



Date: June 24, 2015

From: WHO Collaborating Center for
Research, Training and Eradication of Dracunculiasis, CDC

Subject: GUINEA WORM WRAP-UP #234

To: Addressees

SOUTH SUDAN: 7 CONSECUTIVE MONTHS WITH ZERO CASES!!!!!!!



The South Sudan Guinea Worm Eradication Program (SSGWEP) recorded another month with zero cases of Guinea worm disease (GWD, dracunculiasis) in May 2015, extending its total number of consecutive months without a case of the disease to seven (Figure 1, Table 1). The most recent case of GWD in South Sudan was diagnosed in October 2014. This compares to 11 cases reported in South Sudan in January-May 2014. The

Ministry of Health of South Sudan issued a press release with this good news on June 17, 2015. The WHO Collaborating Center for Research, Training and Eradication of Dracunculiasis at the Centers for Disease Control and Prevention (CDC) examined 87 specimens submitted by the SSGWEP for May and found none were *Dracunculus medinensis*. The SSGWEP convened the regular monthly meeting of its interagency Task Force in Juba on May 26th.

Figure 1 **South Sudan Guinea Worm Eradication Program
Cases of Dracunculiasis Reported by Month, 2011 - 2015***

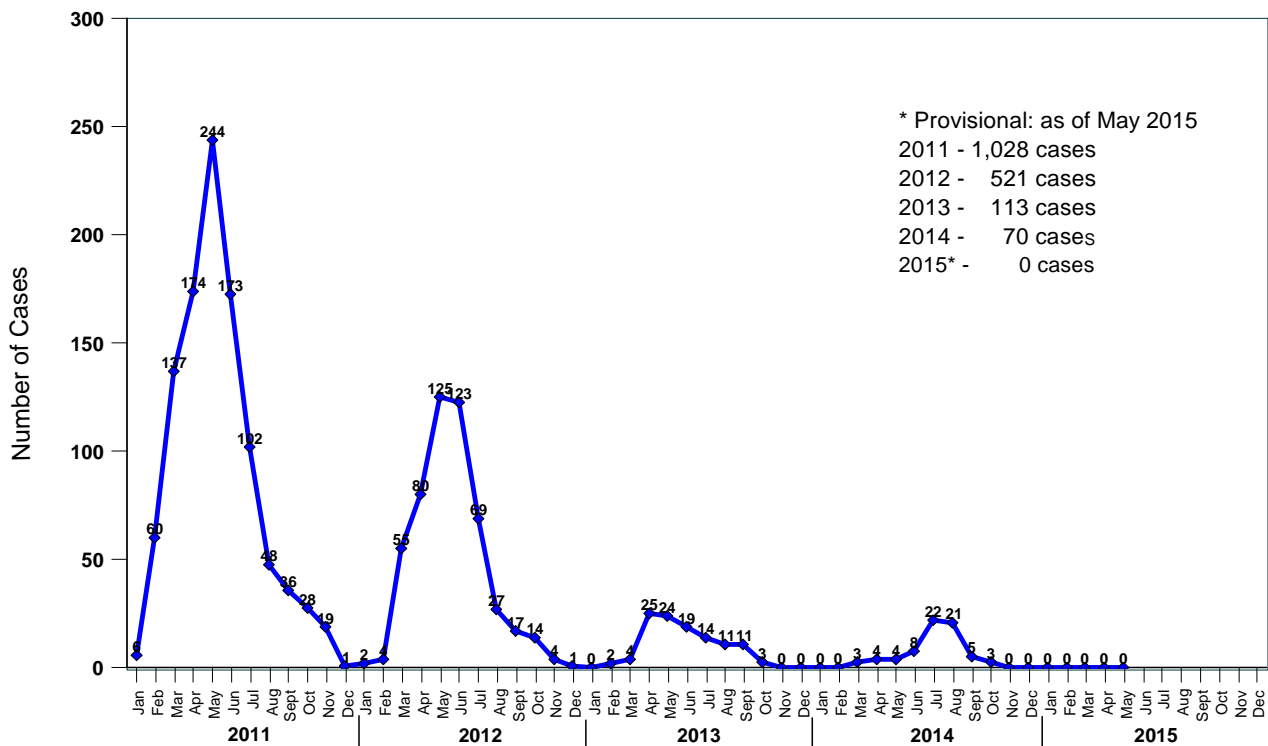


Table 1

Number of Reported Cases of Guinea Worm Disease Contained and Number Reported by Month during 2015*
(Countries arranged in descending order of cases in 2014)

COUNTRIES WITH ENDEMIC TRANSMISSION	NUMBER OF CASES CONTAINED / NUMBER OF CASES REPORTED													% CONT.
	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL*	
SOUTH SUDAN	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
CHAD	0/0	0/1	0/2	0/1	0/0	/	/	/	/	/	/	/	0/4	0
ETHIOPIA	0/0	0/0	0/0	0/0	1/1	/	/	/	/	/	/	/	1/1	100
TOTAL*	0/0	0/1	0/2	0/1	1/1	0/0	0/0	0/0	0/0	0/0	0/0	0/0	1/5	20
% CONTAINED	0	0	0	0	100								20	

*Provisional

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

Cells shaded in yellow denote months when transmission of GWD from one or more cases was not contained.

[§]Reports include Kayes, Koulikoro, Segou, Sikasso, and Mopti, Tinbuktu and Gao Regions; in late April. One technical advisor deployed to Kidal in April 2013 continues to oversee the program in that region.

Number of Reported Cases of Guinea Worm Disease Contained and Number Reported by Month during 2014
(Countries arranged in descending order of cases in 2013)

COUNTRIES WITH ENDEMIC TRANSMISSION	NUMBER OF CASES CONTAINED / NUMBER OF CASES REPORTED													% CONT.
	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL*	
SOUTH SUDAN	0/0	0/0	3/3	3/4	3/4	6/8	13/22	14/21	4/5	1/3	0/0	0/0	47/70	67
CHAD	1/1	1/1	1/1	1/1	0/1	0/1	1/3	0/1	1/1	0/0	1/1	1/1	8/13	62
MALI [§]	0/0	0/0	0/0	0/0	0/0	0/0	0/0	1/1	14/18	12/13	8/8	0/0	35/40	88
ETHIOPIA	0/0	0/0	0/0	0/0	0/0	2/2	0/0	0/0	0/0	0/0	0/0	0/1	2/3	67
TOTAL*	1/1	1/1	4/4	4/5	3/5	8/11	14/25	15/23	19/24	13/16	9/9	1/2	92/126	73
% CONTAINED	100	100	100	80	60	73	56	65	79	81	100	50	73	

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

Cells shaded in yellow denote months when transmission of GWD from one or more cases was not contained.

[§]Reports include Kayes, Koulikoro, Segou, Sikasso, and Mopti, Tinbuktu and Gao Regions; in late April, the GWEP deployed one technical advisor to Kidal to oversee the program during the transmission season (for the first time since 2012).

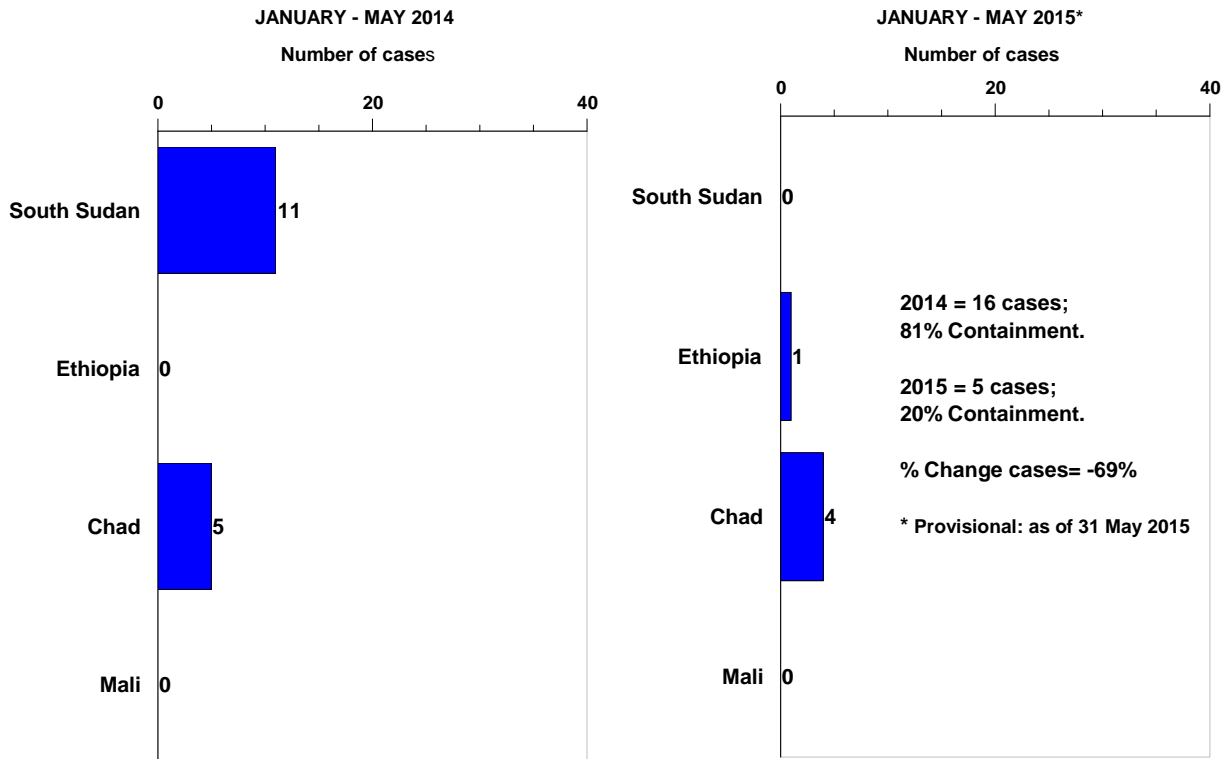
ICCDE WARNS CHAD, ETHIOPIA, MALI AND SOUTH SUDAN: START PREPARING FOR STRICTER CERTIFICATION PROCESSES NOW



As the world moves closer to complete interruption of transmission of Guinea worm disease (Figure 2, Table 1), in his remarks to participants at the Informal Meeting for Guinea worm-affected countries during this year's World Health Assembly in Geneva, Prof. David Molyneux, a member of the International Commission for the Certification of Dracunculiasis Eradication (ICCDE), reminded representatives of the four remaining endemic countries (Chad, Ethiopia, Mali, South Sudan) that they will need to meet a higher standard in general, and regarding surveillance in particular, in order to be certified as free of Guinea worm disease by the ICCDE. The senior representatives of the four countries at the meeting were Honorable Mr. Ngueadoum Assane (Secretary of State for Health, Chad), Honorable Dr. Kesetebirhane Birhane (Minister of Health, Ethiopia), Honorable Mr. Ousmane Kone (Minister of Health, Mali), and Honorable Dr. Makur Kariom (Undersecretary, Ministry of Health, South Sudan). Approximately 100 persons, including WHO Director General Dr. Margaret Chan, WHO Deputy Director Dr. Asamoah Baah, WHO Assistant Director General Dr. Hiroshi Nakatani, and ICCDE member Prof. Robert Guiguemde participated in the meeting, which heard technical overviews presented by Mr. Craig Withers of The Carter Center and Dr. Dieudonne Sankara of WHO. Dr. Matshidiso Moeti, director of WHO's Regional Office for Africa, chaired the meeting.

Figure 2

REPORTED CASES OF DRACUNCULIASIS BY COUNTRY DURING JANUARY - MAY 2014 and 2015*



The three main criteria for certification of dracunculiasis elimination, established by the ICCDE, are: 1) evidence of absence of transmission of the disease, 2) evidence of a functional country-wide surveillance system, and 3) no risk of re-establishment of local transmission from any imported case. Whether the country meets these criteria must be verified by an independent evaluation, by the visit of an International Certification Team (ICT), and by ICCDE review of documents submitted to it by the ministry of health (especially a thorough Country Report about the national eradication campaign), the evaluation team, and the ICT. Beginning these preparations now is urgent for the four remaining endemic countries, because of the extensive time and effort required to assemble the required documentation, especially the records of surveillance, case investigation, and assessment of rumors of cases at local, regional and national levels, and to properly preserve and organize those records for inspection by the evaluation team, the ICT and the ICCDE. As an example of the level of detail already required of Ghana, which was certified by the ICCDE at its Tenth Meeting in January 2015, the Table of Contents of its Country Report on Dracunculiasis Eradication that Ghana submitted to the ICCDE in May 2014 is reproduced below (Figure 3). Those countries that already have a national Certification Committee (i.e., Ethiopia, Mali) are advised to put them to work, and those countries which do not yet have a functional Certification Committee (i.e., Chad, South Sudan) should appoint one soon.

Figure 3

COUNTRY REPORT ON DRACUNCULIASIS ERADICATION GHANA

TABLE OF CONTENTS

LIST OF MEMBERS OF THE NATIONAL CERTIFICATION COMMITTEE
FOREWORD
ACKNOWLEDGEMENTS
LIST OF ABBREVIATIONS
LIST OF FIGURES
LIST OF TABLES
EXECUTIVE SUMMARY
CHAPTER 1: INTRODUCTION
1.1. Country Profile
1.1.1. Geography, Location and Borders
1.2. Governance and Administration
1.3. Demography
1.4. The Healthcare System in Ghana
1.4.1. Organization of Health Systems in Ghana
1.4.2. Health Service Delivery in Ghana
1.5. Health Workforce
1.6. Health Information Management
1.7. Safe Water Supply
CHAPTER 2: GUINEA WORM ERADICATION IN GHANA
2.1. Background
2.2. The Guinea Worm Eradication Program
2.3. Interventions Used During the Intervention Phase of the Program
2.3.1. Public Health Education
2.3.2. National Communication Strategy
2.3.3. Vector control
2.3.4. Promotion of Filter Use
2.3.5. Surveillance and Case Containment

- 2.3.6. Community-Based Surveillance System
- 2.3.7. Water Supply
- 2.4. Achievements during the Intervention Phase
- CHAPTER 3: PRECERTIFICATION ACTIVITIES
- 3.1. Precertification Surveillance Activities
 - 3.1.1 Types of Surveillance
 - 3.1.1.1 Community-based Surveillance Systems (CBS)
 - 3.1.1.1.1 Village Reporting
 - 3.1.1.2. Integrated Disease Surveillance and Response (IDSR)
 - 3.1.1.2.1. IDSR Reporting
 - 3.1.1.3. DHIMS
 - 3.2. Rumors Reporting
 - 3.2.1. Rumors' registration and investigations
 - 3.3. Diagnosis of Hanging Worms
 - 3.4. Case Searches
 - 3.4.1. Results of recent Case Searches
 - 3.4.1.1. Results of Case Search in Nine Recently Freed Districts
 - 3.4.2. NIDS Case Searches-June and October 2013
 - 3.5. Cash Reward System .
 - 3.6. Reward System Publicity
 - 3.7. School Quiz
 - 3.8. Training
 - 3.7. Stop Transmission of Guinea Worm (STOG)
 - 3.8. Provision of safe water sources to at-risk villages
 - 3.8.1. Safe Water Status in Formerly Endemic Villages Since 2006
 - 3.9. Evaluation and Reviews
 - 3.9.1. External Evaluation
 - 3.9.2. WHO Follow-Up Visits
 - 3.9.3. Ghana Legacy Project
 - 3.10. HW knowledge of appropriate response to GWD rumors and the cash reward
 - 3.11. National Certification Committee
 - 3.11.1. Terms of Reference
 - 3.11.2. The structure and composition of the National Certification Committee
 - 3.11.3. Activities undertaken by the National Certification Committee
 - 3.11.4. Advocacy Meetings and Visits
- CHAPTER 4: CROSS BORDER SURVEILLANCE
- 4.1. Epidemiological Status of Neighboring Countries
- 4.2. Certification in Neighboring Countries
- CHAPTER 5: COUNTRY PREPAREDNESS FOR CERTIFICATION
- 5.1. Justification for Absence of Dracunculiasis in Ghana
- 5.2. Monitoring process for absence of Dracunculiasis in Ghana
- 5.3. Evidence of absence of Dracunculiasis in Ghana
- CONCLUSION
- REFERENCES
- APPENDIX

CHAD: 4 CASES IN HUMANS, 251 INFECTED DOGS SO FAR IN 2015



Chad's GWEP reported a fourth case of GWD, a 3 year old Sarakaba boy in Maikom (Maicombe) area of Morko village of Danamadji District in Moyen Chari Region (Table 2). His first worm emerged on April 28, and he was admitted to a case containment center the same day, but he is classified as not

contained because the worm was already emerging when he was brought to the health center, although he reportedly did not contaminate a water source. None of the four GW patients detected in Chad so far in 2015 were contained.

The numbers of dogs with emerging Guinea worms continues to rise, with 251 infected dogs so far this year as of June 15, compared to 113 infected dogs reported in all of 2014. Measures to reduce transmission of GW infections to and from dogs have increased also. In January 2015 Chad's GWEP began offering a reward of 10,000 CFA (~\$17) for reporting and tethering an infected dog to prevent the animal from contaminating a water source.

- As of June 15, 70% (175/251) of the infected dogs reported from all villages so far this year had been contained, compared to 40% of the infected dogs reported in all of 2014.
- As of May 2015, 83% of 1,032 residents who were surveyed in villages under active surveillance in Chad, and 73% of 259 market vendors surveyed, reported that they were burying fish entrails; a practice which the GWEP began urging residents to do in October 2013 (Figure 4).

Dogs are believed to be infected by eating raw entrails of fish which contain copepods with viable GW larvae. The mode of transmission to humans in Chad also appears not to be via drinking water, unlike the pattern of infection seen in every previous endemic country (including Chad itself in the 1990s):

1. because almost all of the 61 cases of GWD since 2010 have occurred without any other human case in the same village in preceding or subsequent years (one would normally expect many cases, i.e., outbreaks of GWD, in those villages in consecutive years if transmission of GWD was via sources of drinking water commonly used by many residents);
2. because a relatively high proportion of villages along the Chari River have safe sources of drinking water, e.g. as of May 2015, 470 (63%) of 746 villages under active surveillance have safe sources of drinking water (borehole and/or protected draw wells);
3. because the current outbreak is associated with intensive seasonal fishing and consumption of fish year-round along the Chari River;
4. because the GWs emerging from dogs and humans are D. medinensis and genetically indistinguishable, and;
5. because similar patterns of transmission involving aquatic animals as a transport host are known to occur routinely with other parasites.

The evidence supporting this unusual pattern of transmission in Chad has become even stronger since it was hypothesized a year and a half ago.*

* (Eberhard ML, Ruiz-Tiben E, Hopkins DR, et al., 2014. The Peculiar Epidemiology of Dracunculiasis in Chad. Am J Trop Med Hyg:Vol 90(1), pp. 61-70).

Figure 4

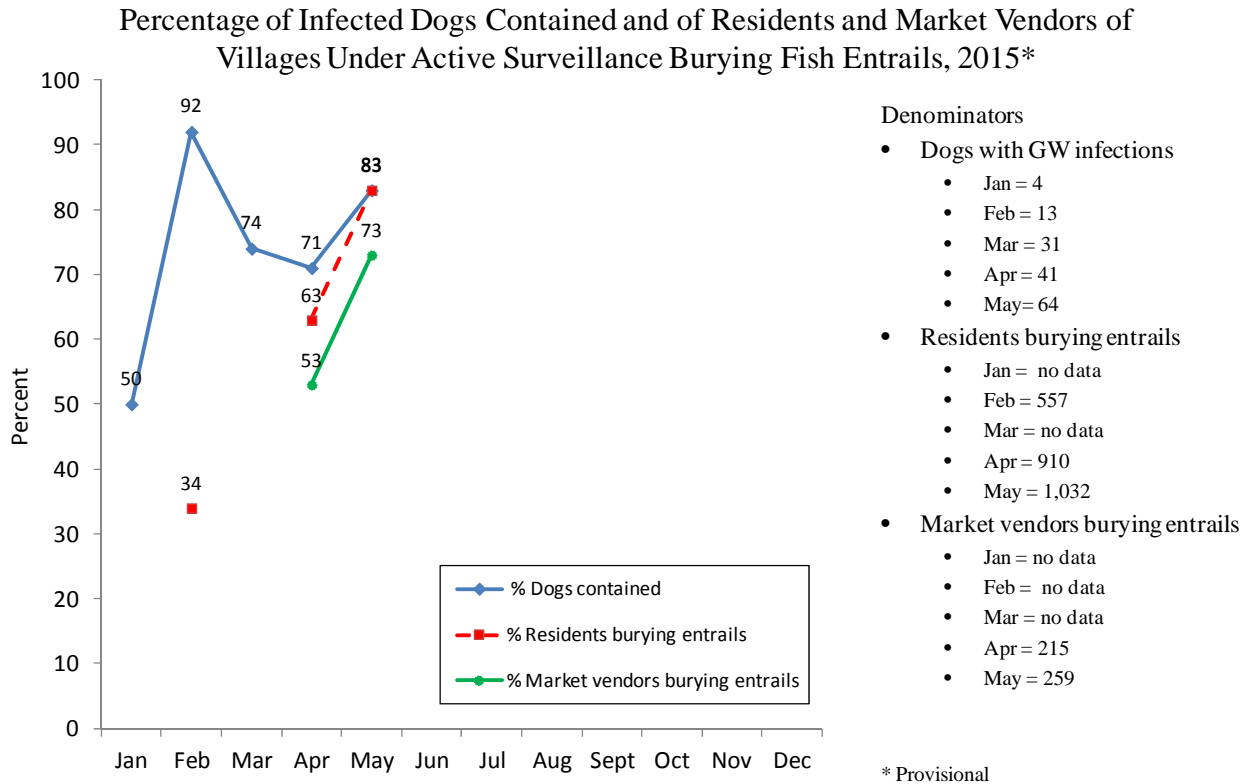


Figure 5

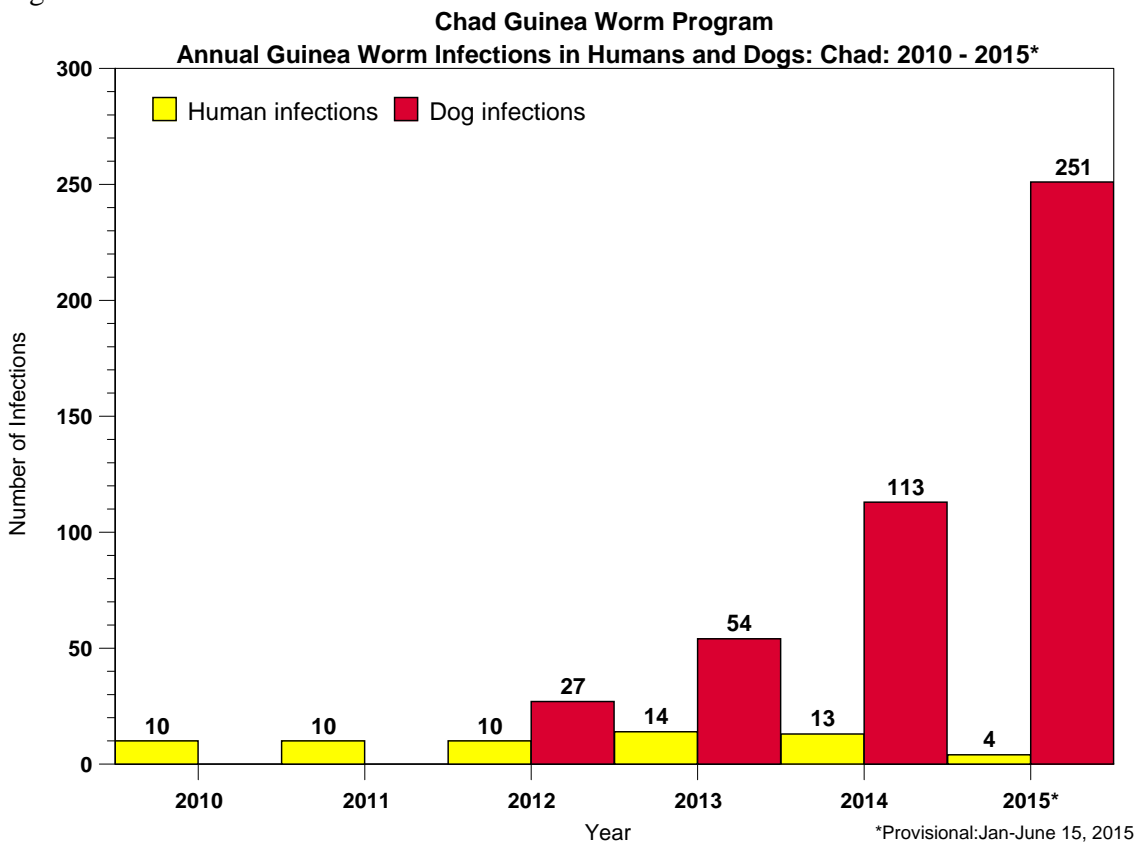


Table 2

Chad Guinea Worm Eradication Program
Line Listing of Cases of GWD during 2015

Case #	Village or Locality of Detection			District	Region	Patient			Case Contained?		1 = imported 2= indigenous	Home Village or Locality			Presumed Source of Infection Identified?		Presumed Source of Infection is a Known VAS?	
	Name	1= VAS	2= VNAS			Age	Sex	Date GW Emerged (D/M/Y)	(Yes, No, or Pending)	If no, date of Abate Rx		Name	1= VAS	2= VNAS	(Yes or No)	Name	(Yes or No)	Actions?
1.1	Mourgoum		2	Dourbali	Chari Baguirmi	13	M	19-Feb-15	No	-	2	Mourgoum		2	No		No	Contaminated flowing water
2.1	Marabe I		2	Kyabe	Moyen Chari	8	F	7-Mar-15	No	-	2	Marabe I		2	No	-	No	Did not contaminate water
2.2								24-Mar-15										
2.3								13-Apr-15										
3.1	Diganali	1		Guelendeng	Mayo-Kebi Est	9	M	28-Mar-15	No	4/6/2015	2	Diganali	1		No	-	Yes	
3.2								5-Apr-15										
3.3								14-Apr-15										Worm extraction in process
4.1	Maicomb		2	Danamaji	Moyen Chari	3	M	28-Apr-15	No		2	Maicomb		2	No		No	
4.2								17-May-15										
4.3								17-May-15										

Use the 1.1, 1.2...etc. system to designate number of GWs emerging from same case-patient.

VAS = village under active surveillance

VNAS = village not under active surveillance

ETHIOPIA: A LONG STRUGGLE JUST GOT LONGER



The Ethiopia Dracunculiasis Eradication Program (EDEP) has reported a case of GWD in a 25 year old male Anuak fisherman and hunter who resides in the village of Gutok in the Gop fishing area of Terkudi kebele of Abobo district in Gambella Region. The patient was detected and admitted to a case containment center in Abobo district on 27 May, the same day that his worm began emerging during controlled immersion. The exact source of his infection is uncertain, but he has a history of travel in a known endemic area (as of 10-14 months ago) of Gog district as well as a known endemic area (as of two years ago) of Abobo district. Abate has been applied in all associated surface water sources except a large lake. Abate application also continued in April and May in water sources in Gog district associated with Wichini, Atheti, Ablen and Bator villages, where cases were reported in 2014. One new district Guinea worm officer and 9 new assistant Guinea worm officers were trained in Gambella in May.

MALI ESTABLISHES NATIONAL CERTIFICATION COMMITTEE



On May 13, 2015, the Minister of Health of Mali, the Honorable Ousmane Kone, issued an official decision memorandum establishing a National Commission for the Certification of Dracunculiasis Eradication in Mali. The Commission will consist of a president, a vice-president and 11 members, including representatives from several ministries, the Faculty of Medicine, the National Public Health Research Institute, the World Health Organization, UNICEF and The Carter Center. The national GWEP will serve as the secretariat of the Commission. The date of the first meeting of the Commission is not yet known. Mali still does not have a national Task Force to help coordinate intersectoral activities of its GWEP.

The staff of Mali's GWEP visited each of the 40 patients who had GWD last year in Tanzikratene, Nanguaye and Fion villages in April and again in May. GW surveillance in Tanzikratene was integrated with the polio immunization campaign in April. Insecurity continues to hamper activities. The water system in Tanzikratene has not been rehabilitated, but UNICEF disbursed funds for that purpose in May. Surveys of reward awareness conducted in April in Gao, Bourem, and Ansongo districts of Gao Region found awareness rates of 100% (1,244 surveyed), 78% (166), and 81% (2,573) respectively. The awareness rate in Gourma Rharous district of Timbuktu Region was 100% among 390 persons surveyed, and it was 99% among 1,650 persons surveyed in Koro, Bankass and Mopti districts of Mopti Region.

DEFINITIONS

A case of Guinea worm disease is a person exhibiting a skin lesion with emergence of a Guinea worm, ideally with laboratory confirmation. That person is counted as a case only once during the calendar year, i.e., when the first Guinea worm emerged from that person. *All worm specimens should be obtained from each case-patient for laboratory confirmation and sent to CDC. All cases should be monitored at least twice per month during the remainder of the calendar year for prompt detection of possible additional Guinea worms.*

A rumor is defined as any information about a possible case of GWD.

A suspect is a person exhibiting sign and symptoms compatible with GWD, i.e., localized or generalized itching and/or a swelling, a painful blister, and/or a skin lesion but no visible Guinea worm.

Endemic village: a village with one or more active indigenous cases during the previous and/or current year.

Chad: Given the special circumstances in Chad, the 2014 GWEP Review meeting established a new description and definition. Instead of using “endemic” to denote affected villages in Chad, the GWEP will use “1+ case village”: *a village with one or more indigenous cases and/or imported case of Guinea worm infection in a human, dog and/or cat, in the current calendar year and/or the previous year. These 1+ case villages require immediate interventions to interrupt or prevent transmission. These 1+ case villages are also called “priority villages.”*

Revised Criteria For 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. The village volunteer 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 Guinea worms are present, the case is not contained until the last worm is pulled out), *and*
4. ABATE is used if there is any uncertainty about contamination of sources of drinking water, or if a source of drinking water is known to have been contaminated.

Levels Of Surveillance 2015-2019: Because *Dracunculus medinensis* lives without symptom in humans for 10-14 months, patients are unaware of their infection. This condition allows humans to become carriers of the infection during the entire incubation period, and so unknowingly can carry the disease with them over long distances. When the GW emerges, the victim poses a risk to a water source potentially hundreds of miles from the site of initial infection. Moreover, during the entire incubation period, the GWEP staff cannot know who is infected. This issue requires programs to identify all communities with endemic transmission of GWD, as well as communities or localities where residents may travel, and establish active village-based daily surveillance (please see below) and monthly reporting of GWD cases, and implement interventions to interrupt transmission of the disease.

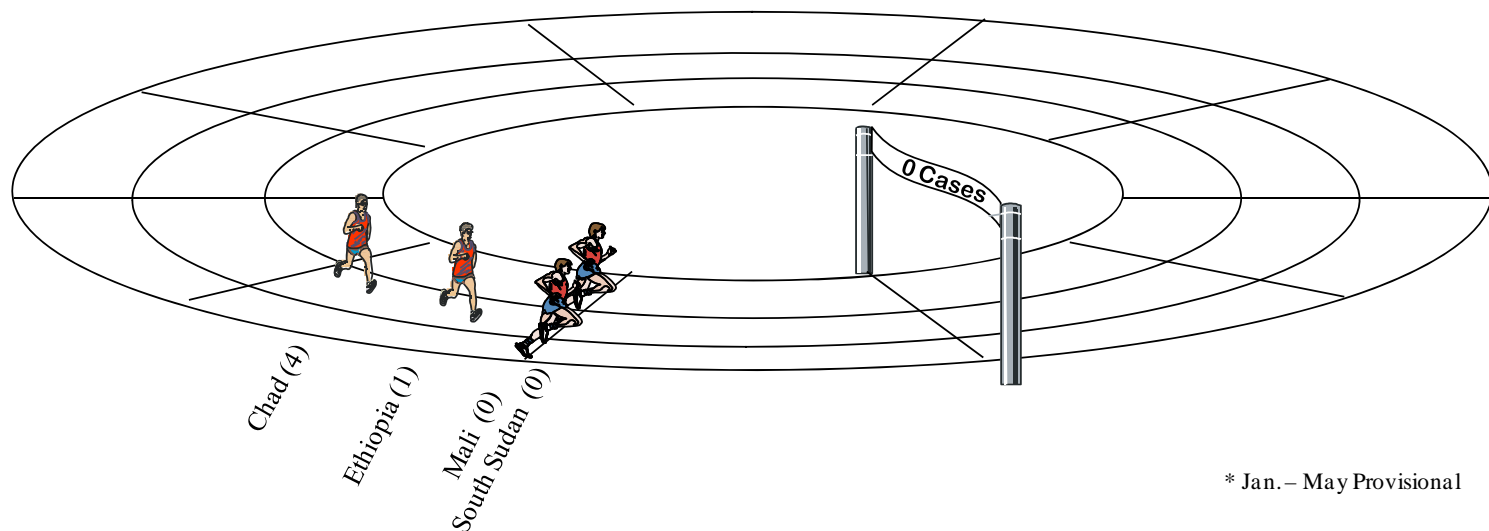
- Level I surveillance is implemented in communities with endemic transmission within the endemic districts. Multiple searches for cases are conducted each week, usually household-by-household by village volunteers or other GWEP staff in all inhabited places (camps, hamlets, villages) with the aim of detecting cases within 24 hours of the worm's emergence from the skin and immediately implementing control interventions to prevent the patient transmitting the infection to others. Information about the cash reward is disseminated to all residents constantly, by word of mouth and using all other available infrastructures. Levels of awareness are monitored monthly. All rumors are investigated within 24 hours, the outcome of investigations reported and documented, and rumor reporting rates monitored monthly.
- Level II surveillance is implemented in communities in non-endemic districts at high risk of imported cases (adjacent to endemic districts or share water sources, migration routes, etc.). Outreach and intensive dissemination of information to residents about the cash reward for reporting cases of GWD (via supervisors, village informants, health workers, community leaders, radio, etc.), and monthly assessments of the level of reward awareness are conducted. All rumors are investigated within 24 hours, the outcome of investigations reported and documented, and rumor reporting rates monitored monthly.
- Level III surveillance is implemented in all other communities in non-endemic districts not at high risk of importation of cases. Dissemination of information to residents about the cash reward is delivered via all available infrastructures, including monthly monitoring of levels of awareness. All rumors are investigated within 24 hours, the outcome of investigations reported and documented, and rumor reporting rates monitored monthly.
- All three levels of surveillance also include redundant surveillance via special surveys in schools, markets, villages, etc. where indicated, and use of other ongoing outreach activities such as polio immunization days, mass drug administration campaigns, etc. Ministries of health are encouraged to train staff from neglected tropical diseases control/elimination programs about GWD, cash rewards, investigations of rumor and reporting protocols.
- Once transmission is interrupted (12-14 months after report of the last indigenous case) the risk of importation of cases reduces to zero and all communities nationwide default to Level III surveillance until the country is certified free of GWD transmission.

RECENT PUBLICATIONS

Eberhard, ML; et al. 2015 Thirty-Seven Human Cases of Sparganosis from Ethiopia and South Sudan Caused by Spirometra. Am J Trop Med Hyg. S: 1476-1645.

GUINEA WORM RACE: 2015*

Who will cross the finish line last?



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 (eruziti@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, Drs. Sharon Roy and Mark Eberhard of CDC and Dr. Dieudonné Sankara of WHO.

WHO Collaborating Center for Research, Training, and Eradication of Dracunculiasis, Center for Global Health, Centers for Disease Control and Prevention, Mailstop C-09, 1600 Clifton Road NE, Atlanta, GA 30333, 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



CDC is the WHO Collaborating Center for Research, Training, and Eradication of Dracunculiasis.