

## **Eradication of dracunculiasis**

### **Report by the Secretariat**

1. Dracunculiasis is the quintessential disease of forgotten people in forgotten places, and has been a scourge of humankind for millennia. It is caused by the nematode *Dracunculus medinensis*. The parasite is transmitted only through drinking-water and freshwater copepods are the required intermediate host. The incubation period lasts 12–14 months. Transmission of the parasite is seasonal. There is no curative medicine or vaccine, and humans do not develop immunity to infection. Case numbers are reduced through the application of a mix of interventions aimed at interrupting transmission of the parasite: early case detection and containment, vector control, water filtration and supply of safe drinking-water, and health education.

2. Dracunculiasis is one of two human diseases currently targeted for eradication, the other being poliomyelitis. The Regional Committee for Africa adopted several resolutions on the eradication of the disease.<sup>1</sup> In 2004, the Health Assembly adopted resolution WHA57.9 on eradication of dracunculiasis, renewing the call for eradication by 2009,<sup>2</sup> a target that was also set in the Geneva Declaration for the Eradication of Dracunculiasis, signed during the Health Assembly.

### **PROGRESS TOWARDS THE CURRENT GLOBAL GOAL**

3. The annual incidence of dracunculiasis has declined remarkably. In 2010 only 1797 new cases were reported, a reduction of 89% compared to the 16 026 reported in 2004, and a reduction of more than 99% compared to the estimated 3.5 million infected people in 1986.

4. The number of disease-endemic countries has been reduced from the 12 countries that signed the Geneva Declaration in 2004 to four countries (Ethiopia, Ghana, Mali and Sudan) by the end of 2010, a reduction of 67% and a decrease of 80% compared to the 20 countries that were endemic for the disease during the 1980s.

5. The number of villages that reported cases in 2010 was 779, representing a decrease of 79% compared to 3625 villages in 2004 and 97% compared to the peak of 23 735 villages in 1991.

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<sup>1</sup> Resolutions AFR/RC38/R13, AFR/RC41/R2, AFR/RC43/R9, AFR/RC44/R8, and AFR/RC45/R8.

<sup>2</sup> See also previous resolutions WHA39.21 and WHA42.29 on elimination of the disease and WHA44.5 and WHA50.35 on its eradication.

6. Even though the goal of eradication by the end of 2009 was not attained, significant achievements were made by the Member States with support from partners. The progress made is significant when viewed in the context of the limited resources available to the national programmes, political instability and insecurity being faced by many countries.

### **Countries and territories certified as free of dracunculiasis**

7. Since the Fifty-seventh World Health Assembly, the International Commission for the Certification of Dracunculiasis Eradication has certified 19 additional countries as free of dracunculiasis (14 countries from the African Region – Algeria, Benin, Cameroon, Central African Republic, Gabon, Guinea, Liberia, Mauritania, Mozambique, Sierra Leone, Swaziland, Uganda, United Republic of Tanzania, and Zambia; two countries from the Eastern Mediterranean Region – Afghanistan and Djibouti; and three from the Western Pacific Region – Cambodia, Palau and Marshall Islands). In all, 187 countries and territories have been certified free of dracunculiasis transmission since the Commission was established in 1995.

### **Economic and social benefits**

8. Dracunculiasis occurs almost exclusively in isolated rural areas. Although not fatal, it places a major economic burden on affected villages. The Dogon people of Mali have referred to the disease as “the disease of the empty granary”. The cost in lost revenue for individuals and the community can be very high. A study supported by UNICEF in 1989 estimated that rice farmers in a population of 1.6 million people in south-east Nigeria were losing the equivalent of US\$ 20 million per year because so many were incapacitated by dracunculiasis during the season when they needed to harvest their rice crop.

9. The World Bank has estimated that the economic rate of return on the investment in dracunculiasis eradication will be about 29% per year once the disease is eradicated. This figure was based on very conservative estimates of the average amount of time that infected workers are unable to work (five weeks) and using a project horizon of 1987–1998.

### **Improved water supply**

10. Since 1986, the global campaign for eradication of dracunculiasis has contributed towards improving the drinking-water supply in communities that were endemic for, or at risk of, the disease, in collaboration with UNICEF and national authorities responsible for water supply and sanitation. However, much still needs to be done to supply the currently endemic localities with safe drinking-water.

## **REMAINING NATIONAL CHALLENGES**

11. The challenge for the eradication of dracunculiasis remains the interruption of transmission in the four remaining countries where, at the end of 2010, the disease was still endemic – predominantly Sudan and to a much lesser extent Ethiopia, Ghana and Mali – and in Chad, a country in the pre-certification phase. Based on information reported by the countries’ programmes, it is estimated that Ethiopia, Ghana and Mali are likely to achieve eradication by the end of 2011. In 2010, 10 new cases were confirmed in Chad.

12. **Ethiopia.** After no report of an indigenous case between July 2006 and February 2008, 41 cases of dracunculiasis were reported from 11 villages in 2008, including two cases imported from south Sudan. Subsequently, the Ethiopian Dracunculiasis Eradication Programme detected 24 indigenous cases in nine villages of the Gambella region in 2009. Only 21 (88%) of them were reportedly contained. In 2010, Ethiopia reported 21 cases, one of which was imported from south Sudan.

13. Each year between 2001 and 2010 Ethiopia has continued to report less than 50 cases, indicating low-level transmission that remains uncontrolled. Regular movement of people between Ethiopia and the areas of south Sudan where dracunculiasis is endemic, coupled with evidence of missed transmission foci, present a challenge for eradication. Efforts are under way to interrupt transmission effectively, as indicated by the 90% case-containment rate in 2010. Equally important is maintenance of a high level of surveillance in the dracunculiasis-free areas in order for measures to be taken to prevent establishment of new foci.

14. **Ghana.** After years of struggle, Ghana's Guinea Worm Eradication Programme made substantial progress in 2007, achieving a 85% reduction in cases from 3358 in 2007 to only 501 in 2008. Despite a small outbreak in the Northern Region early in 2009, the programme reduced the number of cases by another 52%, to 242 cases reported from 52 villages in 2009. In 2009, the Northern Region reported 98% of all the cases in Ghana, and all the 19 villages with endemic transmission were in this Region. The programme reported a case-containment rate of 93% in 2009. During 2010, Ghana has recorded a total of eight cases, a reduction of 97% compared with 2009. All the cases were reported to be contained and all were traced to sources of transmission known in 2009. In 2010 Ghana accounted for less than 1% of all reported global cases compared to 45% in 2004. After recording its first month with no reported case in November 2009, no case was reported in the period June 2010 to January 2011 (the time of writing this report). In order to further strengthen surveillance, the programme has initiated a pilot project of cash rewards for informers of confirmed dracunculiasis cases. Ghana's challenge is to implement effective nation-wide surveillance of dracunculiasis through the Integrated Disease Surveillance and Response System in order to detect and investigate all suspected cases of the disease that might be reported from any part of the country.

15. **Mali,** which reported 6% of all cases globally in 2009, had suffered a major setback in 2008, when 261 cases were discovered in the Kidal Region, where the disease had previously not been endemic. The outbreak resulted from a single undetected patient who travelled there in 2007 from an area of Mali endemic for dracunculiasis and contaminated a source of drinking-water. Mali achieved a 55% decline in cases in 2009, from 417 in 69 localities in 2008 to 186 in 52 localities in 2009; 73% of the cases in 2009 were reported to be contained. In 2010, 57 cases were reported in 22 localities, of which 45 (79%) were reportedly contained. Of Mali's eight regions, transmission of dracunculiasis is restricted to five: Gao, Kidal, Ségou, Mopti and Tombouctou.

16. Most cases (93%) were among the Touareg nomadic ethnic group that lives in Gao and Kidal regions and who are constantly on the move, even across the borders to Algeria, Burkina Faso and Niger. Persistent security concerns and limited supplies of safe drinking-water constitute major challenges to surveillance and effective case containment.

17. **Sudan** reported 94% of all dracunculiasis cases in the world in 2010 from 732 localities – 94% of all the villages worldwide that reported cases. Transmission is now limited to parts of south Sudan, the last indigenous case of dracunculiasis in north Sudan having been reported in the Al-Gedaref State in 2003. The Southern Sudan Guinea-worm Eradication Programme was launched on a full scale only in 2006, after the Comprehensive Peace Agreement was signed in January 2005. Because of reporting from newly accessible areas following the conflict, the Programme reported a surge of more than 20 000 cases in 2006, but it has intensified control measures steadily since then. Between 2008 and

2009 the number of cases reported was reduced by 24% and the number of disease-endemic villages fell by 38%, while the Programme increased the case-containment rate from 49% to 78%. However, the proportion of disease-endemic villages with one or more safe sources of drinking-water remained at about 16%. The Programme has reported a total of 1698 cases during 2010, compared to 2733 cases reported during 2009, a 38% decline.

18. After the 72% decline in the number of cases in 2007 compared with 2006, the rate of decline has levelled off to between 24% and 39%. The overall decline is commendable in the context of the difficult terrain and a still-developing infrastructure, but levelling off is a cause for concern. The case-containment rate needs to increase from 74% in 2010 in order to have a significant effect on interruption of transmission in the next two years. Surveillance, in areas where the disease is endemic as well as those that are free from dracunculiasis, needs to be strengthened so as to detect cases within 24 hours and facilitate full containment measures.

19. Insecurity in south Sudan is the biggest threat to successful completion of the global eradication campaign. During 2009, 32 incidents necessitated the Programme's workers to be confined to their homes or evacuated temporarily, thus disrupting their work in areas that together reported about half of all the global cases in 2009.

20. **Chad.** Since September 2000 no case has been reported from Chad. However, after a gap of 10 years, specimens collected from two suspected cases in July 2010 were confirmed by both parasitological as well as molecular tests as infection by *D. medinensis*. Initial investigation revealed that these patients reportedly had never travelled outside Chad. Eight additional cases have since been reported. An investigation is being undertaken, and measures are being taken to interrupt transmission.

### **Maintaining surveillance**

21. As the number of dracunculiasis cases declines and areas become free of transmission, the level of awareness and readiness to report suspected cases declines. However, this stage is the most crucial phase for surveillance in the eradication campaign: optimal surveillance has to be maintained in order to prevent re-establishment of transmission due to missed cases. Evidence of re-established transmission has been seen in Ethiopia in 2006–2007 and more recently in Chad (2010). Health ministries need to ensure availability of adequate resources and to emphasize maintenance of surveillance. Dracunculiasis is now reportable in the Integrated Diseases Surveillance and Response system that is evolving in the African countries. All countries, except Sudan, have established a reward system for informants who report cases that are subsequently confirmed as dracunculiasis. However, this information needs to be given widespread publicity and all suspected cases must be investigated promptly.

### **Insecurity in certain countries**

22. Insecurity, with the consequent lack of access to disease-endemic areas, remains a major constraint, especially in Ethiopia, Mali and Sudan. Movements of populations within or outside countries' borders should be prepared for, to the extent possible, in order to set up appropriate contingencies for surveillance.

## **Population movements**

23. The movement of people from disease-endemic localities to non-endemic areas within and across countries has caused unexpected outbreaks that have delayed achieving the goal of eradication by one or more years in some countries. Nevertheless, the number of cases exported from one country to another declined from 114 in 2004 to only four in 2010.

24. However, since 2004, the proportion of villages reporting only imported cases from other villages within the country has been increasing. In 2010, of the 779 villages that reported cases of dracunculiasis, 66% reported only cases imported from other disease-endemic villages. During 2010, 69% of the 732 villages that reported cases in south Sudan reported only cases imported from disease-endemic villages.

## **FUNDING SECURED UNTIL 2013**

25. A major development towards funding the US\$ 72 million required to implement the activities of the Guinea Worm Eradication Programme between 2008 and 2013 was the US\$ 40 million challenge grant that the Bill & Melinda Gates Foundation awarded to The Carter Center and through it to WHO in November 2008. The Carter Center has since received major grants from Oman, Saudi Arabia and the United Kingdom of Great Britain and Northern Ireland, the OPEC Fund for International Development, the John P. Hussman Foundation and Vestergaard Frandsen as well as funding from other donors that will help match the funds from the Bill & Melinda Gates Foundation's grant towards meeting the remaining US\$ 32 million.

## **NEXT STEPS**

26. In order to interrupt transmission and to achieve eradication of dracunculiasis as soon as possible, steps need to be taken jointly by Member States where dracunculiasis is or was endemic and the international community. In particular, the following actions are vital:

- (1) urgent conversion of the high-level political commitment expressed by leaders of the remaining countries where dracunculiasis is endemic into measures aimed at interrupting transmission of dracunculiasis has a high priority on the public health agenda of those countries;
- (2) commitment by international partners to making available adequate resources for the final push to complete the goal of eradication;
- (3) provision of adequate and safe supplies of drinking-water in the remaining disease-endemic communities;
- (4) implementation of intensified case-containment measures including detection of all cases within 24 hours of worm emergence in all remaining areas where the disease is endemic as well as in the dracunculiasis-free areas, should a case be imported;

(5) raising community awareness nationwide about dracunculiasis and the reward system for reporting dracunculiasis cases through appropriate channels of communication;

(6) continued certification activities in countries that meet the eradication criteria.

27. An earlier version of this report was noted by the Executive Board at its 128th session,<sup>1</sup> and the Board adopted resolution EB128.R6.

## **ACTION BY THE HEALTH ASSEMBLY**

28. The Health Assembly is invited to adopt the resolution recommended by the Executive Board in resolution EB128.R6.

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<sup>1</sup> See document EB128/2011/REC/2, summary record of the eighth meeting, section 3.