWEP is strengthening Guinea worm surveillance in 2024 by engaging governmental authorities in wildlife conservation, animal resources, and fisheries; conducting frequent targeted and integrated case sweeps; sensitizing hunters, fishers, and cattle keepers; and tracking movements of populations at-risk. As reported in the previous issue, following a meeting of One-Health stakeholders in Juba on May 21, 2024, Director Makoy led a delegation of stakeholders to Tonj East on May 28-June 7 to help deliver cash rewards for the cases reported there in 2023 (Figure 2a). After the Chair of South Sudan's National Committee for Documentation of Dracunculiasis Eradication (NCDDE) Dr. Luka Tombekana Monoja chaired a follow up meeting on June 20th to review recommendations and resolutions from the May 21st meeting, Deputy NCDDE Chair Dr. Margaret Itto Leonardo led a delegation

of One-Health stakeholders to a cash reward ceremony in Lafon County on June 21-22 for the 2023 animal infection there (Figure 2b). South Sudan has more than doubled the cash rewards for reporting contained and uncontained human cases and for managing suspected animal infections to the equivalent of US$1,500, US$750, and US$375, respectively, in 2024. Awareness of the cash rewards in 2023 was estimated at 66% in Level 1 (endemic) surveillance areas, 21% in Level 2 (at-risk) areas, and 13% in Level 3 (low risk) areas. Reported rumors of human GW cases increased from 67,788 in 2022 to 150,192 in 2023, while rumors of animal GW infections increased from 1,111 to 10,045.

Figure 2. Cash reward ceremonies for 2023 reported cases and infections. (a) Tonj East conducted May 28 – June 7 for human cases and (b) Lafon County conducted June 21 – 22 for the 2023 animal infection.

ETHIOPIA FINDS A BABOON WITH UN-EMERGED WORMS

The Ethiopia Dracunculiasis Eradication Program (EDEP) has reported an olive baboon that had six un-emerged subcutaneous *D. medinensis* worms which were found when a hunter and his dogs killed the baboon near Melaku Farm (Yacob Farm) in Perbongo sub-district of Abobo district/Gambella Region on April 12, 2024. The hunter said he reported the animal to authorities when he saw the worms because he knew of the cash reward for reporting Guinea worms. The CDC laboratory confirmed the diagnosis. One hundred and forty-three other dead or sedated baboons, eleven other dead primates (1 ape, 6 monkeys, and 4 colobus monkeys) and ten other dead felines (4 leopards, 4 foxes, a serval, and a wild cat) that the EDEP examined in Gog or Abobo districts in January-May 2024 had no evidence of Guinea worm infection. Although it does not meet the case definition because the worms had not emerged, this is the first infected baboon found in Ethiopia since August 2022 (see *Guinea Worm Wrap-Up* #309). The peak season for Guinea worm transmission in Ethiopia is April-September.

The baboon research team was deployed to the area on April 13 and identified five baboon troops in Perbongo sub-district, two of which, with 26 (Lel Nyang troop) and 47 (Melaku Farm troop) baboons each, were in the home range of the dead baboon. None of those five troops were among the 15 troops being tracked already by the project, which will begin trapping and examining baboons from the Lel Nyang and Melaku Farm troops in July 2024. A response team focused on four villages and 45 non-village areas in Perbongo, Pukudi, and Mender 11/12 sub-districts to inform the communities about the infected baboon, conduct active case/infection search, and inspect and distribute cloth and pipe filters. The searchers contacted 1,419 persons in 262 households and inspected 572 dogs and 26 cats. The hunter who killed the baboon is also checking his 11 dogs and 4 cats, which are untethered. Working with the communities, a mapping team identified 29 new water sources and treated 14 of them with Abate in April and May 2024.

The EDEP believes that this baboon found with six un-emerged Guinea worms in April 2024 is probably linked epidemiologically to the wild serval found with three un-emerged subcutaneous Guinea worms about three miles (five kilometers) away in Perbongo sub-district in March 2023. The two animals were within the home ranges of each other (4-12 sq mi/12-32 sq km for the serval cat; 2.5-6 sq mi/4-10 sq km for the baboon), and the likely period of infection of the baboon (February-June 2023) includes the period when the serval's Guinea worms were mature or almost mature. The serval's un-emerged worms were not the source of the baboon's infection, but another undetected infected animal or person in that area at that time probably was the source. The EDEP only began Abate treatments of water sources in the implicated area of Perbongo sub-district in June 2023, after discovery of the infected serval, but some sources were not treated in July 2023 due to insecurity. Gog and adjacent Abobo have been the only districts with known endemic GW infections in Ethiopia for the past seven years.

On June 20, 2024, the World Health Organization (WHO) donated five motorbikes to help support GW surveillance and elimination activities in Ethiopia's Gambella Region. Accepting the donation, the Gambella Regional Health Bureau (RHB) head, Rout Gatwich, expressed gratitude for WHO's support and emphasized the need for continued and strengthened collaboration and support from all partners and stakeholders. On June 18-19, a team composed of representatives from the Ethiopia Public Health Institute (EPHI), Gambella RHB, and WHO visited three refugee camps (Tierkide, Nguelnyel, Kule) and Pagak entry point. Immediately afterward RHB head Rot Gatwich convened a meeting with all partners supporting refugee camp activities, including EPHI, Refugees and Returnees Service, United Nations High Commission for Refugees, *Medecins Sans Frontieres*, Doctors with Africa CUAMM, and WHO.

On June 22, Carter Center Senior Country Representative Dr. Zerihun Tadesse and his team held a productive meeting with His Excellency, Gambella Region President Mr. Ojulu Omod, and discussed staff safety and security, resolving delays in construction of Carter Center-assisted shallow wells in Guinea worm-endemic villages, and fuel shortage. The President, Mr. Omod, promised to provide all the necessary legal protection to all GW field staff to allow them to resume full-fledged program support without any life-threatening security issues.

On July 11, the EDEP organized the first virtual cross-border meeting with the South Sudan GWEP. The meeting participants included delegates of the ministries of health, EPHI, WHO, and Carter Center from both countries. The Carter Center-Ethiopia presented the GW epidemiological situation across the border areas of the two countries and provided an update on the Felata community movement from South Sudan to Ethiopia and vice-versa. The meeting concluded with the following action items: the first in-person cross-border meeting will be held in Ethiopia; chairpersons were selected from Ethiopia-MOH; co-chairpersons were selected from South Sudan-MOH, and secretary and co-secretary were selected from WHO and Carter Center-Ethiopia respectively. The meeting concluded by stating the need to prepare tailor-made guidelines for the Felata migratory group and to jointly plan and conduct a case sweep across the border areas (Pochalla) in September 2024.

CHAD-CAMEROON BORDER

The neighboring districts of Guere in Cameroon and Bongor in Chad (Figure 3) form a single epidemiologic focus of Guinea worm infections in animals and humans that has led to renewed GW occurring in Guere district in 2019-2024, despite Cameroon having been certified by WHO as Guinea worm free in 2007 after ten years of no indigenous cases. The previous issue (*Guinea Worm Wrap-Up* #310) included a Table showing the status of interventions in the 11 villages of Cameroon's Guere district that reported confirmed Guinea worm infections in animals in January-May 2024. The line list in Table 2 of this issue shows the

status of interventions in the 10 villages of Chad's Bongor district, which borders Cameroon's Guere district, that reported GW infections in January-May 2024. Only 44% of the 16 GW infections in Bongor district in January-May 2024 were contained (vs. 95% of 99 GW infections in Guere district in January-May), but like Guere district, all 10 affected villages in Bongor district have trained health workers, all received health education in January-May about preventing GWD, all have at least one source of safe drinking water, and Abate was applied in almost all eligible water sources. An average 86% (range: 68%-92%) of eligible animals were proactively tethered in the Bongor district villages and an average 88% (range: 72%-96%) of households practiced safe burial of fish guts. Cloth and pipe filters were distributed to few households, an average 12% (range: 0%-63%), since most had access to safe drinking water.

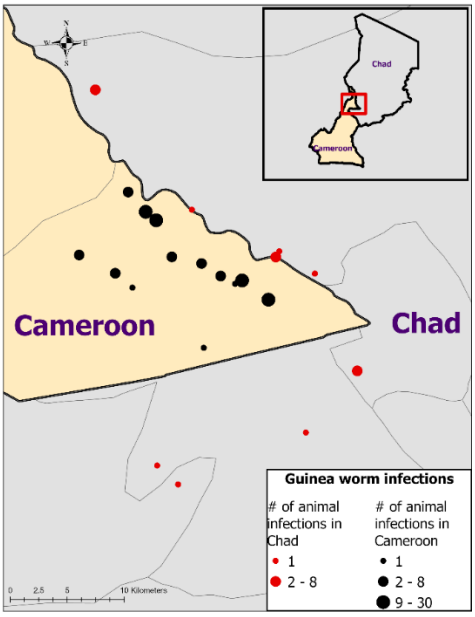

Figure 3. Infections along the Cameroon-Chad border between January – May 2024

Chad's Guinea Worm Eradication Program (CGWEP) continues to show significant reductions in overall animal infections this year: 144 infected animals (65% contained) and 1 human case in January-June 2024, vs. 220 infected animals (76% contained) and 2 human cases in January-June 2023--a reduction of 35%. In Bongor district, the reduction has been even more significant--46 infected animals (87% contained) in January-June 2023 versus 17 infected animals (44% contained) in January-June 2024; a reduction of 63%. N.B.: The GW case reported in Chad whose single worm emerged on May 30, 2024, is a 60-year-old woman, Sara Kara ethnicity, who resides in Goho village of Kyabe district in Moyen Chari Province. Her infection was not contained. *The most likely source of her infection may have been an infected dog in the same village in 2023.* There is no source of safe water in the village. The patient says she filters her drinking water from the local Goho River. She eats dried or fresh fish almost daily, smoked or grilled.

In Cameroon, where Guere district is the only affected area, the number of reported GW infections soared to 258 animal infections in 2023 and 99 confirmed infections plus 125 provisional infections pending laboratory analysis in January-May 2024. The reported high containment rate and coverages with Abate and proactive tethering in 2024, if accurate, should greatly reduce GW infections in Guere district in 2025. Meanwhile, Chad is planning to host a ministerial-level meeting of Chad, Cameroon, and Central African Republic to discuss cross-border issues on September 16, 2024, supported by WHO and The Carter Center.

Table 2. Status of interventions within the Bongor health district in Chad for January- May 2024

Villages	**# infection YTD**	**% infection contained**	**Trained health worker? (Y/N)**	**# months received GW health ed?**	**% eligible water sources treated (Jan-May)**	**% eligible animals tethered (Jan-May)**	**% HH with cloth & pipe filters**	**% HH practicing safe burial of fish guts**	**1+ safe drinking source? (Y/N)**	**Estimate % GW cash reward awareness**
Petit Tougoudé	4	25%	Y	5	70%	91%	0%	72%	Y	100%
Moussa	2	0%	Y	5	100%	89%	6%	88%	Y	100%
Daba zero	2	50%	Y	5	100%	88%	0%	92%	Y	100%
Daba	2	100%	Y	5	100%	77%	17%	85%	Y	100%
Djarwaye	1	0%	Y	5	100%	92%	16%	92%	Y	100%
Nahaina	1	100%	Y	5	100%	86%	0%	89%	Y	100%
Abena	1	100%	Y	5	100%	87%	5%	90%	Y	100%
Ham Paudy	1	100%	Y	5	100%	68%	5%	88%	Y	100%
Grand-Tougoudé	1	0%	Y	5	100%	89%	63%	89%	Y	100%
Tena-boyna	1	0%	Y	5	100%	89%	10%	96%	Y	100%

GUINEA WORM WARRIOR DR. YOUSSOUF ALI HAGGAR, DEPUTY NPC OF CHAD

We profoundly regret to report the untimely demise of Dr. Youssouf Ali Haggar (1975-2024), Deputy National Coordinator of Chad's Guinea Worm Eradication Program, who died in a vehicle accident on July 5, 2024, while on an official GWEP mission to Salamat Province. One of Dr. Haggar's recent contributions to the program was highlighted in the previous *Guinea Worm Wrap-Up*, which reported his representation of the national program at the separate Guinea Worm Eradication Declarations of four endemic provinces, including Salamat, in April and May 2024. We extend our condolences to his family and colleagues.

MALI

Mali began proactive tethering of animals in Macina and Markala districts in June/July 2024 for seven months. Since there is very little or no GW transmission in Mali during the other five months of the year, villagers agreed to proactively tether their dogs during the transmission season but continue using the dogs for guarding and hunting in the other months. The GWEP surveyed fish guts management practices in three Level 1 districts in May and found proper management in 95% (53/56) of households surveyed in Macina district, 71% (25/35) in Tominian district, and 91% (93/102) of households surveyed in San district. In Macina district, which reported 32 of Mali's 48 GW infections/case in 2023, the program assists with disposal of fish guts in Ke-Bozo, Kolongo Bozo, Kayo Bozo, and Lelegre villages, as well as Barakabougou in Markala district, and Djenne where collectively 194 of 198 fish disposal devices in markets, other public places and sites identified by the communities were functional. Ke-Bozo village, which reported 6 of Mali's 46 animal GW infections in 2023, was not accessible because of insecurity in May 2024.

Cash reward surveys conducted in Level 1 districts (Macina, Tominian, San, Mopti, Djenne) in May found 95% awareness among 5,836 persons surveyed, and 100% awareness among 268 persons surveyed in two Level 2 (Tenenkou, Yowarou) districts. The National Program Coordinator of Mali's GWEP Dr. Cheick Oumar Coulibaly, Carter Center Senior Resident Advisor Mr. Sadi Moussa, and a veterinary officer made a supervisory visit to Macina, Markala and San districts on July 11-19. The national supervisory team was not able to visit Ke-Bozo, Kolongo village and hamlet, and Gueada villages because of insecurity (trained local health workers report GW infections and provide some interventions).

Mali reported 8 animal GW infections in January-June 2023 vs. 0 confirmed infections so far in January-June 2024. *Needed: 6-months (July-December) of peace in 6 districts (Macina, Markala, Djenne, Tominian, San, Mopti) [6MP6D].*

ANGOLA: MORE HELP HAS ARRIVED

WHO has increased its assistance to Angola's GW program since 2015 leading to the detection of the first human case in 2018, while The Carter Center provided limited technical assistance with training, supplies, and supportive visits, pending approvals to open an office in the country. On July 15-17, 2024, representatives from the WHO mission in Angola conducted a mission to Cunene Province, where Angola has reported GW infections, mostly in dogs. The WHO representatives met with provincial government officials and health authorities in Ondjiva, Cuanhama municipality, followed by field work in Namacunde municipality to verify Abate treatment of surface water sources in Oluxwa ya Kalunga village. Members of the mission also met with traditional authorities and conducted a dialogue with the endemic community.

Angola reported 87 GW infections in 2023 and 2 confirmed infections so far in 2024, with specimens from 35 other suspected animal infections in 2024 pending laboratory analysis. Even if all the pending suspected infections are confirmed, Angola will have reduced reported GW infections by 58% from 87 in 2023 to 37 in 2024 so far. Angola's peak transmission season is typically January-May.

After many hurdles and delays, The Carter Center was officially registered to operate as a Non-Governmental Organization in Angola late in 2023. Following appropriate visa approvals, Carter Center GWEP Associate Director Giovanna Steel, MPH, arrived in Luanda as the Center's Acting Country Representative on July 16, 2024, accompanied by Sarah Yerian, MPH, Senior Associate Director of the Center's GWEP. They are setting up the Carter Center office and will assist Angola's GWEP until the Center's first Country Representative, Ms. Lucia Verzotti, arrives. Ms. Verzotti holds Masters' Degrees in Global Health (University of Milan) and in International Relations (Universita Ca'Foscari, Venice). She previously led Italian medical missionary work for over three years in Angola, and also has experience in Guinea-Bissau and Niger.

Table 3

Number of Laboratory-Confirmed Human Cases of Guinea Worm Disease, and Number Reported Contained by Month during 2024*

(Countries arranged in descending order of cases in 2023)

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	0 / 0	0 / 1	0 / 0							0 / 1	0%
SOUTH SUDAN	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0							0 / 0	N / A
CENTRAL AFRICAN REPUBLIC	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0							0 / 0	N / A
CAMEROON	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	N / A
TOTAL*	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0							0 / 0	N / A
% CONTAINED	N / A	N / A	N / A	N / A	0%	N / A							0%	

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 Human Cases of Guinea Worm Disease, and Number Reported Contained by Month during 2023

(Countries arranged in descending order of cases in 2022)

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	0 / 0	1 / 1	1 / 1	1 / 3	1 / 1	1 / 2	1 / 1	0 / 0	0 / 0	6 / 9	67 %
SOUTH SUDAN	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 1	0 / 1	0 / 0	0 / 0	0 / 0	0 / 2	0 %
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
CENTRAL AFRICAN REPUBLIC	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 1	0 / 0	0 / 0	0 / 1	0 %
MALI	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 1	0 / 0	0 / 0	0 / 0	0 / 0	0 / 1	0 %
CAMEROON	0 / 0	0 / 0	0 / 0	0 / 0	1 / 1	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	1 / 1	100 %
TOTAL	0 / 0	0 / 0	0 / 0	0 / 0	2 / 2	1 / 1	1 / 3	1 / 3	1 / 3	1 / 2	0 / 0	0 / 0	7 / 14	50 %
% CONTAINED	N / A	N / A	N / A	N / A	100%	100%	33%	33%	33%	50%	N / A	N / A	50%	

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

Delea MG, Sack A, Eneanya OA, et. al., 2024. Slaying the serpent: a research agenda to expand intervention development and accelerate Guinea worm eradication efforts. Am J Trop Med Hyg (pre-publication proof). https://doi.org/10.4269/ajtmh.23-0889

Delea MG, Browne L, Kaji S, Weiss AJ, Tchindebet O, 2024. Factors influencing community engagement during Guinea worm and polio eradication endgames in Chad: recommendations for "Last Mile" programming. Am J Trop Med Hyg (pre-publication proof). https://doi.org/10.4269/ajtmh.23-0635

DeWeerdt S, 2024. Even with no drug or vaccine, eradication of Guinea worm is in sight. Nature https://doi.org/10.1038/d41586-024-02306-8

Eneanya OA, Delea MG, Cano J, et. al., 2024. Predicting the environmental suitability and identifying climate and sociodemographic correlates of Guinea worm (*Dracunculus medinensis)* in Chad. Am J Trop Med Hyg (pre-publication proof). https://doi.org/10.4269/ajtmh.23-0681

Are the right people receiving the Guinea Worm Wrap-Up?

We remind leaders of National Guinea Worm Eradication Programs to make sure all appropriate persons are receiving the Guinea Worm Wrap-Up directly, by email. With frequent turnover of government officials, representatives of partner organizations, and recruitment of new Guinea worm program staff, keeping desired recipients up to date is challenging. Frequent review of who is receiving the newsletter directly is advised. To add an addressee, please send their name, title, email address, and preferred language (English, French, or Portuguese) to Dr. Sharon Roy at CDC (gwwrapup@cdc.gov).

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. Formatted by Mindze Nkanga.

WHO Collaborating Center for Dracunculiasis Eradication, Center for Global Health, Centers for Disease Control and Prevention, Mailstop H21-10, 1600 Clifton Road NE, Atlanta, GA 30333, 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