

the number of Guinea worms emerging from infected dogs is reduced by 39%. This reduction is believed to reflect mainly the impact of tending infected dogs until their worms have emerged, educating villagers to bury fish guts instead of discarding them on the ground where dogs can eat them, encouraging residents always cook and cure aquatic animals well, and limited use of Abate. Seventy nine percent of dog infections in 2012-2016 occurred in March-August. Most infected dogs and humans in Chad reside in villages along the Chari River, where 1,862 villages are under active surveillance in 2017. The pattern of cases in humans since the current outbreak was discovered in 2010 remains unusual, with only 9-16 cases annually, located in different villages each year: of 94 villages with cases so far since 2010, only six villages had a case in a subsequent year, including three that had cases in successive years.

The outbreak in Ethiopia had affected at least migrant male workers from Oromia Region who shared drinking water provided from a contaminated pond at their workplace on a commercial farm in an adjacent area of Gambella Region a year ago. Ethiopian authorities and staff of Ethiopia's national Dracunculiasis Eradication Program had begun to interview the patients, assess relevant water bodies for possible treatment with Abate, identify and monitor all seasonal workers on the implicated farm and other nearby commercial farms before January 2017 who may have drunk water from the contaminated pond, and establish active community-based surveillance in the affected areas.

The World Health Organization (WHO) has certified 198 countries, areas and territories as free of dracunculiasis transmission. Eight countries remain to be certified: four endemic countries (Chad, Ethiopia, Mali and South Sudan), two countries in the pre-certification stage (Kenya, Sudan) and two countries not known to have had indigenous disease since before the global campaign began (Angola, Democratic Republic of Congo). The governments of Angola and Democratic Republic of Congo are in various stages of preparing dossiers for consideration by the International Commission for the Certification of Dracunculiasis Eradication (ICCDE) and may be ready for review in 2018. Kenya and Sudan have submitted Country Reports to WHO already. Kenya is tentatively scheduled to receive an International Certification Team (ICT) mission later in 2017 if the security situation following the presidential election permits; the ICT mission to Sudan has been postponed due to unresolved rumors of a suspected case. WHO continues to request quarterly reporting of surveillance activity in post-certified formerly endemic countries. By the end of September 2017 WHO had received sports surveys among dogs in 21,952 households in 1,947 villages in eight formerly endemic countries; these surveys found no dogs or humans infected with Guinea worm disease.

Biology and Life Cycle

Studies to date have revealed findings that suggest transmission of Guinea worm parasites in Chad involves a paratenic or transport host and that frogs may be more susceptible hosts than fish, but other aquatic animals such as Nile monitor lizard (*Anolis niloticus*) may be involved also. *D. medinensis* has been recovered from a wild caught frog in Chad and catfish (*Pseudorasbora*) native to Chad have been infected experimentally. Third stage larvae of *Dracunculus insignis*, which is indigenous to North America, have remained viable in frog tissues for up to eight months in the laboratory. Dogs can drink copepods in high concentration from bowls of water under

Dog Ecology and Diet

2. The ITFDE commends the robust research agenda being pursued related to dog infections in Chad, and endorses the on-going search for relevant intervention tools, including modeling of transmission scenarios and study of dog diets and habits.
3. Research priorities also should include continued attention to the mode of transmission, especially (dog) lapping studies and duration of larval viability in aquatic animals. At this stage, it is not possible to rule out transmission of Guinea worm infections in Chad via drinking water or eating a paratenic host, or both modes of transmission. Frogs appear to be a more likely paratenic host than fish so far.
4. It would be instructive to look for any differences between behavior of dogs and humans in households with and without Guinea worm-infected dogs.
5. Genetic studies indicate that the Guinea worms recovered from animals and people in Chad, Ethiopia and Mali are all *Dracunculus medinensis*.
6. The relatively small genetic diversity of Guinea worm specimens from Mali and South Sudan suggests that those two countries are closer to elimination of transmission than Chad and Ethiopia. Genetic findings also suggest that Guinea worm parasites were circulating in Chad during the decade when no cases of the disease were reported there.
7. In Chad, intervention priorities should stress surveillance, intensified use of Abate wherever possible, increased containments of infected humans and animals, thorough cooking or curing of aquatic animals, burial of fish guts, and focus on Chadian villages with the highest number of infected dogs. The GWEP and government of Chad are urged also to advocate with utmost urgency for provision of resources of drinking water to all villages with infected humans or animals lacking a safe source of drinking water.
8. Prompt reporting and containment of Guinea worm infections in humans and animals are both important, since the worms from both are indistinguishable. The ITFDE endorses the enhanced communication campaigns launched recently in Mali and Chad and soon to be launched in South Sudan and Ethiopia in order to increase knowledge of the cash reward and of prevention messages, and help prepare countries for certification of eradication.
9. The ITFDE emphasizes the need for strong political support in all of the endemic countries remaining, which has been particularly forthcoming in South Sudan and to a degree in Mali. This need is now still especially acute in Ethiopia, as was specifically noted in a recommendation at the ITFDE meeting in 2015, and also in Chad.
10. The Task Force encourages engagement of regional health authorities in Oromia and Gambella in response to the recent outbreak in Ethiopia, including activation of the Health Development Army and Health Extension Workers in those two regions especially.
11. Insecurity is a significant hindrance to surveillance and interventions, and to validation of interruption of transmission as well as certification of the elimination of transmission of *D. medinensis* in Mali and South Sudan especially, but to a lesser extent in Ethiopia and Chad as well.