

Date: November 6, 2017

From: WHO Collaborating Center for Dracunculiasis Eradication, CDC

Subject: GUINEA WORM WRAP-UP #251

To: Addressees

Every uncontained Guinea worm from any source can spread infection!

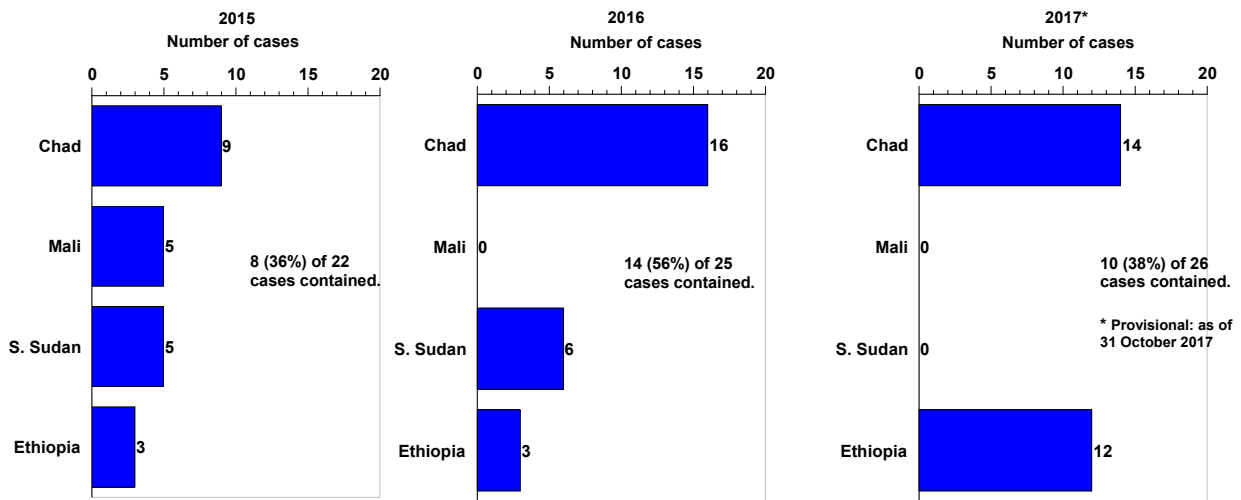
GUINEA WORM OUTBREAK IN ETHIOPIA



After eleven consecutive months with no reported cases of Guinea worm disease, the Ethiopian Dracunculiasis Eradication Program (EDEP) has detected a total of 14 apparent cases between September 25 and October 16, 2017. At least one of the case patients allegedly had a worm emerge as early as mid-August. All of the patients are males between 16 and 40 years old, 11 are ethnic Oromo, and 1 is Agnuak; only one was contained. Nine patients were detected in Oromia Region, where they reside, while 3 were detected in Gambella Region (Figure 1, Tables 1 and 2). This outbreak was only discovered when the index case appeared at the regional hospital in Gambella town for treatment on September 25. Subsequently it was learned that two patients with broken worms had been treated at health centers in Yeti kebele (sub-district) in Anfilloo woreda (district) of Oromia Region before September 25 and sent home. The two patients were not reported to health authorities, they were not queried as to the potential sources of their infection, and no containment measures were taken.

Figure 1

REPORTED CASES OF DRACUNCULIASIS BY COUNTRY 2015 - 2017*



Also, patient #9 was first seen with a blister at Gambella regional hospital on October 2nd (a week after the index case was detected and reported at the same hospital) and was sent away with some medication before he was finally diagnosed with an emerging worm on October 15.

The index case, a 32-year-old man, is a seasonal laborer who is a resident of Goomii village in Yeti sub-district of Anfilloo district in Oromia Region, but who was employed at a rock quarry in adjacent Itang district of Gambella Region when his infection was detected. However, he and all 11 other case patients worked at a commercial farm (Goyi Farm) in nearby Abobo district of Gambella Region a year ago, where they apparently acquired their infections by drinking water pumped from a stagnant pond called Joro (Figure 2). His infection was confirmed by the Centers for Disease Control and Prevention (CDC) as *Dracunculus medinensis*. All indications are that this is a classic “point source” outbreak among persons exposed to a common source of infection over a brief period. The only known potential sources of contamination of the implicated pond used to provide drinking water for the seasonal workers at Goyi Farm a year ago are the Nuer man who traveled between South Sudan and Ethiopia whose uncontained infection occurred in September 2016 when he resided at Kule Refugee Camp in Itang district (see Guinea Worm Wrap-Up #244), and, more likely, the infected dog #7 named Odoongi in 2016, whose Guinea worm appeared in Tegni sub-district of Abobo on July 29, 2016, and which accompanied his owner who worked as a security guard at “Goyi commercial farm” in August-September 2015.

The index case and the second case were initially admitted to the case containment center in Lare district of Gambella Region. The index case was later transferred to the case containment center in Abobo district of Gambella Region because of his secondary infections. The ten other patients were admitted to the case containment center in Abobo district, but after authorities established a case containment center in Yeti sub-district of Anfilloo district in Oromia Region, seven patients were transferred there from the case containment center in Abobo (4 on October 24; 3 on October 28). The EDEP and regional authorities have identified Abobo, Gog, Itang, Gambella Zuria and Lare districts of Gambella Region and Anfilloo district of Oromia Region for active case searches and awareness-raising. The program is identifying all seasonal laborers who worked at Goyi Farm and five other nearby commercial farms in Abobo district before January 2017 who may have drunk water from the contaminated pond. Teams that visited 19 water sources in villages of Yeti sub-district of Anfilloo district from which most patients in this outbreak originated found all were continuously flowing streams. All sources tested negative for copepods. Mr. Adam Weiss, associate director of the Guinea Worm Eradication Program at Carter Center headquarters, arrived in Ethiopia on October 20th to assist in the investigation and preventive measures and establishing community-based surveillance in affected communities in Oromia. On October 27, the Ethiopia Public Health Institute (EPHI) also invited CDC and WHO to jointly assist in the investigation.

Following detection of the index case, and in response to the outbreak, the national EDEP coordinator, Mr. Getaneh Abraha Estayew led a task force including representatives from EPHI, Gambella Regional Health, Investment, and Water Bureau, The Carter Center, and WHO, to investigate the outbreak response. One outcome was an advocacy visit to Abobo District by the President of Gambella Region. Afterwards, Dr. Ebba Abate, Director General of EPHI, led a debriefing meeting in Addis Ababa, which was co-chaired by Mr. Biruck Kebede, Director, Federal Ministry of Health Disease Prevention and Control. During this meeting EDEP technical

working groups and national certification commission identified action points and directives to deal with the outbreak and its possible after effects.

On September 30 Mr. Getaneh Abrha Estayew, National Coordinator of the EDEP, led a team to Yeti Kebele, Anfilloo District, Oromia Region to locate and transport five resident patients suspected to have GWD to the case containment center in Abobo. During a subsequent visit on October 9, the National Coordinator, joined by Mr. Nena Okello and Ms. Yeshitila Mulugeta of the Carter Center-Ethiopia and Dr. Zeyede Kebede Zeleke, WHO-Ethiopia, met with Anfilloo District Council and Health staff to establish a district level Task Force committee responsible for coordinating a response to cases of GWD among Anfilloo residents.

The failure of staff at two health clinics in Oromia to report the patients they saw to the EDEP via the Integrated Disease Surveillance and Reporting (IDSR) system is very disappointing. The national hotline for reporting suspected cases or rumors of Guinea worm disease has been off-line since the end of May. An awareness survey conducted during a field visit to Oromia in July 2017 found only 22% (136/628) of public interviewees knew of the cash reward for reporting a case, and they had heard of it through radio or television. Among Oromia health workers, 48% (44/92) knew of the reward, but only 7% (6/92) “knew the appropriate response to suspects of Guinea worm disease”. The nationwide communication campaign that will be launched officially in early December will begin an expedited roll out in parts of Oromia in early November to increase awareness about the disease and the cash reward for reporting cases.

In response to news of this outbreak Honorable World Laureate Dr. Tebebe Y. Berhan, Goodwill Guinea Worm Ambassador and member of Lions Clubs of Ethiopia, immediately began urging Ethiopian officials to address the serious challenges posed by this event. The president of Gambella Region and members of his cabinet conducted a high-level advocacy visit to Abobo district, including Goyi Farm, on October 4 on behalf of the eradication program. Efforts are underway to improve drinking water provided for the workers.

This outbreak shows the potential risks to the program posed by migrant seasonal laborers, the dangers of uncontained Guinea worms from any source, and the potential consequences of inattentive health workers in non-endemic Level 2 and Level 3 surveillance areas.

This point source outbreak in Gambella and western Oromia in 2017 (Figure 2) is distinct from the occurrence of sporadic Guinea worm infections among humans, dogs and baboons in Atheti sub-district of Gog district in Gambella Region which has reported between 2 and 8 cases of Guinea worm disease in humans annually between 2011 and 2016. The Atheti focus reported 14 infected dogs (10 (71%) contained); 2 infected baboons and 3 Guinea worm cases in humans (2 contained) in 2016. It has reported 11 infected dogs (6 (55%) contained), 4 infected baboons, and no human cases in January-October 2017. No cases in humans have been reported there for the past 16 months, since June 2016.

CHAD: 33% FEWER EMERGING WORMS, 20% FEWER INFECTED DOGS



Chad's Guinea Worm Eradication Program has reported significant reductions of 33% (from 1,917 to 1,281) in the number of Guinea worms emerging from dogs and 20% (from 943 to 750) in the number of infected dogs between January-September 2016 and the same period of 2017 (Figure 3). The reduction in numbers of infected dogs compared to the same month a year before actually began in November 2016 (Figure 4). This is an important change from the 100%+ increases in numbers of infected dogs reported in each of the previous four years (Figure 5), and it reflects the cumulative impact of new interventions introduced in Chad since frequent infections in dogs were first recognized there in 2012: enhanced health education urging burial of fish guts and cooking fish well in 2013; tethering infected dogs and cordoning parts of contaminated lagoons for treatment with Abate in 2014; offering a cash reward for tethering and reporting infected dogs since January 2015; and expanded research agenda in 2015-2016, including trials of mass treatment of dogs. The innovations continued with launching a nationwide enhanced communication campaign in July 2017. It appears that burial of fish guts, which surveys indicate is practiced by over 80% of households in at-risk areas since 2016, and tethering infected dogs to prevent them from entering water with emerging worms, which was applied to 66% of infected dogs in 2016 and 76% so far in 2017, were likely the main interventions responsible for the recent reduction in transmission to dogs. The frequency distribution of numbers of worms emerging from infected dogs has also declined (Figure 4). The fewer emerging Guinea worms and greater containment of those fewer worms this year, the enhanced communication campaign, and expanded application of Abate in targeted areas should help accelerate the downward trend in infection. Abate was used in response to contamination events in 63 villages in January-August 2017, and will be expanded to over 37 villages with 5 or more infected dogs in the next few months.

Chad has reported 14 cases of Guinea worm disease in humans so far this year, of which 9 (64%) were contained (Table 3). The extraordinary and unique pattern of a few sporadic cases appearing in humans in different Chadian villages each year is illustrated in Table 4. Chad also has reported 12 infected domestic cats so far this year. Because of their well-known aversion to immersion in water, however, infected domestic cats are unlikely to transmit this infection by contaminating water.

SOUTH SUDAN MINISTER LAUNCHES NATIONAL COMMUNICATION CAMPAIGN



The Minister of Health of South Sudan, Honorable Dr. Riek Gai Kok, officiated at a ceremony in Kapoeta to launch the nationwide communication campaign “It Pays to Report Guinea Worm” on Saturday, October 28. He described South Sudan's notable progress in eradicating Guinea worm disease and the launching of the campaign to support those efforts. The minister also announced that South Sudan would now offer an even larger cash reward of 50,000 South Sudanese Pounds (~US\$400) for reporting a case of Guinea worm disease. (South Sudan had increased its cash reward to 10,000 South Sudanese Pounds as of May 2017. See Guinea Worm Wrap-Up #248.) An estimated 2,500-3,000 persons attended the event, where other keynote speakers

included the Governor of Kapoeta State Honorable Maj. Gen. Louis Lobong Lojore, the Kapoeta State Minister of Health Honorable Dr. Stella Lorika, National Program Coordinator Mr. Samuel Makoy Yibi, and Carter Center Country Representative Ms. Sarah Yerian. Representatives from the Ministry of Environment and the World Health Organization also spoke at the ceremony. During the festivities Mr. Lokuyono Lokitoi Lobune, a man who was the last Guinea worm patient in South Sudan east of the Nile, in 2015, described how he became infected, his illness, and how he used his cash reward to buy a bull, “which improved his relationship with his in-laws”. Live entertainment included performances of the national campaign song by South Sudanese artist Isaka Number One, a performance of the campaign social drama by Field Officers, and singing by social mobilizers and village volunteers. Community traditional dance groups representing ten counties also showcased their tribal dances. Media representatives in attendance included a consultant who partners with Reuters news agency, Internews, South Sudan Broadcast Television, and a community radio station, Singaita FM. South Sudan National Television broadcast a delayed transmission of the ceremony on Sunday, October 29. The communication campaign is assisted by The Carter Center and KYNE INC communication consultants.

South Sudan has reported zero Guinea worm infections in humans or animals in January-October 2017 and it reported no infected dogs in 2016. It has had 11 consecutive months since its most recent GW case in a human was reported in November 2016,

MALI REPORTS ZERO HUMAN CASES; 8 INFECTED DOGS & 1 CAT



As of the end of October 2017, Mali’s Guinea Worm Eradication Program has reported no cases of Guinea worm disease in humans for 23 consecutive months, since November 2015. It has reported 8 infected domestic dogs (7 contained, 88%) and 1 infected domestic cat (contained) in January-October 2017 (see line list in Guinea Worm Wrap-Up #250), compared to 11 infected dogs (8 contained, 73%) and no infected cat in the same period of 2016. The program has reported 370 rumors of GW cases in January-September 2017, and investigated all within 24 hours. So far this year, the cumulative average awareness of the reward for reporting human cases of GWD is 87% among 541 persons surveyed in Level I surveillance areas and 84% among 3,440 persons surveyed in Level II areas. The cumulative average awareness of the reward so far this year for reporting infected dogs is 67% among 1,040 persons surveyed in Level I areas and 88% among 340 persons surveyed in Level II areas. No reward awareness surveys have been conducted in Level III surveillance areas. Insecurity continues to limit program access to the 4 or 5 contiguous districts of Segou and Mopti Regions where dog infections are occurring.

On October 31, 11 of the 13 members of Mali’s National Certification Committee for Guinea Worm Eradication met in Bamako to discuss plans for preparing the Country Report to WHO and for requesting an external evaluation of the national Guinea Worm Eradication Program early in 2018. WHO has confirmed its willingness to assist the National Committee in both matters. Committee members also discussed plans to make their next field visit to Kayes Region and Bamako district. The president of the committee, Prof. Kader TRAORE, requested a meeting with the minister of health to introduce him to the mission and members of the Committee.

ITFDE & RESEARCHERS DISCUSS GWEP

THE
CARTER CENTER



The International Task Force for Disease Eradication (ITFDE) held its 27th Meeting at Carter Center headquarters in Atlanta on October 17, 2017. Chaired by Dr. Stephen Blount, the Task Force, including International Commission for the Certification of Dracunculiasis Eradication (ICCDE) members Dr. David Molyneux, and Dr. Mark Eberhard, heard presentations and discussed the status of the campaign with emphasis on research being done to address the challenge of dogs infected with Guinea worms in Chad. Dr. Ernesto Ruiz-Tiben of The Carter Center and Dr. Dieudonne Sankara of the World Health Organization presented an overview of the eradication campaign and summarized the status of certification efforts, respectively. Researchers from CDC, the University of Georgia, Wellcome Trust Sanger Institute, Vassar College, Georgia Institute of Technology, University of Exeter, and The Carter Center described the results of their work. President Jimmy Carter participated in the entire all-day meeting, as did Carter Center CEO Ambassador (rtd) Mary Ann Peters and Vice President for Health Dr. Dean Sienko. A summary of this meeting will be published in WHO's *Weekly Epidemiological Record* early in 2018.

On October 18, retired CDC scientist and ICCDE member Dr. Mark Eberhard chaired a follow up meeting of the researchers which was also attended by Dr. Sienko, Dr. Ruiz, Dr. Sankara of WHO, Dr. Sharon Roy of CDC, Dr. Donald Hopkins and other Carter Center staff to review the previous day's discussions, and to discuss next steps, future research, and future publications. This was the third meeting of the Chad Guinea Worm Research Group in 2017, following their first meeting at the annual International Guinea Worm Program Review meeting in Atlanta last March and a meeting by conference call in June. The next meeting tentatively will be a conference call in January and the next face to face meeting will be held immediately after the International Program Review in Atlanta in March 2018.

EXHIBITION IN ABU DHABI

The exhibition "Countdown to Zero: Defeating Disease" was opened in Abu Dhabi to significant media coverage across the United Arab Emirates on Sunday, October 15, 2017, in the presence of His Highness Sheikh Hamed bin Zayed. Based on the highly successful exhibit displayed at the American Museum of Natural History (AMNH) in New York in 2015-2017 that was developed by the AMNH and The Carter Center, a link to the opening events in Abu Dhabi may be viewed at: <https://www.webcargo.net/d/12648109/phLnqn1ijc/>

LABORATORY CONFIRMATION OF WORM SPECIMENS AT THE CENTERS FOR DISEASE CONTROL AND PREVENTION

We let the readership know that henceforth all worm specimens from patients suspected of having GWD should be sent to the address below for laboratory and or molecular confirmation of *Dracunculus medinensis* (Guinea worm). The primary contact will be Dr. Richard Bradbury, who is in charge of the diagnostic laboratory in the Division of Parasitic Diseases and Malaria, at CDC.

CDC Stat Lab
ATTN: Unit 52
1600 Clifton Rd NE Atlanta, GA 30329
Email: DPDx@cdc.gov
Telephone: 404-718-4110

MEETINGS

- Ethiopia's annual Guinea worm program review will be held in Gambella Town, on December 5-6, 2017
- South Sudan's annual Guinea worm program review will be held in Juba on December 11-12, 2017.
- Mali's annual Guinea worm program review will be held in Bamako on January 18-19, 2018.
- Chad's annual Guinea worm program review will be held in N'Djamena on January 23-24, 2018.
- The International Commission for the Certification of Dracunculiasis Eradication (ICCDE) will meet at World Health Organization headquarters in Geneva, Switzerland on February 15-16, 2018.
- The 22nd International Meeting of Guinea Worm Eradication Program Managers will be held at The Carter Center in Atlanta, USA on March 21-23, 2018.

RECENT PUBLICATIONS

World Health Organization, 2017. Monthly report on dracunculiasis cases, January-September 2017. Wkly Epidemiol Rec 92:659-660.

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 Dr. Ernesto Ruiz-Tiben (eruizti@emory.edu), 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, Drs. Donald R. Hopkins and Ernesto Ruiz-Tiben of The Carter Center, Dr. Sharon Roy of CDC, Dr. Dieudonné Sankara of WHO, and Dr. Mark Eberhard.

WHO Collaborating Center for Dracunculiasis Eradication, Center for Global Health, Centers for Disease Control and Prevention, Mailstop C-09, 1600 Clifton Road NE, Atlanta, GA 30329, USA, email: gwwrapup@cdc.gov, fax: 404-728-8040. The GW Wrap-Up web location is <http://www.cdc.gov/parasites/guineaworm/publications.html#gwwp>

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_francais.html



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