

Memorandum

**Date:** May 20, 2024**From:** WHO Collaborating Center for Dracunculiasis Eradication, CDC**Subject:** GUINEA WORM WRAP-UP #309**To:** Addressees

Are you working to make things happen, or waiting to see what happens?

GUINEA WORM STATUS

January-April 2024 (provisional) vs. January-April 2023

No known human GW cases in January-April 2024 or January-April 2023.

Confirmed animal GW infections,	January-April 2024	vs.	January-April 2023:
Chad	68 (65% contained)	vs.	99 (75% contained)
Cameroon	101 (97% contained)**	vs.	180 (87% contained)
Angola	ND	vs.	65 (0% contained)
South Sudan	0*	vs.	0
Ethiopia	0	vs.	0
Mali	0	vs.	0

ND = no data

*Un-emerged Guinea worm

**An additional 120 provisional animal infections have been reported

Why do dogs *get* Guinea worm?

- Humans let dogs roam freely and forage.
- Humans take dogs to collective fishing and hunting.
- Humans give dogs raw fish, raw fish guts, or unsafe water.

Why do infected dogs *spread* Guinea worm?

- Humans don't detect infected dogs in time.
- Humans don't tether dogs at risk proactively.
- Humans don't contain infected dogs.

PEACE THROUGH HEALTH INITIATIVE IN MALI



Since 2012, much of central Mali has been plagued by violence, which has hampered the final stage of Mali's Guinea Worm Eradication Program (GWEP). A Peace Through Health Initiative (PTHI) began in Tenenkou district of Mali's Mopti Region in September 2020 and expanded to Macina and Tominian districts (see respective health areas below) of Segou Region, and Youwarou district (Youwarou, Sah, Dogo, Farimake, Deboye health areas) of Mopti Region in July 2022 (Figure 1). Supported by Malian national, regional, and local political leaders and health authorities and assisted by The Carter Center, the initiative used conflict resolution training, facilitated community meetings, and human and animal health interventions to negotiate "periods of tranquility" and secure public health goals¹. Community members and other stakeholders in the PTHI co-created "health packages" of mutual interest to be jointly implemented with the government and NGO partners as incentives for maintaining peace. The health packages emphasized women's public health needs, such as maternity clinics, emergency transport during labor, and water, as well as veterinary and other development-related activities. Health packages began in Youwarou district in April 2024; they have not yet started in Macina and Tominian districts. Table 1 below summarizes the state of these developments.

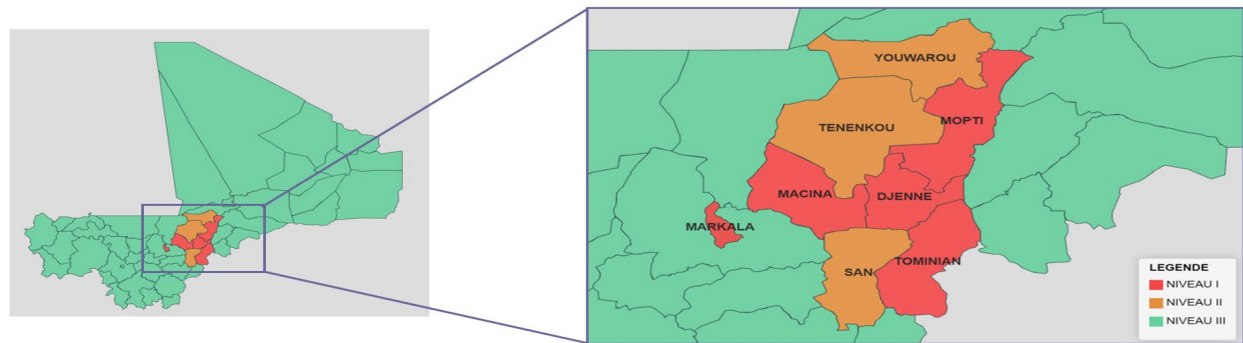


Figure 1. Map of Mali districts under surveillance by level in 2023. Level I = endemic, Level II = at risk, Level III = minimal risk (passive surveillance).

Table 1. **Recent Guinea worm infections & cases, insecurity, and PTHI status in Mali**

District	GW 2020	GW 2021	GW 2022	GW 2023	Insecurity?	PTHI ¹
Macina	4	6	27	32	Yes	2022 ²
Markala	1	3	2	9	Yes	-
Djenne	3	7	7	3	Yes	-
Tominian	1	3	4	2	Yes	2023 ³
4 district total	9	19	40	46/		
Mali total	10	19	41	48		

¹Peace Through Health Initiative

²Macina, Kolongo, Kokry health areas.

³Ouan, Fangasso, Benena health areas.

- Significant insecurity limits GWEP access to some parts of Macina, Markala, Djenne, and Tominian districts.

¹ Sanders AM, et.al., 2024. Advancing health security and disease eradication through peace and health: a Mali case study. *Health Security* 22(2):1-8. <https://doi.org/10.1089/hs.2023.0091>

- Some GW surveillance in these districts is possible by GWEP-trained local health workers and village volunteers, but genomic analysis and other metrics show that Mali is missing uncontained GW infections. *(Those are probably dog infections, in areas with limited access.)*
- The GWEP began proactive tethering in Macina and Djenné in November 2021 and expanded it in 2022. Mali reported only 4 human cases in 2020-2023, but its reported number of animal infections, mostly dogs, increased from 8 to 17 to 41 to 47 in the same four years, as proactive tethering improved surveillance in accessible areas.
- *Lacking or limited in key districts because of insecurity: adequate GW surveillance, proactive tethering of domestic animals at risk, adequate Abate use, and safe fish gut management.*

ETHIOPIA PROGRESS TOWARDS GW ERADICATION



1. Known GW infections, uncontained infections, and total GWs are declining.

<u>Infections</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>
Humans	0	11	1	1	0
Dogs	2	3	2	1	1
Baboons	6	4	0	2	0
Cats	0	8	1	0	0*
TOTAL	8	26	4	4	2
UNCONT'D	6	4	1	2	0
TOTAL GWs	65	128	4	11	4

*Wild serval cat; 3 un-emerged GWs.

2. The affected area has shrunk.

South Omo/SNNPR eliminated GW in 2001. Originally affecting six districts in Gambella Region, the remaining known endemic area of Gambella is now limited to parts of Gog and Abobo districts.

3. Surveillance for GW in humans and animals is high.

The EDEP has 199 villages and 229 non-village areas under active surveillance in Gog and Abobo districts. It conducted integrated surveys that queried 126,000 people in 2022 and 189,000 people in 2023.

The EDEP community-based wild animal surveillance system examined 253 deceased or trapped/killed baboons in 2022, including 83 baboons in June-August peak months, which found 2 GW-infected baboons killed by villagers (August). In 2023, 385 killed or trapped baboons, including 164 killed in June-August, yielded zero GW-infected baboons. The baboon study project increased from monitoring 6 troops in 2021, to 10 troops in 2023, to 15 troops in 2024. No infected baboons were found among 26 baboons deceased in January-February 2024 or 68 baboons trapped and examined in March 2024; the next baboon trapping session is scheduled for June-July 2024.

Reporting rate for the 21,620 IDSR units (Infectious Disease Surveillance and Reporting units; passive surveillance) was 88% in 2022, 83% in 2023.

Cash reward awareness for reporting human (US\$196) and animal (US\$10) GW infections was 96% in 2022 (active surveillance areas), 98% in areas under active surveillance in Gog and Abobo districts in 2023, and 59% in Level 3 (non-endemic, non-at-risk) areas spot-checked in 2023.

The EDEP responded to 37,988 rumors of GW in humans or animals in 2022, 35,273 rumors in 2023.

4. The EDEP applied intensive proactive tethering and Abate pressure in 2020-2023.

Proactively tethered 2391, 1981, 1860, 1720 eligible domestic dogs and cats in Gog, Abobo districts in 2020-2023; (100% of 1,720 eligible dogs and cats in 2023).

Applied 9992, 9387, 9366, and 9722 Abate treatments in Gog and Abobo districts in 2020-2023 and monitored impact in eligible surface water sources associated with recent Guinea worm infections in humans and/or animals.

5. Three cautions:

- Genomic evidence suggests the EDEP missed some GW infections in 2021; epidemiologic investigations identified no presumed source(s) of the two known infections in 2023.
- Potential extent of baboon infections.
- Risks of unsafe drinking water for workers at commercial farms

Water, fish, and other aquatic animals contaminated with GW by dogs can infect *people*, as well as other dogs.

SUDAN: CERTIFICATION PREPARATIONS CONTINUE DESPITE INSECURITY



In 2023, Sudan's National Neglected Tropical Diseases Program continued with preparations for certification of Guinea worm eradication in accessible areas, despite the on-going conflict in the country since April 2023. Sudan reported and investigated 269 rumors but detected no human case of Guinea worm disease in 2023 and has never reported an animal with GW infection. The most recent human Guinea worm cases in Sudan occurred in Kafia Kingi village of South Darfur State in 2013. The World Health Organization provided supportive missions to assist the Ministry of Health's certification preparations in recent years, but the International Commission for the Certification of Dracunculiasis Eradication cancelled a planned visit by an International Certification Team in 2023, because of the insecurity.

Most of Sudan's certification preparations in 2023 were conducted in White Nile, Blue Nile, and Sennar States, including an intensive Microplanning and Training of Trainers workshop, training 39 staff from the veterinary department of the Ministry of Agriculture and Animal Resources on Guinea worm surveillance in animals, and distributing IEC (information, education, communication) materials. Information about the cash reward for reporting a confirmed case was also publicized on 42 billboards. Other activities included:

White Nile State. Active case searches in communities and 10 refugee camps reached 220 health facilities, 29,633 households, and 166,452 persons. The program oriented 113 community-based volunteers among internally displaced persons and 55,023 persons in house-to-house campaigns to raise awareness about the disease. Twenty-one billboards were displayed at crossing points and points of entry to refugee camps.

Blue Nile State. Active case searches in 24 formerly endemic villages examined 63,764 persons. Staff were oriented and provided surveillance materials and reward posters at all 156 health facilities. A house-to-house awareness raising campaign using GW identification cards and reward posters oriented 1,474 persons. Seven billboards were displayed here.

Sennar State. A house-to-house awareness raising campaign in formerly endemic areas used GW identification cards and reward posters to orient 55,023 persons. The program also oriented health care workers and distributed surveillance materials and reward posters to 340 of the 393 health facilities. Fourteen billboards were displayed at crossing points and points of entry to refugee camps.

South Darfur State trained Guinea worm community health workers continue to conduct surveillance for GW. Security concerns prevented implementation of other activities.

South Kordofan State. The Sudan GWEP coordinates closely with health authorities in the Nuba Mountains and Khor Yaboos areas in collaboration with the South Sudan GWEP and with WHO support to train trainers of health staff on GW surveillance. During May – June 2024 the program plans to conduct active searches for GW in people and animals and distribute reporting forms, health education materials, billboards, and posters about the ash reward for reporting GW, as well as supervise and assess GW activities in all counties in the Nuba Mountains and Khor Yaboos areas.

Don't let dogs eat raw fish or fish guts!

Keep infected dogs out of the water!

IN BRIEF

Central African Republic. The GWEP is working with the Wildlife Conservation Society, the Ministry of Health/CDC Field Epidemiologist Training Program, and the MOH's Human African Trypanosomiasis program in the C.A.R. to reinforce and expand surveillance and awareness of Guinea worm disease.

Mali. Mali promotes proactive tethering of domestic dogs and cats from June to January, when nearly all its GW cases and infections are reported. In some endemic areas of Macina district (Segou Region), which reported 67% of Mali's GW infections in 2023, surveys on management of fish guts in February 2024 found proper management of fish guts (using on-site disposal receptacles) in 96% of 293 households and 92% of 13 fish sellers visited.

South Sudan has two apparent hotspots: **Tonj East County** of Warrap State (2 human cases in 2023; an infected dog in 2022; a human case in 2021; and a human case in 2020) and **Lafon County** of Eastern Equatoria State (1 infected genet in 2023; 1 human case in 2022). CDC has processed 5 specimens from genets and 1 from a serval in South Sudan in January-April 2024: 1 un-emerged worm (April 5, 2024) from a serval cat in Piok Manjar forest in Makuac payam of Tonj East County was *D. medinensis*; 3 specimens from Lafon County were Spargana; 2 specimens from Urur County in Upper Nile State were animal tissue. All 5 worms from genets, which prey on chickens and chicken eggs, were found subcutaneously after they were killed by villagers. The serval with the un-emerged GW does not meet the official case definition because the worm did not emerge, but the SSGWEP is responding as if it did.

Table 2 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 / 0	N / A
SOUTH SUDAN	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	N / A
CAMEROON	0 / 0	0 / 0	0 / 0	0 / 0									0 / 0	N / A
MALI	0 / 0	0 / 0	0 / 0	0 / 0									0 / 0	N / A
TOTAL*	0 / 0	0 / 0	0 / 0	0 / 0									0 / 0	N / A
% CONTAINED	N / A	N / A	N / A	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.													
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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.													
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RECENT PUBLICATIONS

Smalley H, Keskinocak P, Swann J, Hanna C, Weiss A, 2024. Potential impact of a diagnostic test for detecting prepatent Guinea worm infections in dogs. *Am J Trop Med Hyg* 110(5):953-960. <https://doi.org/10.4269/ajtmh.23-0534>

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. Translation support by Valerie Mendes.

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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



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