

Memorandum



Date: June 10, 2019
From: WHO Collaborating Center for Dracunculiasis Eradication, CDC
Subject: GUINEA WORM WRAP-UP #261
To: Addressees

“Perseverance and spirit have done wonders in all ages.”
George Washington

ETHIOPIA: 0 INFECTED DOGS IN APRIL/MAY 2019 VS. 8 IN APRIL/MAY 2018



In comparison with 8 infected dogs reported in April and May 2018, the Ethiopian Dracunculiasis Eradication Program (EDEP) has reported 0 infected animals in the same period of 2019. A single suspect infected baboon was reported on June 2. Having found no Guinea worm infections in humans in 2018, it thus appears the EDEP also has begun impacting Guinea worm transmission among animals, using two main tools: Abating all known eligible water sources in endemic and at-risk villages and containing infected animals. The most recent case of Guinea worm disease in a human in Ethiopia was reported in December 2017. In 2018, 4681 Abate treatments were applied in Gog and Abobo districts of Gambella Region, an increase of 59% from the 2950 treatments administered in 2017. The EDEP successfully contained 7 of Ethiopia’s 17 infected animals in 2018 and beginning in April that year it also proactively tethered domestic dogs and cats in endemic and at-risk villages of the same two districts to help prevent the animals from being exposed to Guinea worm infection. By the end of the year, 1406 dogs and cats were proactively tethered. [*Editorial Note: Ethiopia and other endemic countries wisely stress containment of Guinea worm infections and Abate application, since both interventions prevent Guinea worm-infected copepods in water, and neither intervention will be perfect. It is similarly challenging to detect and treat all at-risk water sources with Abate correctly and on time as it is to discover and contain all Guinea worm-infected animals and people in time to prevent transmission.*] Of 5484 persons interviewed in Level I and Level II areas under active surveillance in January-April 2019, a cumulative 75% were aware of the cash reward for reporting a case of Guinea worm disease in a human and 84% knew of the reward for reporting an infected animal in Level I areas.

The Goyi commercial farm that was the source of the outbreak of Guinea worm cases in humans in 2017 has signed an agreement with Water Construction Enterprise in Gog district to drill a well to make safe drinking water available to its workers, and two other nearby farms (Mulat and Seife) are completing construction of borehole wells. A second round high level visit to Gambella to advocate for safe water supply in all such farms is expected later this year. A team of Ethiopian officials and members of the International Commission for the Certification of Dracunculiasis Eradication (ICCDE) conducted a field visit to Gog and Abobo districts of Gambella Region in April (see below).

ICCDE MEETS IN ADDIS ABABA, ETHIOPIA



The International Commission for the Certification of Dracunculiasis Eradication (ICCDE) held its Thirteenth Meeting in Addis Ababa, Ethiopia on April 25-26, 2019. Chaired by Dr. Joel Breman, this was the first time that the ICCDE has met in a Guinea worm-endemic country and the only time it has met outside of World Health Organization (WHO) headquarters in Geneva. Just before their meeting, a team from the ICCDE, accompanied by representatives from WHO, the Ethiopian Federal Ministry of Health, the Ethiopian Public Health Institute, The Carter Center, the Gambella Regional Health Bureau and the chairman and a member of the Ethiopian National Certification Committee conducted a field visit in Gog and Abobo districts of Gambella Region. One of the teams (including ICCDE member Dr. Ashok Kumar) was impressed by efforts to proactively tether, house, feed, and exercise dogs in endemic and high-risk villages and encouraged the EDEP to continue this intervention. The ICCDE meeting itself paid special emphasis to the EDEP and it applauded the program activities in Gog and Abobo. The ICCDE expects to receive a revised Country Report for Sudan and it expects to receive the completed Country Report of the Democratic Republic of Congo (DRC) and results of visits by International Certification Teams to both countries by the end of this year. Depending on the results of surveillance in both countries in 2019, including a nationwide case search combined with national polio vaccination days in the DRC, those two countries now in the pre-certification stage may be considered for certification at the ICCDE's next meeting in 2020.

MALI REPORTS ONE INFECTED DOG AND EXPANDS SURVEILLANCE



Mali's Guinea Worm Eradication Program (MGWEP) has discovered an infected dog in Sokoura village of Tominian district in Segou Region. The worm emerged from the dog on May 7, 2019 and was contained; the dog was tethered. (Mali also reported one infected dog in May 2018.) The one-year old infected dog was recently received as a gift from an ethnic Bozo man from Sabare village of Tenenkou district in Mopti Region, which is the most likely source of this dog's infection. According to its owner, the infected dog eats cooked and raw fish. The MGWEP also reported infected dogs that originated from Goumberi and Diondiori villages of Tenenkou district in 2017 and unknown villages of Tenenkou district in 2018. Sokoura village itself also had an indigenous infected dog that was contained in September 2018.. Mali's most recent reported human with Guinea worm disease was in November 2015. The MGWEP's national secretariat has been unable to supervise Tenenkou district directly in recent years because of insecurity. Dr. Moussa Saye, the Malian technical assistant based in Mopti, visited Tenenkou on May 15 to supervise training of local GW workers, but the groups controlling the area did not allow him to visit Sabare village (which borders the Niger River) to also further investigate the probable source of the dog's infection. In April 2019, the program applied 40 Abate treatments out of 53 water bodies identified in 5 villages in Mopti district and 9 Abate treatments in 4 villages of Djenne district, where the number of water bodies is unknown because it is a part of the inland delta of the Niger River. Mopti district has 221 villages under active surveillance; Djenne district has 176 villages under active surveillance. Abate was not applied in Sokoura village where the infected dog was detected

because no water body was available there at that time. Two Malian technical assistants formerly posted in Kidal and Gao Regions have been relocated to Segou Region indefinitely because Kidal and Gao Regions have not had a Guinea worm infection in more than three years ago and due to increased insecurity in northern Mali.

Notwithstanding the serious limitations due to insecurity, Mali's GWEP has detected an increasing share of dog infections at the presumed source of their infections, rather than after the dogs have been transported to Tominian district in Segou Region for sale. All 11 infected dogs in 2016 were detected in Tominian district; in 2017, 5 infected dogs were detected in Tominian and 5 were detected in other presumed source districts; in 2018, 9 infected dogs were detected in Tominian and 11 were detected in other districts. In April the program completed training of health workers in all 20 health areas of Tominian district plus 177 village volunteers and other local health workers and 10 veterinary agents. In May the program trained village and other local health workers and veterinary agents in Tenenkou district of Mopti Region, as well as in Niono, Macina, Markala, Bla, San and Segou districts of Segou Region. The MGWEP now has 2,802 villages under active surveillance in endemic and at-risk areas, including 8 former endemic sites in Ansongo district of Gao Region and 26 former endemic sites in Gourma Rharous district of Timbuktu Region, compared to 903 villages under active surveillance in 2018. A map showing the location of the seven contiguous endemic or at-risk districts in Mopti and Segou Regions was included in *Guinea Worm Wrap-Up #259*.

Mali's National Commission for the Certification of Dracunculiasis Elimination has met twice so far this year: on April 4th and May 10th. The Commission's Vice President Dr. Alhousseini Maiga has agreed to be Acting President. Mali has a new Minister of Health and Social Affairs, the Honorable Michel Sidibe, who was appointed in early May. Mr. Sidibe was formerly the executive director of UNAIDS at Geneva.

CHAD: MORE CASES AND INFECTED DOGS; MORE ABATE AND CONTAINMENT



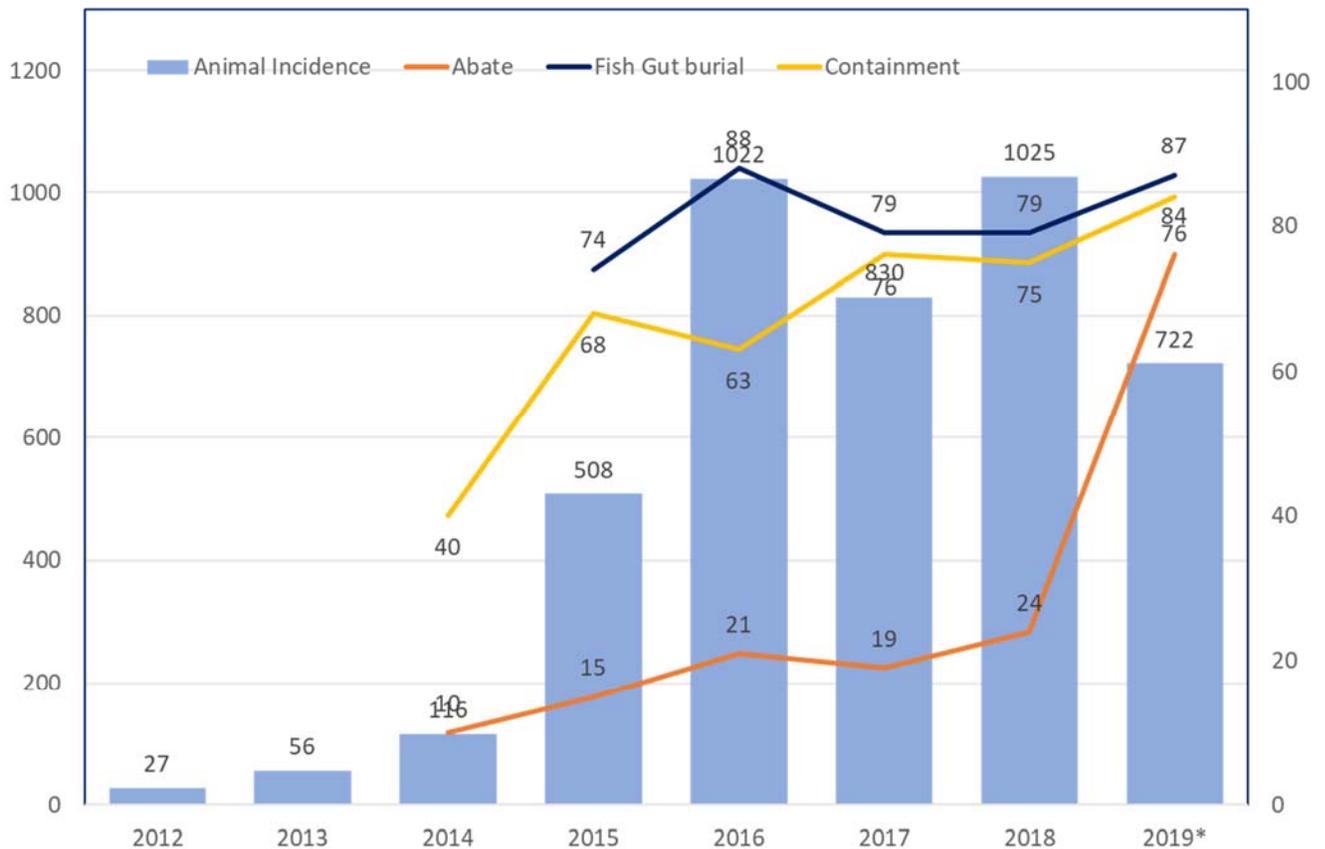
Chad's Guinea Worm Eradication Program (CGWEP) has reported 9 confirmed human cases of Guinea worm disease (67% contained) in January-April 2019 (Table 1). The program suspects there is an outbreak of human Guinea worm infections in the village of Bogam, in Liwi zone of Aboudeia district, Salamat Region, where 3 patients with confirmed infections were detected; there are 5 additional unconfirmed suspect cases in Liwi and a suspect case found in Sarh that comes from Bogam. Through April, Chad has provisionally reported 722 infected dogs, of which 84% were contained, plus 3 infected cats. This is an increase of 113% over the number of infected dogs reported in the same period of 2018. In addition to the improved containment rate of infected dogs, the CGWEP has greatly increased the use of systematic monthly Abate applications in the 340 villages with an infected human or animal in 2018 and the 28 new villages so far in 2019 to 76% (281/368). Eighty-three percent (876) of 1054 households of 1+ endemic villages surveyed in April 2019 were practicing safe disposal of fish guts ([Figure 1](#)). Awareness of the cash reward for reporting Guinea worm infections is still low: an average of 34% of persons surveyed so far in Level 1 and Level 3 areas in 2019 knew of the reward for reporting an infected person and an average 29% were aware of the reward for reporting an infected dog.

The Chad GWEP now has 2,218 endemic or high-risk villages under active surveillance. It is extending surveillance in Sarh and Kyabe districts of Moyen Chari Region, and opening active Guinea worm surveillance in Bere, Kolon, and Lai districts of Tandjile Region, Pala district of Mayo Kebbi Ouest Region, and Bongor district of Mayo Kebbi Est Region. Chad’s GWEP is also recruiting additional technical assistants in order to reduce the supervisory areas of the TAs.

A drug trial to assess the efficacy of Flubendazole to treat and/or prevent Guinea worm infections in dogs got underway in Chad in May in collaboration with the University of Georgia/USA. Together with wildlife veterinarian Dr. John Bryan II, the team has begun the first of two treatment phases and enrolled 235 dogs so far.

Figure 1

**Chad: Incidence of GW Infection in Animals, 2012 - 2019*
% Coverage** with Key Interventions**



* provisional through April 2019. The animal infections are mostly dogs.
 ** Definition of coverage Abate = % cumulative villages treated in 2018-2019 1+ villages same year;
 Burial of fish guts = % people surveyed in VAS level 1 with demonstrated fish burial practices;
 Containment = % infected humans or animals contained or tethered.

Table 1

**Chad Guinea Worm Eradication Program
GWEP Line Listing of Confirmed Cases: Year 2019***

| Case # | Age | Sex | Ethnicity | Village of Detection | District / payam / woreda | County / Region | Date of Emergence (D/M/Y) | Nb of worms | Case Contained | Patient contaminated sources of water (Yes/No) | ABATE applied (Yes/No) | Source* of infection established? (Yes/No) | Date sent to CDC (D/M/Y) | Diagnosis - GWD |
|--------|-----|-----|--------------|---------------------------------|---------------------------|-----------------|---------------------------|-------------|----------------|--|------------------------|--|--------------------------|-----------------|
| 1 | 33 | M | Mbao | Ngargue (Quartier Kormada) | Bailli | CB | 01-Jan-19 | 1 | No | Probable | Yes | Suspected | 09-janv.-19 | PDB19-002 |
| 2 | 11 | M | Sara Kaba | Dangala Kanya (Quartier Kibita) | Kyabe | MC | 05-Jan-19 | 1 | No | Probable | Yes | Suspected | 11-janv.-19 | PDB19-005 |
| 3 | 13 | M | Sara Kaba | Marabe 2 (Quartier Dilibi) | Kyabe | MC | 15-Fev-19 | 1 | Yes | No | No | Suspected | 22-Fev-19 | PDB19-011 |
| 4 | 64 | F | Sara Kaba | Kyabe (Hors-zone) | Kyabe | MC | 24-Mar-19 | 1 | No | Yes | Yes | Suspected | 03-avr.-19 | PDB19-017 |
| 5 | 4 | M | Ngambaye | Mourkou | Dourbali | CB | 16-Apr-19 | 1 | Yes | No | No | Suspected | 08-mai-19 | PDB19-024 |
| 6 | 58 | M | Sara-Goulaye | Gassaou/Ndjourou | Bouso | CB | 23-Apr-19 | 2 | Yes | No | No | Suspected | 08-mai-19 | PDB19-025 |
| 7 | 19 | F | Torom | Bogam | Aboudeia | SLM | 19-Apr-19 | 1 | Yes | No | No | Suspected | 08-mai-19 | PDB19-030 |
| 8 | 24 | F | Torom | Bogam | Aboudeia | SLM | 07-May-19 | 1 | Yes | No | No | Suspected | 13-mai-19 | PDB-19029 |
| 9 | 50 | F | Torom | Bogam | Aboudeia | SLM | 09-May-19 | 1 | Yes | No | No | Suspected | 13-mai-19 | PDB-19028 |

* Provisional

DOG WITH CONFIRMED GUINEA WORM FOUND IN ANGOLA



A domestic dog with an emerging Guinea worm was reported in the village of Ofenda in Namacunde municipality of Angola's Cunene Province in early April. Ofenda village is part of a cluster of villages where the young girl with the confirmed Guinea worm infection in April 2018 resided (see *Guinea Worm Wrap-Up #259*). The dog's infection was confirmed by PCR upon examination of the worm specimen at CDC. The surprising discovery of confirmed Guinea worm infections in two humans and one dog in two widely separated areas of Angola's Cunene Province in 2018 and 2019 after no known prior infections during almost four decades of the global Guinea worm eradication campaign is similar to the epidemiological pattern of sporadic infections of humans and domestic dogs now being seen also in Ethiopia and Mali, without the large-scale dog infections in Chad. Ambassador Mary Ann Peters, CEO of the Carter Center, Dr. Dean Sienko, Vice President of Health, and Mr. Adam Weiss, GWEP Director, will meet the Minister of Health in mid-June to finalize plans towards the establishment of community-based surveillance in Namucunde and Cuvelai municipalities.

SOUTH SUDAN: ZERO CASES REPORTED FOR 8 CONSECUTIVE MONTHS



The South Sudan Guinea Worm Eradication Program (SSGWEP) has not reported any cases so far in 2019. No case has been reported since September 2018, a period of eight consecutive months. South Sudan reported two cases in January-May 2018. This year ten specimens have been sent to CDC for testing and none were confirmed as Guinea worm. Three specimens are currently pending analysis.

Even though no cases have been reported this year, the SSGWEP remains on high alert during the peak transmission season, as only 30% of the cases in 2018 were contained. The program currently has over 2100 villages and cattle camps under active surveillance and from January to May 16,591 rumors were reported, of which 99% were investigated within 24 hours; 47% of all rumors became suspects. From January to April, the SSGWEP treated 236 water sources with Abate. In response to an uncontained 2018 case detected in Lankien, the program has significantly increased surveillance in the former counties of Uror, Nyirol, and Ayod in Northern Jonglei. This area has only recently been accessible to SSGWEP surveillance activities, which was made possible by a peace deal between the Government of South Sudan and opposition parties in September 2018. The SSGWEP is also conducting two pilot studies in the East of Nile region to assess the current levels of cash reward awareness, knowledge about GWD, and safe water use in 92 formerly 1+ villages and cattle camps (2013-2015). The results, which will be forthcoming shortly, will provide a baseline by which the program can measure its progress towards indicators for certification while also modeling the best way to strengthen passive surveillance throughout other parts of the country.

WHO CONVENES ANNUAL BRIEFING ON GUINEA WORM ERADICATION DURING WORLD HEALTH ASSEMBLY



The annual Informal Meeting of Ministers of Health of all endemic and formerly endemic Guinea worm-affected countries was held from 6:30 to 8:30pm on May 22, 2019 during the Seventy-Second World Health Assembly (WHA) in Geneva, Switzerland. The meeting was co-chaired by the Federal Minister of Health of **Ethiopia** (Honorable Dr. Amir Aman), and the WHO Regional Director for Africa (represented by Dr. Joseph Cabore). WHO Director-General Dr. Tedros Adhanom Ghebreyesus addressed the audience; he acknowledged the tremendous progress achieved by the eradication campaign so far, urged the remaining endemic countries to stop transmission as quickly as possible, and thanked former U.S. President Jimmy Carter for his dedication and unwavering support towards global eradication of Guinea worm disease. The Ministers of Health of Ethiopia, **Chad** (Honorable Moussa Khadam), and Togo (Prof. Moustafa Mijiyawa) participated, as well as the heads of the delegations of **South Sudan** (Undersecretary of Health Honorable Dr. Makur Matur Kariom) and Niger (Undersecretary of Health Dr. Ranaou Abache), and Dr. Mohamed Berthe, advisor to the Minister of Health of **Mali**. Dr. Pascal Magnussen represented the International Commission for the Certification of Dracunculiasis Eradication. Carter Center Vice President for Health Dr. Dean Sienko and Guinea Worm Program Director Mr. Adam Weiss represented The Carter Center at the meeting, which was attended by more than 60 participants. An exhibit on the GWEP was displayed at this WHA.

TRANSITIONS

Ms. Sarah Yerian joined the headquarters staff of the Guinea Worm Eradication Program at The Carter Center in Atlanta as Senior Associate Director in April 2019. She was formerly the Country Representative of The Carter Center in South Sudan, based in Juba. Welcome and Congratulations, Sarah! Her successor as Acting Country Representative in Juba is Mr. Jake Wheeler, formerly the Deputy Country Representative. Welcome and Congratulations, Jake!

Table 2

Number of Laboratory-Confirmed Cases of Guinea Worm Disease, and Number Reported Contained by Month during 2019*
(Countries arranged in descending order of cases in 2018)

| 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 / 2 | 1 / 1 | 0 / 1 | 3 / 3 | 2 / 2 | / | / | / | / | / | / | / | 6 / 9 | 67% |
| SOUTH SUDAN | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | / | / | / | / | / | / | / | 0 / 0 | 0% |
| ANGOLA | 0 / 1 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | / | / | / | / | / | / | / | 0 / 1 | 0% |
| ETHIOPIA | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | / | / | / | / | / | / | / | 0 / 0 | 0% |
| MALI § | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | / | / | / | / | / | / | / | 0 / 0 | 0% |
| TOTAL* | 0 / 3 | 1 / 1 | 0 / 1 | 3 / 3 | 2 / 2 | 0 / 0 | 6 / 10 | 60% |
| % CONTAINED | 0% | 100% | 0% | 100% | 100% | | | | | | | | 60% | |

*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.

§Reports include Kayes, Koulikoro, Segou, Sikasso, and Mopti, Timbuktu and Gao Regions; contingent on security conditions during 2018, the GWEP continued to deploy one technical advisor to Kidal Region to oversee the program.

Number of Laboratory-Confirmed Cases of Guinea Worm Disease, and Number Reported Contained by Month during 2018*
(Countries arranged in descending order of cases in 2017)

| 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 | 1 / 1 | 1 / 1 | 0 / 0 | 1 / 1 | 0 / 0 | 1 / 5 | 1 / 4 | 0 / 0 | 0 / 1 | 0 / 0 | 1 / 3 | 7 / 17 | 41% |
| 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 | 0% |
| SOUTH SUDAN | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 2 | 0 / 2 | 1 / 3 | 1 / 2 | 1 / 1 | 0 / 0 | 0 / 0 | 0 / 0 | 3 / 10 | 30% |
| 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 | 0% |
| ANGOLA^ | / | / | / | 0 / 1 | / | / | / | / | / | / | / | / | 0 / 1 | 0% |
| TOTAL* | 1 / 1 | 1 / 1 | 1 / 1 | 0 / 1 | 1 / 3 | 0 / 2 | 2 / 8 | 2 / 6 | 1 / 1 | 0 / 1 | 0 / 0 | 1 / 3 | 10 / 28 | 36% |
| % CONTAINED | 100% | 100% | 100% | 0% | 33% | 0% | 25% | 33% | 100% | 0% | 100% | 33% | 36% | |

*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.

§Reports include Kayes, Koulikoro, Segou, Sikasso, and Mopti, Timbuktu and Gao Regions; contingent on security conditions during 2018, the GWEP continued to deploy one technical advisor to Kidal Region to oversee the program.

^ Investigation of the origin of this is case is ongoing. Preliminary outcomes indicate there is no current or historical evidence of human or animal infections in the district of residence.

RECENT PUBLICATIONS

Cleveland C, Eberhard ML, Thompson AT, et.al., 2019. A search for tiny dragons (*Dracunculus medinensis* third-stage larvae) in aquatic animals in Chad, Africa. Scientific Reports 9:375. doi:10.1038/s41598-018-37567-7.

World Health Organization, 2019. Dracunculiasis eradication: global surveillance summary, 2018. Wkly Epidemiol Rec 94:233-252. <http://www.who.int/wer>

OBITUARY

We regret to report the passing of two former Guinea Worm Warriors of Chad:

- Djimadoumadji Ngarodjel, who was the National Program Coordinator of Chad's GWEP from August 2011 to October 2012, passed away in 2016.
- Hassan Guialoungou, who was Deputy National Program Coordinator of the CGWEP from March 2011 to October 2012 and served as Monitoring and Evaluation Officer to the program from November 2012 to February 2019, died in March 2019.

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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<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



CDC is the WHO Collaborating Center for Dracunculiasis Eradication