



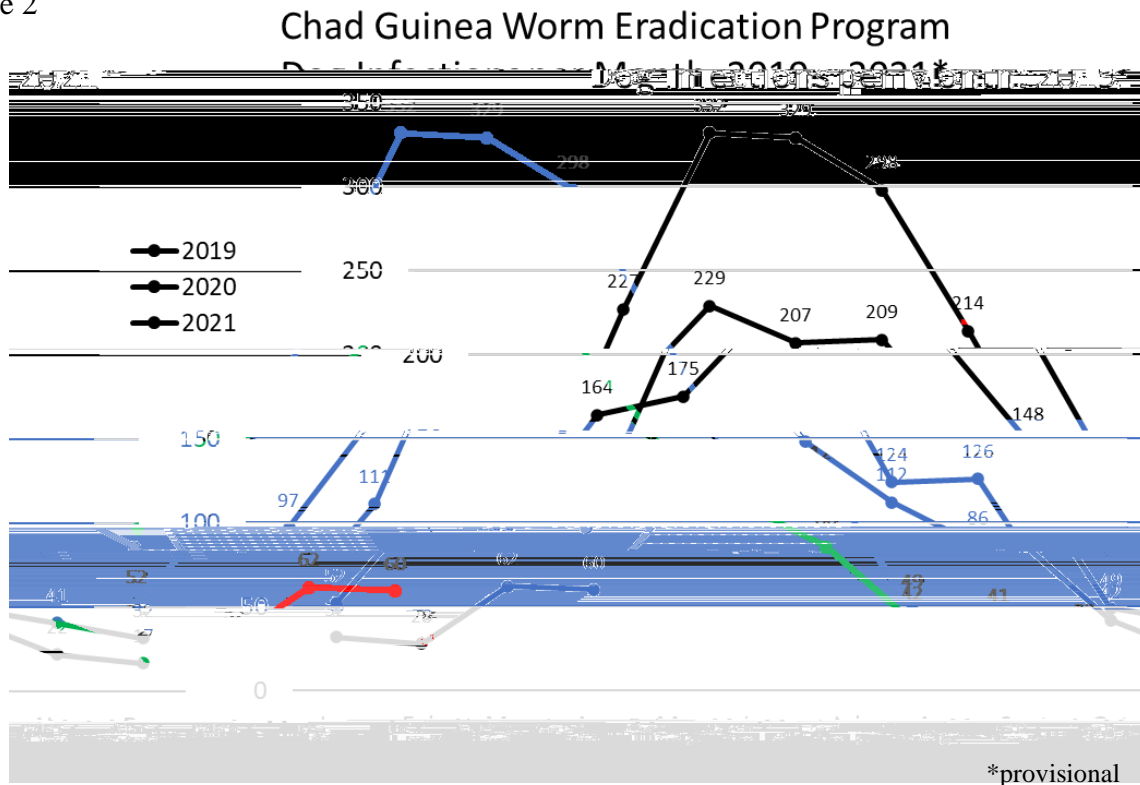
reductions of 76% in human cases and 73% in animal infections for the first trimester of 2021 compare to reductions of 50% and 20% in human cases and infected animals worldwide in 2020 vs. 2019. The peak transmission seasons for Guinea worm infections are January-April (Angola), March-July (Chad), May-August (Ethiopia), May-September (South Sudan), and July-November (Mali).

### CHAD

Chad has reported 182 infected dogs (81% contained) and 4 infected cats (75% contained) in January-April 2021 compared to 679 infected animals in January-April 2020, which is a reduction of 73% in infected animals (Figure 2). Chad reported three confirmed human cases (67% contained) one in February and two in April 2021, which is a reduction of 63% from the 8 human cases Chad reported in January-April 2020.

The human case in Chad in February occurred in Am-Timan district of Salamat Region; the presumed source of that case is unknown. The second confirmed case is a 7-year-old boy from Bogam village/Aboudeia district/Salamat Region whose worm emerged on April 14 and who also was case #7 from the same village in 2020. Bogam village reported 3 Guinea worm cases in March-April 2020 and 22 cases in March-August 2019. The third confirmed case is a 3 year old girl from Bodobo 1 village in Marabe Zone, Moyne Chari Region. The worm Emerged on March 30. The current hypothesis for the presumed source of infection is in Marakouya 2 village. Specimen from one other suspect human cases in 2021 is being examined at CDC: from Balimba village/Moissala district/Mandoul Region which emerged on April 20.

Figure 2



The coverage of endemic villages in Chad with Abate and the proportion of households in at-risk villages practicing burial of fish guts remained about the same in 2019 and 2020, at approximately 83% and 87%



In April the EDEP facilitated two consultative meetings in Gog and Abobo districts to strengthen government ownership and leadership in the eradication effort. The meetings were attended by the kebele (district) cabinets, district senior office heads, the Carter Center Program Manager, and Gambella Region Public Health Emergency Management Directors, and were chaired by the respective District Administrators. Participants discussed the challenges associated with importation and release of dogs and cats, delays in maintenance of borehole wells, and the risks of using dogs for hunting in high risk areas. The district officials were mandated to take administrative measures against persons who violate the community bylaws.

In April the Ethiopian Public Health Institute, EDEP, Ethiopian Wildlife Conservation Authority, the University of Georgia/USA, and The Carter Center held a meeting to launch the next phase of the baboon study later this year. Field team members have continued to track movements of selected baboon troops during the suspension of other field studies in 2020 because of the COVID-19 pandemic. Trapping of baboons for study is expected to resume in July/August 2021.

### MALI

Mali's Guinea Worm Eradication Program (MGWEP) reported a confirmed infected dog (contained) in Macina town/Segou Region in January 2021 (see *Guinea Worm Wrap-Up* #275). The MGWEP recently detected a suspect Guinea worm infection (contained) in a dog in Barakabougou village of Markala district/Segou Region on May 5, 2021; the dog was tethered two days before the worm began emerging. A specimen is being sent to CDC. Barakabougou village also reported a dog with a Guinea worm infection in June 2018, but not in 2019 or 2020, so the presumed source of this suspected GW infection is unknown. Mali reported a human Guinea worm case in Baroueli district of Segou Region in March 2020 and a dog with Guinea worm infection in Gomagada village of Markala district in November 2020, but no other Guinea worm cases in Mali in 2020.

Table 1

	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	NOVEMBER	DECEMBER	TOTAL*
CHAD <sup>a</sup>	0 / 0	1 / 1	0 / 0	1 / 2	/	/	/	/	/	/	/	2 / 3
ETHIOPIA	0 / 0	1 / 1	0 / 0	0 / 0	/	/	/	/	/	/	/	1 / 1
SOUTH SUDAN	0 / 0	0 / 0	0 / 0	0 / 0	/	/	/	/	/	/	/	0 / 0
ANGOLA	0 / 0	0 / 0	0 / 0	0 / 0	/	/	/	/	/	/	/	0 / 0
MALI	0 / 0	0 / 0	0 / 0	0 / 0	/	/	/	/	/	/	/	0 / 0
TOTAL*	0 / 0	2 / 2	0 / 0	1 / 2	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	3 / 4

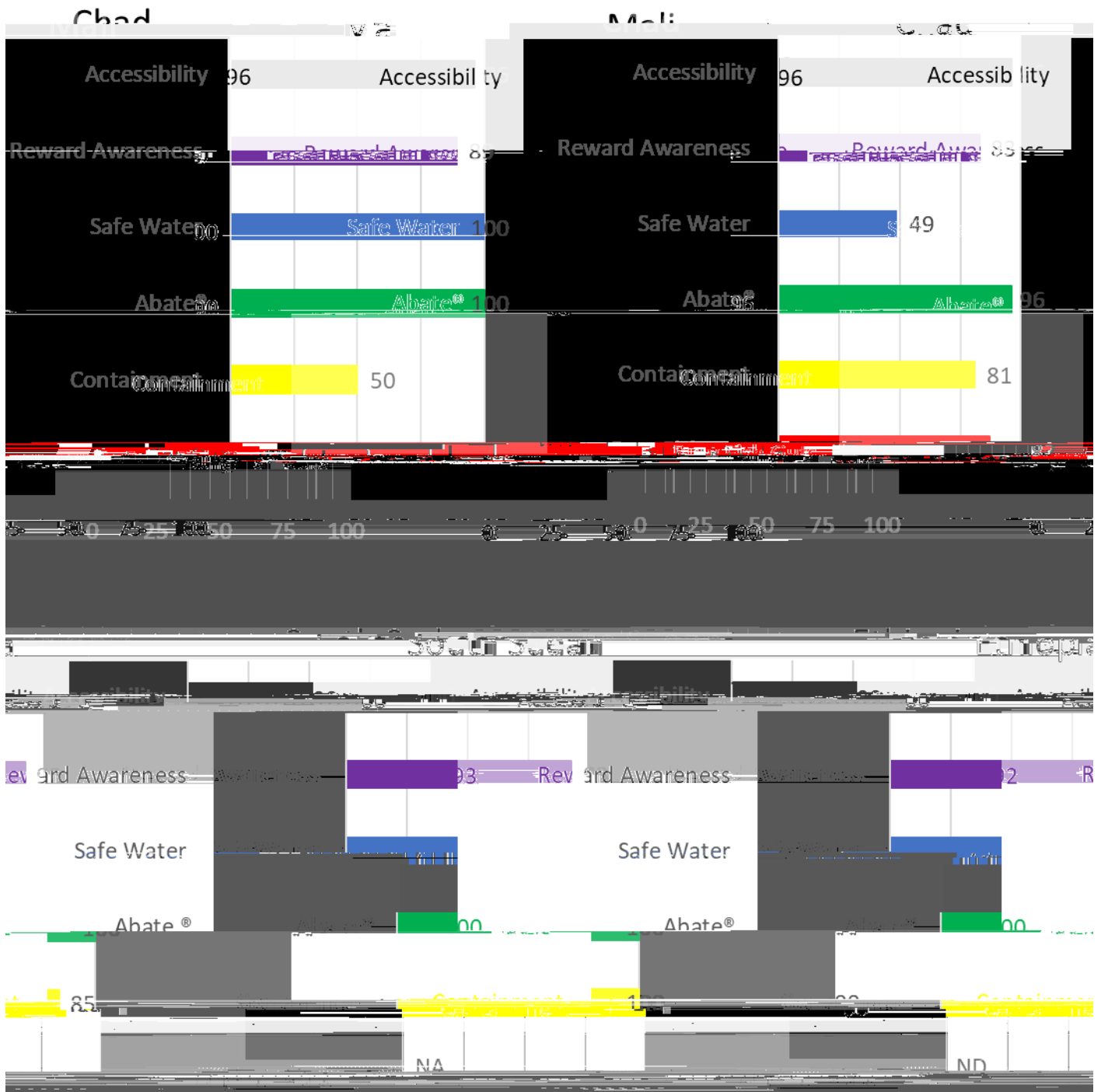
% CONTAINED

\*Provisional 0.000/00/rovisio02020200/INEULY40524Td (0Tj) 4j 4.13 (0Tj) (L525 re W 1 BT CS0 es 0 sen -0.013 Tc 0.0111.40Tj 1.6 (0Tj) 3.73 0.027 Td (2Tj) 1.676-0.027 Td (2Tj) 1 (0Tj) 3.73 0.027 Td (2Tj) 1.676-0.027 Td

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

	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	NOVEMBER	DECEMBER	TOTAL*

# Guinea Worm Eradication Program Indices Coverage (corrected)\*



## **DONATION**

The Carter Center is grateful for the support of the A. G. Leventis Foundation, which recently granted \$100,000 to the Guinea Worm Eradication Program through 2021. This support is matched by The Carter Center's Challenge Fund for Guinea Worm Eradication.

## **DEFINITION OF A PRESUMED SOURCE OF GUINEA WORM INFECTION**

A presumed source/location of a human dracunculiasis case is considered identified if:

The patient drank unsafe water from the same source/location (specify) as other human case(s) or an infected domestic animal 10-14 months before infection, or

The patient lived in or visited the (specify) household, farm, village, or non-village area of (specify) a Guinea worm patient or infected domestic/peri-domestic animal 10-14 months before infection, or

The patient drank unsafe water from (specify) a known contaminated pond, lake, lagoon or cut stream 10-14 months before infection.

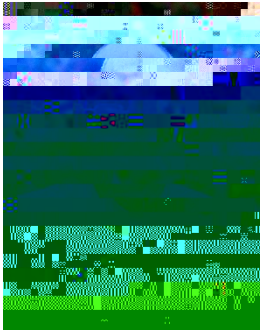
If none of the above is true, the presumed source/location of the infection is unknown. Whether the patient's residence is the same as the presumed source/locality of infection or not should also be stated in order to distinguish indigenous transmission from an imported case.

## **DEFINITION OF A CONTAINED CASE\***

A case of Guinea worm disease is contained if all of the following conditions are met:

1. The patient is detected before or within 24 hours of worm emergence; and
2. The patient has not entered any water source since the worm emerged; and
3. A village volunteer or other health care provider has properly managed the case, by cleaning and bandaging until the worm is fully removed and by giving health education to discourage the patient from contaminating any water source (if two or more emerging worms are present, the case is not contained until the last worm is pulled out); and
- 4.

**DR. NABIL AZIZ MIKHAIL (1944-2021)**  
**COURAGEOUS, DETERMINED GUINEA WORM WARRIOR**



It is with very heavy hearts that we report the death on May 18, 2021 of Dr. Nabil Aziz, Country Representative of The Carter Center to Sudan and former National Program Coordinator of Sudan's Guinea Worm Eradication Program (SGWEP). Dr. Nabil grew up in Khartoum, a Coptic Christian in a predominantly Muslim country. He graduated from medical school in Poland in 1970 and earned a Master of Science degree from the Royal Institute of Tropical Medicine and Hygiene in Amsterdam. He served Sudan as a clinician and as a public health physician in Khartoum, Equatoria, and many other areas on behalf of the Ministry of Health. He was Director-General in the Ministry of Health of White Nile State before being appointed to lead Sudan's GWEP in September 1994.

In one of his earliest acts as head of the SGWEP, when presented with new information in February 1995 Dr. Nabil reported almost 20 times as many cases of Guinea worm disease to the World Health Organization for Sudan in 1994 as the country had reported for 1993. He convened Sudan's First National Conference on Guinea Worm Eradication in Khartoum on March 27, 1995, and summarized the SGWEP's progress at the Opening Ceremony before an audience that included Sudanese President Omar Al-Bashir, former U.S. President Jimmy Carter, the Ministers of Health of Sudan and Uganda, and many other distinguished guests. He was surprised when he learned that President Bashir declared a cease-fire in the civil war late that night after President Carter's negotiation with the two sides. The "Guinea Worm Cease Fire" lasted almost six months and accelerated Sudan's GWEP, its Onchocerciasis Control Program, and allowed many other health interventions assisted by WHO, UNICEF, and The Carter Center. During over 10 years as head of the SGWEP he traveled to supervise workers and observe program activities in affected areas of northern and southern Sudan on trips that sometimes lasted for weeks. He twice nearly died from malaria, once became lost in a dangerous area at night, and endured multiple vehicle breakdowns, entrapment in mud or desert sand, as well as contaminated food and water. He was especially proud of the outstanding database developed by the SGWEP. Dedicated to the health of all Sudanese, he overcame treacherous bureaucratic stumbling blocks, political posturing, and inter-personal minefields due to the civil war and associated suspicions, while staying focused on what he was trying to achieve and keeping always his sense of humor and ability to chuckle at absurdities. He was respected by health professionals on both sides of the conflict, many of whom were also friends. Northern Sudan eliminated Guinea worm disease in 2002. He received the Jimmy and Rosalynn Carter Award for Guinea Worm Eradication in 2004.

As Country Representative for The Carter Center beginning in 2007 after his retirement from the Federal Ministry of Health when southern Sudan assumed control of its health affairs following the Comprehensive Peace Agreement in January 2005, Dr. Nabil continued working on behalf of Sudanese, overseeing the elimination of river blindness from Abu Hamad in 2011 and (in collaboration with Ethiopia) from the cross-border area of Galabet-Metema, assisting efforts to eliminate blinding trachoma, and nurturing Sudan's adaptation of the Ethiopia Public Health Initiative to train health workers.

Dr. Nabil spoke slowly and was a gentle humanitarian. In an interview for an oral history project in 2010, he spoke warmly of his relationships with resident advisors assigned to Khartoum by The Carter Center. He also described an Eastern Orthodox tradition to mark the first Christmas and the first Easter after the loss of a beloved family member by celebrating in their memory. We shall celebrate and remember you, dear friend. Thank you! Rest in Peace. We extend our deepest condolences to your family.



