Memorandum

Date: March 28, 2025

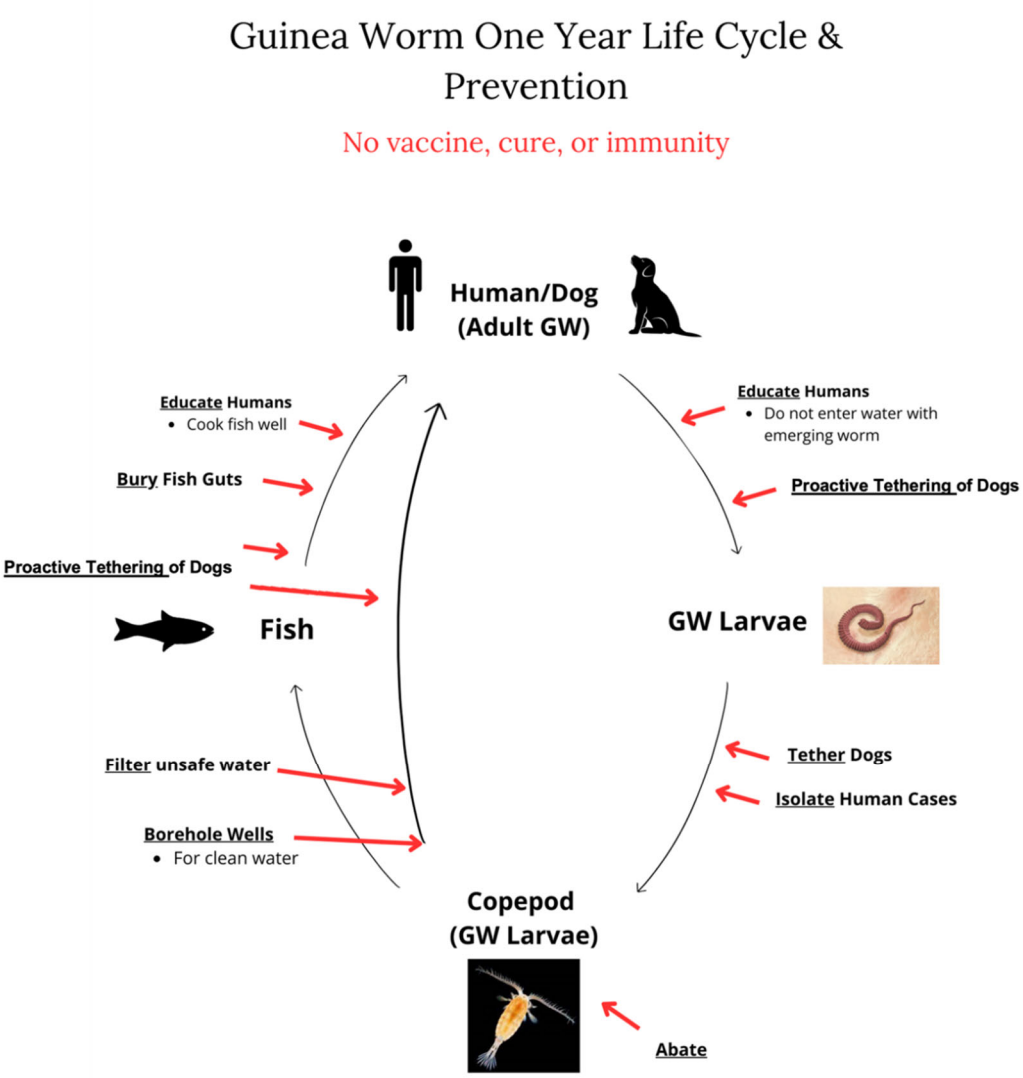
From: Guinea Worm Eradication Program, The Carter Center

Subject: GUINEA WORM WRAP-UP #318

To: Addressees

Surveillance	**Containment**	**Investigation**	**Interventions**	**Political Support**
(Detect cases fast)	(Prevent contamination)	(Link cases)	(Prevent infection)	Minister visits
Active searches	Isolate cases	Source?	Abate, filters, safe water	Traditional leaders
Reward awareness	Tether infected dogs, cats	Contamination?	Proactive tethering	Safe water advocacy
Rumors	Health education	Infection mode?	Bury fish waste	Cease-fire advocacy

Figure 1



MAXIMIZING PROACTIVE TETHERING'S IMPACT

Infections in animals are now the major challenge to stopping Guinea worm transmission as well as the likely source of the few remaining human cases. Proactive tethering of domestic dogs and cats, combined with Abate treatments, is the most important tool to prevent animal infections (Figure 1). And like the interventions used to eliminate human cases before now, effective proactive tethering of dogs and cats ultimately also depends on human behavior.

Proactively tethering dogs in GW-endemic areas prevents them from free roaming and being exposed to potentially contaminated water, fish, other aquatic animals, and associated fish waste, and prevents dogs with emerging worms from contaminating water. Ethiopia pioneered proactive tethering in 2018 with highly effective results in subsequent years, followed by Chad in 2020, Mali and Cameroon in 2021, and Angola in 2023. Ethiopia has applied this intervention most stringently, reportedly tethering 99.3% of 1,536 eligible dogs in June 2024, for example, with only a few animals released temporarily because of loose collars. Chad expanded proactive tethering from 135 villages with 5 or more infected dogs in 2020, to 3+ villages in January 2021, and 1+ villages in May 2022, reaching 727 villages with 1 or more dog infections in 2024. Mali achieved incomplete application of this intervention in 2024, reaching 5 of 11 villages with GW infections. This shortfall in Mali was due to insecurity in the endemic area and because of owners releasing dogs at night or to accompany them while hunting or farming. Comparing the impact of proactive tethering in their first two years, Ethiopia reduced its infected dogs by 73% from 11 in 2018 to 3 in 2020; Chad reduced infected dogs by 65% from 1,508 in 2020 to 521 in 2022; while Mali's dog infections *increased* by 156% from 16 in 2021 to 41 in 2023, although the increase in Mali could be partly attributed to better surveillance. Sustaining interventions is more difficult than improving surveillance in insecure conditions.

With many more affected dogs and year-round transmission, similar riverine ecology, and similar problems as Mali with owners sporadically releasing dogs from proactive tethering, Chad still reduced its dog infections by 84% in the four years since 2020. But Chad must reduce animal GW infections even faster to reach zero by 2027.

After analyzing various proactive tethering scenarios related to selection of dogs and timing of proactive tethering in Chad, a simulation model developed by researchers at the Georgia Institute of Technology, North Carolina State University, and The Carter Center predicts that *proactive tethering of dogs day and night, throughout Chad's peak transmission season, would be the most effective use of that strategy*, in combination with targeted Abate application[1]. Although Guinea worm is transmitted year-round in Chad, almost 80% of Chad's infections occur during April-September. In other remaining endemic countries, GW transmission typically occurs during a six-month-long season or less, e.g., from July to December in Mali. Programs should conduct training, distribute supplies, engage and prepare endemic communities for the transmission season during the period when transmission is absent or minimal, especially in countries such as Angola where transmission is known to occur in the rainy season when the endemic areas are most difficult to reach. *Programs should help members of participating communities understand how non-compliance with proactive tethering even for brief periods increases the risk to everyone*, because released dogs may get infected by scavenging contaminated fish and fish guts, and a released dog with uncontained

[1] Smalley H, Keskinocak P, Swann J, Delea M, Eneanya O, Weiss A, 2025. Proactive tethering to prevent Guinea worm infections among dogs in Chad: an analysis of the impacts of timing and dog selection. Am J Top Med Hyg, 112:xxx-xxx. (In press)

GW infection can contaminate water, and fish. Either failure can upset everybody's sacrifices and prolong GW transmission in the community.

MALI CONVENES ANNUAL PROGRAM REVIEW

His Excellency Minister of Health and Social Development Col. Assa Badiallo Toure opened and closed Mali Guinea Worm Eradication Program (MGWEP)'s annual Review at the Azalai Hotel Salam in Bamako on February 20-21, 2025. In addition to National Program Coordinator Dr. Cheick O. Coulibaly, the opening ceremony included member of National Transition Council Honorable Bilaly Keita, N'Tji Idriss Doumbia of the *Caisse Nationale d'Assurance Maladie*, three former national program coordinators of Mali's GWEP, a representative of the national veterinary service, representatives of the regional directors of veterinary services of Segou and Mopti Regions, Peace Through Health Project Coordinator Boukary Sangare, World Health Organization (WHO) Country Representative Dr. Patrick Kabore, WHO Team Lead for Eradication and Elimination of NTDs Dr. Dieudonné Sankara, UNICEF Delegate Diawara Madani, Carter Center Senior Country Representative Sadi Moussa, Carter Center GWEP Program Associate Mindze Nkanga, and others. After requesting a moment of silence in memory of President Carter, the Minister of Health urged the two regional health directors of endemic Segou and Mopti Regions and the Chief medical officers of endemic health districts, to redouble their efforts to interrupt Guinea worm transmission. The Carter Center representative highlighted the MGWEP's progress in 2024 and expressed gratitude from the Carter family for the messages of condolences and tributes to President Carter by the people of Mali. The WHO Country Representative acknowledged the progress made so far but emphasized the critical need for relentless efforts and innovative strategies to eradicate Guinea worm from Mali by 2027, to meet the 2030 goal. WHO GW Focal Point Mali Dr. Tako Ballo presented the global epidemiological situation of Guinea worm disease.

Mali has provisionally reported 28 confirmed GW infections in animals (22 dogs, 6 cats), of which 54% (15/28) were contained. This is a reduction of 40% in confirmed animal infections from the 47 animal infections reported in 2023. Mali reported no human GW cases in 2024 and only reported 4 human cases in the past nine years (2016-2024). Over one-half (15/29) of Mali's animal infections in 2024 occurred in Macina district of Segou Region, with 8 infections in Djenne district/Mopti Region, 5 in Markala/Segou, and 1 in Tominian/Segou. Mali also reported a confirmed *un-emerged* GW infection in a jackal that was killed by a hunter near Soumouni village in Macina district on July 1, 2024. Rumors of animal GW infections increased from 426 in 2022 to 802 in 2023 and 1,150 in 2024, while rumors of human GW cases decreased from 461 to 255 and 241 in the same period. Awareness of the cash reward for reporting a GW case or infection is about 95% in active surveillance areas. Ninety-three percent of villages under active surveillance have at least one source of safe drinking water, including 100% of villages with known GW infections in 2024.

Security is not good in many endemic areas, especially parts of Macina district. The Peace Through Health Project is operating in parts of Macina, Tominian, Tenenkou, and Youwarou districts, but not in Djenne and Markala districts. Mali's GWEP achieved incomplete coverage with proactive tethering of dogs and cats in 2024, reaching only 5 of 11 known villages with GW infections, mainly because of insecurity (see article on Maximizing Proactive Tethering's Impact in this issue). Exceptionally heavy rains were another challenge for the program in 2024, as well as some villagers discarding small fish in the streets.

ETHIOPIA CONVENES ITS 29th PROGRAM REVIEW

Ethiopia's Dracunculiasis Eradication Program (EDEP) convened its 29th Annual Review Meeting at the Gambella Regional State Council Hall in Gambella Town on February 27-28, 2025. State Minister of Health Dr. Dereje Dueguma opened the meeting and delivered the keynote address. The Vice President of Gambella Regional State Dr. Gatluak Roun; the Director-General of the Ethiopia Public Health Institute (EPHI), Dr. Mesay Hailu; the Deputy Director General of the EPHI Dr. Melkamu Abte; the Country Representative of the World Health Organization (WHO)-Ethiopia, Dr. Kaluwa O. Laws; and Carter Center GWEP Sr. Associate Director Sarah Yerian MPH, also spoke at the Opening Ceremony. WHO Team Leader Eradication and Elimination of NTDs Dr. Dieudonné Sankara also participated in the review, as well as the head of Gambella Regional Health Bureau Dr. Abel Assefa; the Deputy Director General of the EPHI, Dr. Getachew Tollera; The Carter Center's GWEP Program Manager Aragaw Lemesgin, Associate Director Giovanna Steel MA, and Country Representative for Angola Lucia Verzotti. Ethiopian presenters expressed condolences regarding the passing of former U.S. President Jimmy Carter.

The National Program Coordinator of the EDEP, Ato Kassahun Demissie, summarized the performance and accomplishments of the program in 2024, and way forward in 2025. The EDEP reported zero human GW cases and zero domestic dog and cat infections in 2024. It reported a confirmed GW infection in a baboon in Gog district in July and a baboon with a confirmed un-emerged GW from Abobo district in April. The EDEP surveyed 612,247 persons during integrated surveys with mass drug administration, insecticide treated net distributions, and polio immunization campaigns. Surveys estimated awareness levels of the cash reward for reporting human GW cases at 99% of 1,558 persons surveyed in Level 1 villages, 88% of 3,200 persons in Level 2 villages, 50% of 2,779 persons in Level 3 villages, and 91% of 2,610 persons surveyed in refugee camps. The EDEP tethered 1,343 dogs and 175 cats and investigated 31,326 rumors of Guinea worm in humans and animals in 2024. The program inspected a total of 617 baboons for GW signs in 2024, with 300 trapped by the research project (59 of which were ineligible for sedation because of age, lactation, gestation, etc.) and 317 by community-based surveillance. Remaining challenges include limited access to safe drinking water in endemic areas; GW infections in wild animals, especially baboons; artificially created big ponds; and cross-border movement of Falata, nomadic/semi-nomadic people living in Sudan, South Sudan, and parts of Ethiopia.

IN BRIEF

Angola has provisionally reported 19 animal GW infections and 0 human GW cases in January-February 2025, vs. 20 animal infections and 0 human cases in January-February 2024; a 5% reduction.

Cameroon has provisionally reported 31 animal GW infections and 0 human GW cases in January-February 2025, vs. 62 animal infections and 0 human cases in January-February 2024; a 50% reduction.

Chad has provisionally reported 6 animal GW infections and 1 confirmed human GW case in January-February 2025, vs. 26 animal infections and 0 human cases in January-February 2024; a 77% reduction in animal GW infections. The human case is a 37-year-old Bodor man, a fisherman-farmer from Missere village in Lai district/Tandjile Province, whose uncontained worm emerged on January 6, 2025. His infection may have come from drinking contaminated water or eating poorly grilled fish from an uncertain location. Missere has a safe source of drinking water.

Ethiopia has provisionally reported no GW in humans or animals in January-February 2025; no change from the same period in 2024.

Mali has provisionally reported no GW in humans or animals in January-February 2025; no change from the same period in 2024.

South Sudan has provisionally reported no GW in humans or animals in January-February 2025; no change from the same period in 2024.

WORLD HEALTH ASSEMBLY TO CONSIDER GW RESOLUTION

On February 10, 2025, the Executive Board of the World Health Organization approved a draft resolution on Guinea worm eradication for consideration by the Seventy-eighth World Health Assembly in May 2025. The draft resolution, entitled "Accelerating the eradication of dracunculiasis (Guinea worm disease)", was submitted by the Government of Chad and co-sponsored by Angola, Cameroon, China, Mali, Russia, and South Sudan. Brazil and Ethiopia made supportive remarks during the Executive Board meeting. The draft resolution calls on all member states to support endemic countries to accelerate efforts towards eradication.

https://apps.who.int/gb/ebwha/pdf_files/EB156/B156_(23)-en.pdf

Table 1

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 / 3	1 / 1	1 / 1	1 / 1	1 / 1	0 / 0	4 / 8	50%
SOUTH SUDAN	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 2	0 / 3	0 / 0	0 / 1	0 / 0	0 / 0	0 / 0	0 / 6	0%
CENTRAL AFRICAN REPUBLIC	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
CAMEROON	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 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	N / A
TOTAL*	0 / 0	0 / 0	0 / 0	0 / 0	0 / 1	0 / 2	0 / 6	1 / 1	1 / 2	1 / 1	1 / 1	0 / 0	4 / 14	29%
% CONTAINED	N / A	N / A	N / A	N / A	0%	0%	0%	100%	50%	100%	100%	N/A	29%	

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 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.

MEETINGS

28th International Review Meeting of GWEP Program Managers, N'Djamena, Chad – April 8-9, 2025

Ministerial Meeting on Guinea Worm Eradication; World Health Assembly, Geneva – May 21, 2025

ERROR: The complete footnote for Figure 2 in the previous issue (*Guinea Worm Wrap-Up* #317) is: Infected humans & animals; contained & uncontained; emerged & un-emerged. See note on significance of emerged and un-emerged Guinea worms in issue #315.

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 Adam Weiss at The Carter Center (adam.weiss@cartercenter.org)

Note to contributors: Submit your contributions via email 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, and Dr. Dieudonné Sankara of WHO. Formatted by Diana Yu.

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.

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