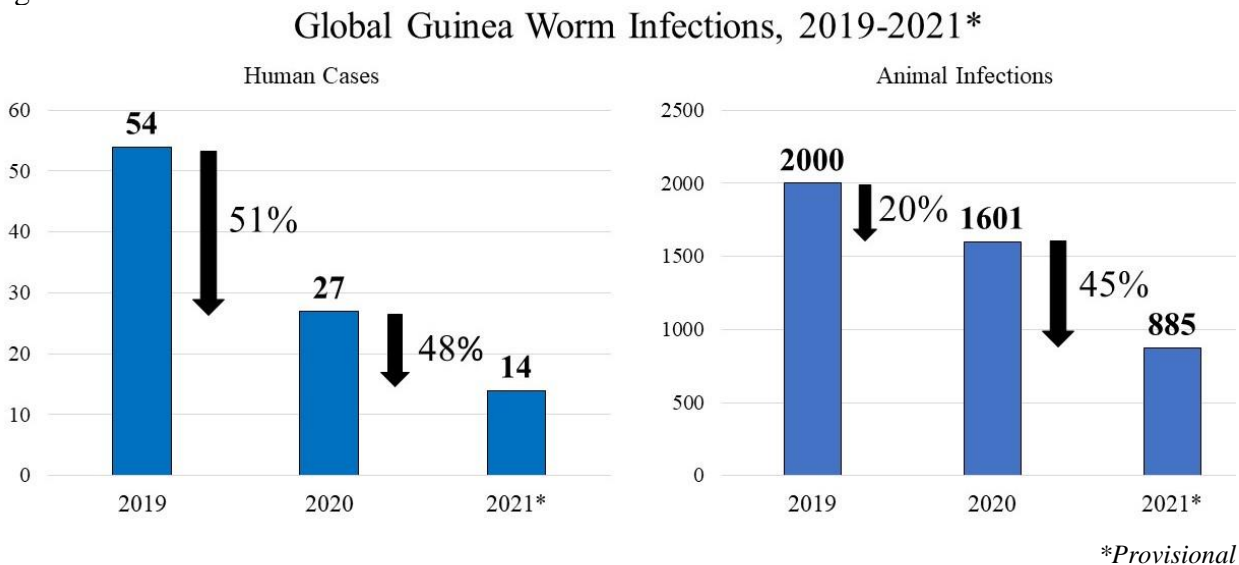




**Date:** January 26, 2022  
**From:** WHO Collaborating Center for Dracunculiasis Eradication, CDC  
**Subject:** GUINEA WORM WRAP-UP #284  
**To:** Addressees

*You've got to go there to know there.*  
Zora Neale Hurston

Figure 1



## FEWEST HUMAN CASES EVER!



After reducing Guinea worm infections by 51% and 20% in humans and animals respectively in 2020, endemic countries reduced human cases and animal infections by another 48% and 45% in 2021 (Figure 1). This sustained progress brought Guinea worm in humans (14) to the lowest level since the eradication program began and reduced the number of known animal infections (885) to

the second-lowest level reported since Chad, the most endemic country, extended active surveillance to all endemic areas in 2016.

- **Chad's** Guinea Worm Eradication Program led 2021 reductions with 42% less human (7) and 48% less dog (790) infections reported; the first year it reduced human *and* animal infections by so much.
- **Ethiopia** reported 1 human, 2 dogs, 1 cat, and 0 infected baboons in 2021 (vs. 11 humans, 3 dogs, 8 cats, 4 baboons in 2020).
- **South Sudan** reported 4 human cases and no animal infections.
- **Mali** reported 2 human cases, 16 dogs, and 1 infected cat.
- **Angola** reported no infected human or animal.
- **Cameroon** reported 10 infected dogs in border villages that were probably infected in Chad.

In 2021 the number of months with zero human cases reported globally increased to five (January, May, June, November, December), from three months in 2020 (June, November, December), two months in 2019 (October December), and one month in 2018 (November). Table 1 summarizes the status of containment and presumed sources of human infections in 2021.

Table 1

<b>Looking forward &amp; backward: human Guinea worm cases in 2021</b>		
<u>Date/place detected</u>	<u>Contained?*</u>	<u>Probable source*</u>
<b>MALI</b>		
03 Aug/Markala-Segou	No	Unknown
15 Sep/Markala-Segou	Yes	Unknown
<b>SOUTH SUDAN</b>		
23 Jul/Uror-Jonglei	No	Unknown
23 Jul/Rumbek N-Lakes	Yes	Unknown
28 Aug/Tonj E-Warrap	Yes	Unknown
06 Oct/Awerial-Lakes	No	Unknown
<b>ETHIOPIA</b>		
23 Feb/Gog-Gambella	Yes	Duli Farm/Gog
<b>CHAD</b>		
01 Feb/Amtiman-Salamat	Yes	Unknown
30 Mar/Kyabe-Moyen Chari	Yes	Marakouva 2/Kyabe
14 Apr/Aboudeja-Salamat	Yes	Bogam/Salamat
19 Apr/Moissala-Mandoul	No	Unknown
22 Jul/Guelendeng-Mayo Kebbi E	Yes	Unknown
29 Jul/Amtiman-Salamat	No	Unknown
09 Oct/Mourgui-Chari Baguirmi	Yes	Unknown

\*See definitions in previous issue

## ETHIOPIA: 4 GW INFECTIONS; 4 KNOWN SOURCES, 3 CONTAINED



The Ethiopia Dracunculiasis Eradication Program (EDEP) has reported four confirmed Guinea worm infections in 2021, compared to 26 Guinea worm infections in 2020, a reduction of 85%. It identified the presumed sources of all four infections and contained three of them (Tables 2 and 3):

One *human case* whose worm emerged in Wadmaro village/Gog district on February 23, 2021 was contained, and the presumed source determined to be Duli Farm, which reported 7 cases in April 2020.

An *infected cat* whose worm emerged in Pugnido Refugee Camp Agnuak Akobo C on August 20 was contained; the presumed source of its infection was the same Akobo C section, PRC, which reported an infected cat in July 2020. Abate was applied to potentially contaminated sites.

An *infected dog* whose worm emerged in Chieng village/Gog district on October 3 was contained, and the presumed source determined to be Awowi stream cuts, shared by the Agonna baboon troop, which is being tracked and a member of which had Guinea worm infection in August 2020.

An *infected dog* which had its worm emerge in Atheti village/Gog district on November 12 was not contained; the presumed source of infection was nearby Awowi stream, shared by the Agonna baboon troop, a member of which had Guinea worm infection in August 2020. Abate was applied to potentially contaminated sites.

The EDEP will hold its annual national program review virtually on January 25-26, 2022. Before an outbreak of COVID-19 among researchers forced the suspension of operations in late October, the baboon study project trapped, sedated, bled, and inspected six baboons from three of the six troops being tracked. All six baboons were negative for physical signs of Guinea worm infection. The serologic test results are pending.

**Table 2. Ethiopian Dracunculiasis Eradication Program: Line List of confirmed case, 2021**

Age (yrs)	Sex	Ethnicity	Occupation	Village of Detection	District	Zone	Date Detected	Date Emerged	Contained (Yes / No)	Entered Water	Lab. Result	Total # of worms
13	M	Agnua	Student	Wadmaro	Gog	Agnua	22-Feb	25-Feb	Yes	No	Confirmed	1

**Table 3. Ethiopian Dracunculiasis Eradication Program: Line list of confirmed animal infections, 2021**

Age (yrs)	Animal Type*	Village of Detection	Zone	District	Date Detected	Date Emerged	Contained (Yes / No)	Entered Water	Lab. Result	Total # of worms
Young (1 year old)	Cat	Akobo C: PRC	Agnua	Gog	20-Aug	21-Aug	Yes	No	Confirmed	1
Adult (1.5 years old)	Dog	Cheing	Agnua	Gog	30-Sep	3-Oct	Yes	Yes	Confirmed	1
Adult (5 years old)	Dog	Atheti	Agnua	Gog	12-Nov	12-Nov	Yes	No	Confirmed	1

\*All animals were males located in the Gambella region.

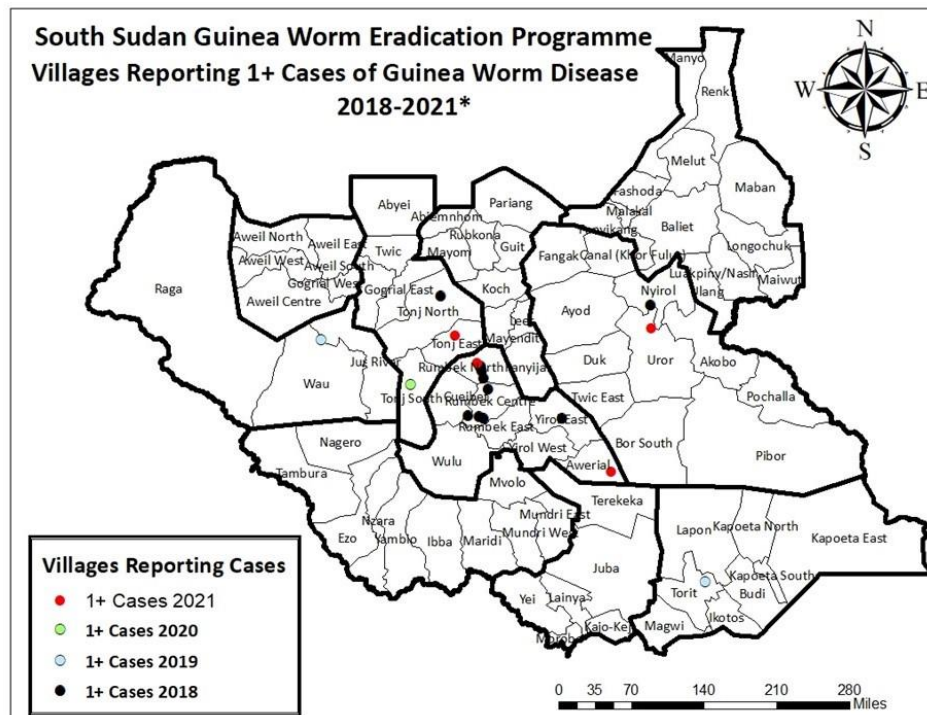
**SOUTH SUDAN: 4 GW CASES; 0 KNOWN SOURCES, 2 CONTAINED**



The South Sudan Guinea Worm Eradication Programme (SSGWEP) reported 4 human Guinea worm cases and no infected animals in 2021, compared to 1 human case in 2020 (Table 1). Two of the four cases, all of which were listed in *Guinea Worm Wrap-Up* #283, were contained; none of the presumed sources of infection was identified. Abate was applied to potentially contaminated sites. Figure 2 shows the locations of the four cases. Comparisons of the genetic profiles of these

infections are pending.

Figure 2



The National Minister of Health, Honorable Elizabeth Acuei Yol, opened the SSGWEP’s annual national program review which was held at the Palm Africa Hotel in Juba on December 9-10 under the leadership of SSGWEP Director Mr. MAKOY Samuel Yibi. Minister Yol challenged the program to consider whether the four cases in 2021 were “the result of a failure in surveillance or a failure in strategy”. The Minister of Health was joined by Minister of Water Resources and Irrigation, the Honorable Manawa Peter Gatkuoth and Carter Center Vice President Mr. P. Craig Withers Jr. to sign a declaration to pursue water, sanitation, health, and hygiene as part of Guinea worm eradication and trachoma control in endemic areas of the country. Other key participants at the review included the State Ministers and Director Generals from all ten states, WHO Country Representative Dr. Fabian Ndenzako, and UNICEF Country Representative Mrs. Hamida R. Lasseko. SSGWEP Director Makoy stated a clear take home message at the end of the meeting: “We need to interrupt transmission of Guinea worm disease as soon as possible”. Dr. Margaret Itto, vice-chairperson and former State Commissioner for Health of Eastern Equatoria, led a meeting of the South Sudan National Committee for Documentation of Dracunculiasis Elimination at the same hotel on December 8.

### **MALI: 19 GW INFECTIONS; 12 KNOWN SOURCES, 11 CONTAINED**



The Mali Guinea Worm Eradication Program (MGWEP) reported Guinea worm infections in 2 humans, 16 dogs, and 1 cat in 2021, compared to 1 human and 9 dogs in 2020 (Table 1). Eleven (58%) of the infections in 2021 were contained and presumed sources of 12 (63%) infections were identified. A line list of the 2021 infections was included in *Guinea Worm Wrap-Up #283*, except the latest infected dog, which had an indigenous, contained infection in Kolongo Bozo village on December 25, 2021.

On October 13 Segou’s Regional Director of Health Dr. Drissa Toure visited Sansanding village in Markala district where both human Guinea worm cases in 2021 occurred. In follow-up to the Ministry of Health meeting in late October on preventing dogs’ exposure to Guinea worm infections, the MGWEP held workshops on December 9 and 11 with village chiefs, mayors, deputy *prefets*, veterinarians, *relais*, and dog traders at Fangasso and Yasso health zones in Segou Region. Participants at the workshops discussed Guinea worm’s epidemiology, strategies to interrupt transmission of Guinea worm infections, and the system of rewards for reporting and proactive tethering of animals at risk. The meetings recommended presenting all imported dogs to the *relais* and village chief, burying fish guts, and sustaining the involvement of dog traders. Technical advisors and/or Guinea worm focal points met with dog traders and inspected dogs in Macina, Tominian, and San districts of Segou Region in October. Mali began proactive tethering of dogs in endemic villages in November. The MGWEP plans to hold its annual national program review meeting on February 8-9, 2022, in Bamako.

## CHAD: 7 HUMAN CASES, 855 INFECTED ANIMALS



Chad's Guinea Worm Eradication Program (CGWEP) has provisionally reported 7 confirmed human cases (71% contained) in 7 villages, 790 infected dogs (82% contained) in 326 villages, and 65 infected cats (76% contained) in 53 villages in 2021, compared to 12 humans, 1,508 dogs, and 63 cats in 436 villages in 2020. The presumed sources of two human infections are known. The vast majority of animal infections occurred in villages that also reported Guinea worm infections in 2020 and presumably were infected in their respective villages. A list of Chad's human cases is in Table 1. Cameroon reported 10 infected dogs in border villages that were probably infected in Chad.

From 10 to 24 December 2021, the Guinea Worm Eradication Program national coordinator, Dr. Tchindebet OUAKO, and the WHO focal point, Dr. Ibrahim DJEOMBORO, conducted a supervisory visit in 4 refugee camps of Haraze in Salamat Province (Moyo, Masmagne, Daha 1 and 2). During the mission, knowledge about Guinea worm disease and the cash reward scheme was raised; four mobilization meetings with traditional leaders and chiefs were organized; four mass sensitization sessions with more than 1000 people reached. Also, knowledge of 120 community relays was strengthened on Guinea worm disease surveillance. No Guinea worm disease case or infected animal was recorded.

The CGWEP plans to hold its annual national review meeting on February 2-3, 2022 in N'Djamena.

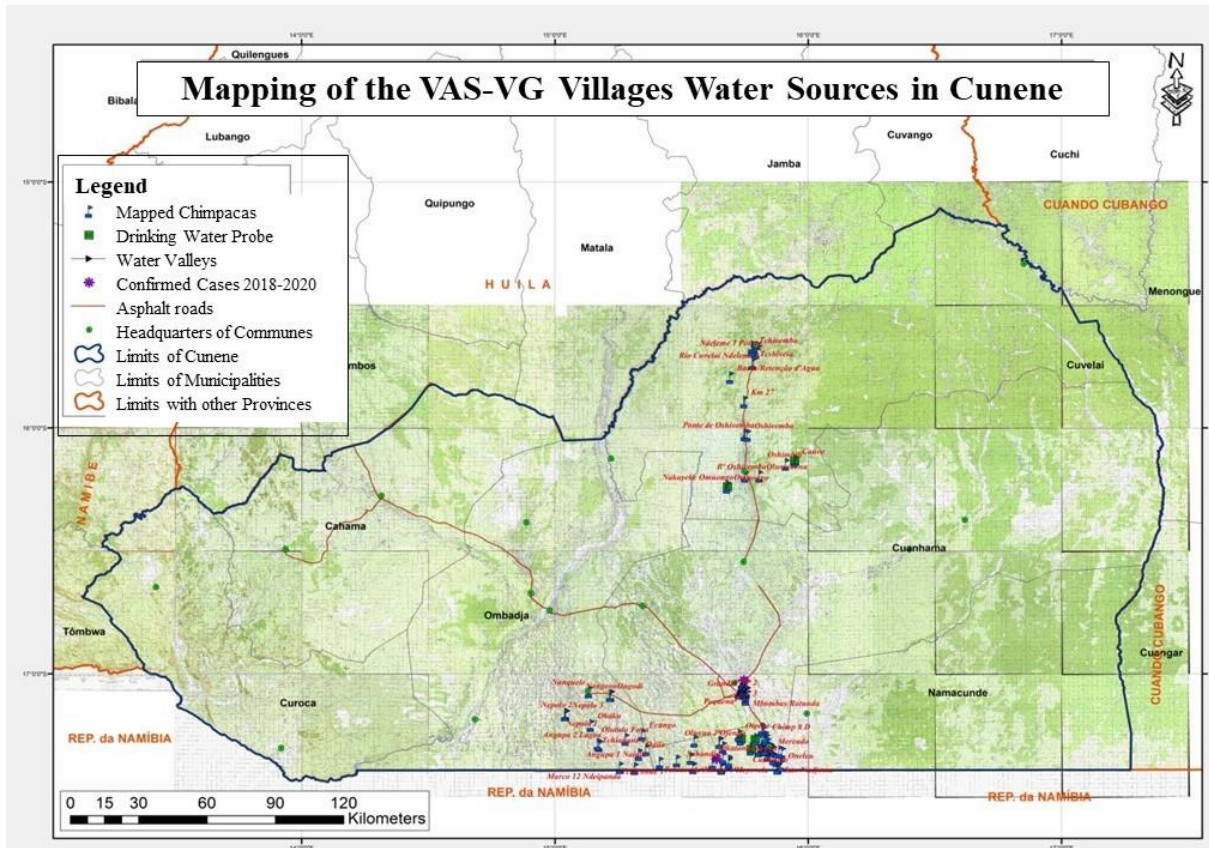
## ANGOLA



The country continues to strengthen community-based surveillance and has benefited from a WHO technical support mission led by two international consultants, one each from Mali and Niger. This mission was mainly focused on vector control, specifically mapping out and treatment of water sources in endemic localities, capacity building of health professionals and community health workers on temephos (Abate<sup>®</sup>) management and application.

The visits carried out in the province of Cunene, specifically in the villages under active surveillance (endemic and villages at risk), allowed identification and updating the mapping of 80 unsafe water sources (potential sources of contamination), comprising of ponds, wells, stagnant irrigation canals and river retention basins, of the 34 villages located in 4 municipalities (Namacunde, Cuanhama, Cuvelai and Ombadja). This included the identification of 23 additional surface water points.

Figure 3. Geolocation map of mapped water points



- 30 health professionals were trained on vector control, and 24 community agents on Community Based Surveillance of GW in the province of Namibe-where active surveillance is being extended.
- 1 intersectoral advocacy and mobilization meeting with the provincial directorates of Agriculture and Energy and Water.
- Several advocacy meetings with local and traditional administrative authorities of the communities visited.

In addition, the following activities were carried out:

- 2 human rumors recorded and investigated (100%) within 24 hours (Cuanhama and Namacunde Municipalities); GW diagnostic ruled out.
- 1 rumor reported on a dead dog since July 2021, with report that a worm allegedly emerged, in Ohangwa locality/Namacunde Municipality, Cunene province; An in-depth epidemiological investigation on Guinea worm is ongoing in this village.
- 2 surveillance visits and follow-up of former cases (2019, 2020).
- Ongoing weekly WHO-The Carter Center virtual meetings ensure partnership exchange and allow The Carter Center to assist the program remotely, pending its setting up in Angola.

## **DONATION**

John and Kathleen Schreiber, who partner with The Carter Center personally and through their family foundation, recently donated \$2 million toward Guinea worm eradication. That donation was matched by the Carter Center Board of Trustees Challenge Fund. The fund matches, dollar for dollar, donations of \$100,000 or more. The Challenge Fund marks a historic and unique opportunity for supporters to multiply the impact of their contributions through August 2022.



**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	0/0	1/1	0/0	0/0	5/7	71%
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	1/1	0/0	0/1	0/0	0/0	2/4	50%	
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%	
<b>TOTAL*</b>	<b>0/0</b>	<b>2/2</b>	<b>1/1</b>	<b>1/2</b>	<b>0/0</b>	<b>0/0</b>	<b>2/4</b>	<b>1/2</b>	<b>1/1</b>	<b>1/2</b>	<b>0/0</b>	<b>0/0</b>	<b>9/14</b>	<b>64%</b>	
% CONTAINED	N/A	100%	100%	50%	N/A	N/A	50%	50%	100%	50%	N/A	N/A	64%		

\*Provisional

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

Shaded cells denote months when one or more cases of GWD did not meet all case containment standards.

**Number of Laboratory-Confirmed Cases of Guinea Worm Disease, and Number Reported Contained by Month during 2020**  
(Countries arranged in descending order of cases in 2019)

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^	1/1	0/2	0/3	1/2	2/2	0/0	0/1	0/1	0/0	1/1	0/0	0/0	5 / 13	38%
SOUTH SUDAN	0/0	0/0	0/0	0/0	0/0	0/0	1/1	0/0	0/0	0/0	0/0	0/0	1 / 1	100%
ANGOLA	0/0	0/0	0/1	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0 / 1	0%
ETHIOPIA	0/0	0/0	0/0	7/7	0/0	0/0	0/0	2/2	1/1	1/1	0/0	0/0	11 / 11	100%
MALI §	0/0	0/0	0/1	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0 / 1	0%
<b>TOTAL</b>	<b>1/1</b>	<b>0/2</b>	<b>0/5</b>	<b>8/9</b>	<b>2/2</b>	<b>0/0</b>	<b>1/2</b>	<b>2/3</b>	<b>1/1</b>	<b>2/2</b>	<b>0/0</b>	<b>0/0</b>	<b>17 / 27</b>	<b>63%</b>
% CONTAINED	100%	0%	0%	89%	100%	100%	50%	67%	100%	100%	100%	100%	63%	

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

Shaded cells denote months when one or more cases of GWD did not meet all case containment standards.

§Reports include Kayes, Koulikoro, Segou, Sikasso, and Mopti, Timbuktu and Gao Regions, contingent on security conditions. The GWEP continued to deploy one technical advisor to Kidal Region to oversee the program.

^ Cameroon reported one case in February that was most likely infected in Chad.

## RECENT PUBLICATIONS

World Health Organization, 2021. Monthly report on dracunculiasis cases, January-September 2021. Wkly Epidemiol Rec 96(46):567-568.

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. Dieudonne Sankara of WHO.

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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_english.html).  
[http://www.cartercenter.org/news/publications/health/guinea\\_worm\\_wrapup\\_francais.html](http://www.cartercenter.org/news/publications/health/guinea_worm_wrapup_francais.html)



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