

# DRACUNCULIASIS IN AFRICA

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Final report on a workshop  
Niamey, Niger 1-3 July 1986



**WORLD HEALTH ORGANIZATION**  
**Regional Office for Africa**  
**Brazzaville**

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Final report on a Workshop

1-3 July 1986  
Niamey, Niger  
Palais des Congrès

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Note

This report expresses the collective viewpoint of the participants at the Workshop on Dracunculiasis in Africa and not necessarily the decisions or the official policy of the World Health Organization.

This report is also available in French.

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## INTRODUCTION

1. The first Regional Workshop on Dracunculiasis (Guinea Worm Disease) in Africa was convened at the Palais des Congrès in Niamey, Niger, from 1 to 3 July 1986. Over 50 participants attended, including representatives of 14 of the 19 African countries affected (Benin, Burkina Faso, Cameroon, Chad, Côte d'Ivoire, Ethiopia, Guinea, Mali, Niger, Nigeria, Senegal, Sudan, Togo, Uganda).

2. The objectives of the workshop were to assist the affected Member States to:

- (i) review the progress made to date in establishing a reasonable base-line for the necessary surveillance;
- (ii) clarify the extent of the disease and its adverse socioeconomic impact;
- (iii) review the various intervention measures and strategies available for guinea worm control and their relative cost-effectiveness, and
- (iv) identify areas in which specific research is required.

3. Significant new surveillance information which was presented at the workshop is summarized in Figure 1 and Table 1. With one exception (noted below), all the data on nationally reported incidence in Africa is based on passive surveillance. And while the data in Table 1 represents more countries than did surveillance information previously available on the disease in the African Region in recent years, several countries still have no official reports available (WER 1986 (61): 29-32).

4. In Africa the disease is sporadically distributed in a wide band north of the Equator, from Mauritania to Ethiopia. Over 100 million persons are now estimated to be at risk of the disease in Africa alone if one considers anyone living in a rural district or subprefecture where at least one case of the disease occurs, to be at risk. The map which is reproduced in Figure 1 provides a more detailed picture of the known extent of the disease in Africa than ever before.

5. Dracunculiasis is officially reportable in at least eight of the countries concerned (Benin, Burkina Faso, Cameroon, Côte d'Ivoire, Ethiopia, Ghana, Togo, Uganda), but is still recognized to be vastly underreported even in those countries (Table 1). For example, based on a study conducted in Togo, the national epidemiological unit in that country estimated a true incidence of over 440 000 cases in 1982, though less than 2600 cases were reported that year. In Nigeria, some 400 000 cases are estimated to occur annually in Anambra State alone. Only in Côte d'Ivoire is a systematic active surveillance being conducted in all endemic areas. A national survey to better define the extent of dracunculiasis is underway in Benin, and will be completed late in 1986. Support is being sought for a similar survey in Senegal, where the disease is not so extensive.

6. In eastern Africa, the disease was confirmed to be occurring in the south, east and western areas of Sudan, although no quantitative data are yet available. In Ethiopia, 11 of the country's 15 provinces reported the disease in recent years; no reports were received from the other 4 provinces. In Uganda, the disease occurs mainly in the north-east, but appears to be spreading. Authorities in all three countries associate some of the disease's occurrence with movements of refugee populations in the region.

7. In western Africa, the disease is now recognized to be occurring at least sporadically in several foci in the Cameroons (especially the Mandara mountains region of the extreme north). The last known reported cases of the disease in Guinea were reported in 1969, but dracunculiasis is not a notifiable disease there. Fifty-five cases were reported in southern Chad in 1978, and the disease is thought to still occur there, but no further or more recent data are available at present. The core of the endemic area in this region apparently includes Benin, Burkina Faso, Ghana, Mali, Mauritania, Niger, Nigeria, Senegal, and possibly Togo.

8. Numerous qualitative, anecdotal examples were cited during the meeting of the negative socioeconomic effects of dracunculiasis. These included temporary disability lasting for months or even up to a year in some victims; unusual but not rare permanent disability; sterility; common absenteeism from school; and substantial agricultural losses. In Burkina Faso, studies being completed by the Centre Muraz of the OCCGE are intended to quantify the impact of the disease on agriculture in that country.



9. Extensive measures to help control or to eliminate the disease are underway in Côte d'Ivoire and Togo. In Côte d'Ivoire an aggressive rural water supply programme backed since 1982 by health education of the populations concerned, has reduced the total number of reported cases in that country from 67 123 in 1966, to 4971 cases in 1976, and to 592 cases in 1985.

10. In Togo, control measures undertaken in the sanitary subdivisions of Haho, Kloto, Tchamba and Zio have been associated with declines in reported incidence of dracunculiasis of 87%, 94%, 73%, and 93%, respectively, between 1980 and 1985. A joint project by World Neighbours and the Evangelical Church of Togo used health education to mobilize a village of about 3000 inhabitants, beginning in 1981; the villagers contributed towards construction of local wells which began in 1983. The incidence of dracunculiasis was reduced from 928 cases in 1981 to 7 cases in 1985.

11. Nigeria continues to follow up on its First National Conference on Dracunculiasis which was held in March 1985 (WER 1985 (60): 263-266). In March 1986, the nation's highest policy making health body, the National Council on Health, declared dracunculiasis to be a serious public health problem in Nigeria, and endorsed the report from the March 1985 conference. The National Youth Service Corps has agreed to assign some of its thousands of doctors and nurses to dracunculiasis surveillance and control nationwide beginning later this year. The newly appointed health commissioner of heavily-endemic Anambra State, who had documented the extent and impact of the disease there while in his former capacity as a researcher at a local state university, plans to begin an aggressive effort at the start of the next transmission season in October, aiming to make that the first Nigerian State to eliminate dracunculiasis.

12. In Ethiopia, a new effort to control dracunculiasis will be integrated with national efforts directed against malaria and some other vector-borne parasitic infections.

13. So far, national plans of varying degree intended to control or eliminate dracunculiasis exist in Benin, Côte d'Ivoire, Burkina Faso, Nigeria, Niger, Togo and Uganda. A consultant who attended the workshop was to assist in developing a national plan of action in Cameroon immediately after the conference.

GUIDELINES FOR NATIONAL PLANS FOR DRACUNCULIASIS ELIMINATION

14. The workshop also developed a set of guidelines for developing a national plan of action, a list of priorities for applied research, and a set of recommendations. The guidelines are given below:

- (i) Secure preliminary concurrence and support of appropriate national authorities for anti-dracunculiasis effort.
- (ii) Designate a person to be responsible for the national dracunculiasis programme (needs not be full-time).
- (iii) Gather all currently available data about dracunculiasis in the country: reports to Ministry of Health, published reports, doctoral theses, etc.; note especially any in-country evidence of reduction in dracunculiasis following intervention measures.
- (iv) Consider sending questionnaires to all public (government-employed) and private physicians and health posts (via state, district, or provincial medical administrators) in country asking: (a) whether dracunculiasis has occurred in their area in any of the last two or three years, and (b) if so, in which years and in which areas.
- (v) Convene a meeting of appropriate national representatives of Ministry of Health, Ministry of Public Works, Ministry of Engineering, United Nations Development Programme, UNICEF, WHO, and other relevant groups to achieve consensus on overall national goal for elimination of dracunculiasis, and to suggest broad outlines of strategy and objectives.
- (vi) Consider mobilizing health and other personnel to conduct an active search (national baseline survey) for dracunculiasis, the main purposes of which would be to: (a) detect all villages in the country or area concerned in which dracunculiasis has occurred in the last two or three years, and (b) classify endemic villages according to whether they have only unsafe drinking water, only safe drinking water, or both.

- (vii) Using the data from step 6, list all known dracunculiasis endemic village by political subdivision.
- (viii) Gather all available data about new drinking water sources scheduled to be provided in 1986-1990: reports from local UNDP representative, WHO, World Bank, UNICEF, Ministry of Works or Water, Ministry of Agriculture, bilateral agencies such as USAID, etc.
- (ix) Using data from steps 7 and 8, list all endemic villages already scheduled to receive safe drinking water between 1986 and 1990.
- (x) Seek to obtain highest priority for all known dracunculiasis-endemic villages in national schedule for providing safe water sources.
- (xi) Seek funding for providing safe water to any known endemic villages not currently scheduled to receive safe drinking water sources before 1990.
- (xii) Decide on specific protocols for provision of health education, vector control (cyclospicicides), and treatment of cases in endemic areas. Treatment of unsafe water sources with a cyclospicide such as temephos (Abate) just before and during the transmission season can help to rapidly reduce transmission in villages waiting to be provided permanent sources of safe water. Topical treatment and dressing of wounds caused by the worm may reduce suffering and encourage reporting of cases; tetanus immunization. Health education is indicated for all villagers in affected areas: seek to get them to prevent patients from contaminating water, to take effective personal protective measures, and to use safe sources of drinking water when they are provided. Get schools in affected areas to teach children about the disease, and how to prevent it.
- (xiii) Train appropriate persons to carry out intervention in step 12.
- (xiv) Implement strategies decided on in step 12.

- (xv) Monitor implementation effort to ensure that indicated activities occur at rate planned, and with the desired effect on incidence of the disease. Conduct periodic evaluation of overall programme. Investigate causes of any departure from planned implementation or impact and take corrective action(s) as necessary.

15. A cogent case will have to be made to appropriate national authorities early on, providing convincing evidence that: (i) dracunculiasis is a serious problem in the country; (ii) that there are effective ways to prevent it, and later, (iii) what specifically needs to be done and about how much it will cost. An overall plan of national activities should be prepared, describing the current epidemiological situation in the country as far as dracunculiasis is concerned; describing the tentative or recommended strategy to be used; giving specific measurable objectives, and indices for monitoring progress; describing how this programme relates to the country's plan for the International Drinking Water Supply and Sanitation Decade; and describing what special resources, if any, will be required and where they are to be obtained.

#### LIST OF RESEARCH PRIORITIES

16. Below is the list of research priorities:

- Evaluation of effect of different health education techniques (i.e. mass communication, community participation, or individual and small group instruction) on knowledge, attitude and practice regarding dracunculiasis.
- Evaluation or monitoring of national dracunculiasis control activities in West Africa.
- Relative efficiency of alternative surveillance systems (e.g. passive reporting to health clinics versus active case searching community members).
- Efficacy and cost of different combinations of control approaches as tested in several dissimilar villages.
- Comparison of different training and supervision methods for control workers (e.g. workshop versus individual instruction).

- Cost and efficacy of cyclops control using temephos in different (representative) ecological situations.
- Efficiency of filtering devices and materials for drinking water and their acceptance by the target population.

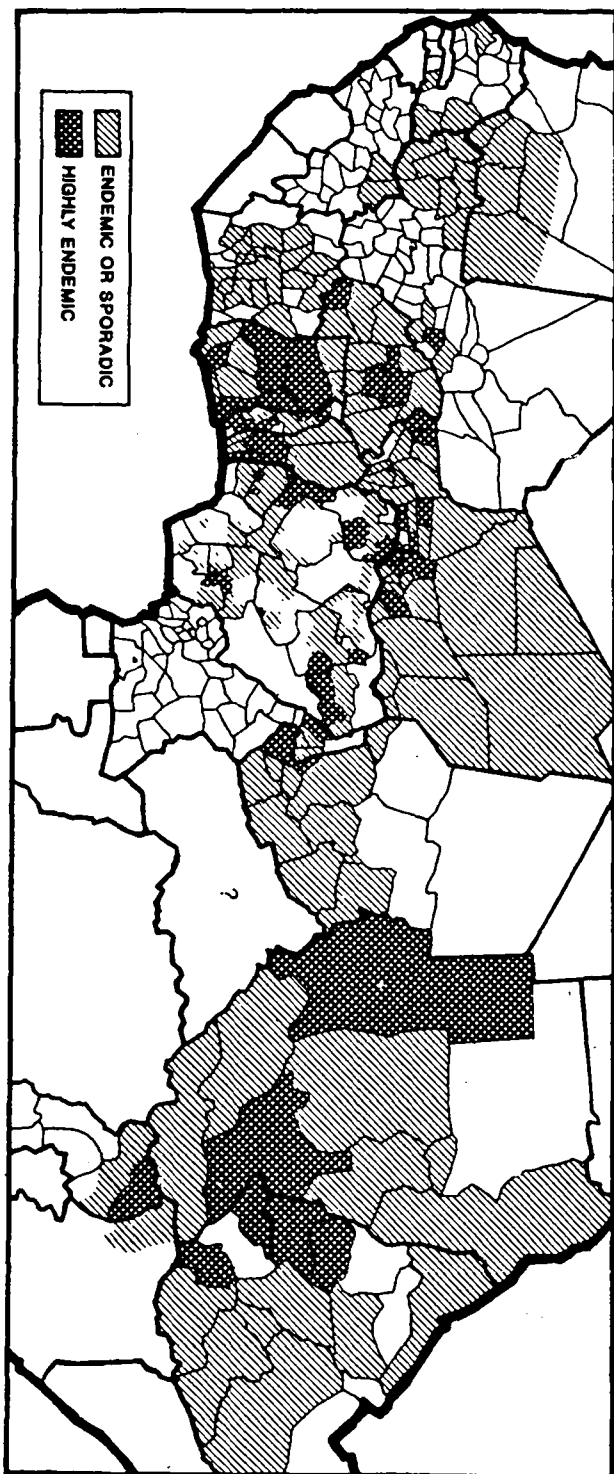
Table 1

REPORTED CASES OF DRACUNCULIASIS BY YEAR, AFRICA, 1984-1985

	<u>1984</u>	<u>1985</u>
Benin	.....	.....
Burkina Faso	.....	458
Cameroon	1 650	691
Central African Republic	.....	.....
Chad	.....	.....
Côte d'Ivoire	1 479	592
Ethiopia	291	770
Gambia	.....	.....
Ghana	4 244	.....
Kenya	.....	.....
Mali	446	510
Mauritania	1 241	.....
Niger	.....	1 373*
Nigeria	.....	.....
Senegal	.....	.....
Sudan	.....	.....
Togo	1 839	1 456
Uganda	6 230	4 070

... No data available.

\* Includes other filarioses.



*Map 1. Areas of Africa in which dracunculiasis is reported or known to exist.  
Carte 1. Régions d'Afrique dans lesquelles la dracunculose est signalée ou attestée.\**

\* Based on information presented at the Niamey workshop, July 1986. -- D'après des informations présentées à l'atelier de Niamey, juillet 1986.

SUMMARY OF WORKSHOP PROCEEDINGS

17. Dracunculiasis or guinea worm is an infection which is caused by nematode dracunculiasis medinensis. It is a disease that is transmitted through drinking water contaminated with infected cyclops. Dracunculiasis is prevalent in Asia, and Africa and is very much associated with the absence of safe drinking water and sanitation.

18. When the United Nations launched in 1980, the international Drinking Water and Sanitation Decade to ensure the provision of safe drinking water and sanitation to all by 1990, an opportunity was created for the eradication of dracunculiasis during the decade. This initiative to eradicate guinea worm disease was officially adopted and approved in 1981 by the Steering Committee of the Decade for Water and Sanitation; the Special Opportunity to reduce dracunculiasis during the Decade was also acknowledged in a resolution by the World Health Assembly the same year.

19. Since that commitment, two international meetings have been held; the first one in Washington, DC, USA, and the second in Nigeria. The current workshop in Niamey, Niger, is the third such meeting; with 15 countries represented. The list of participants is shown in (Annex 2). The workshop was introduced by Dr Roger Mouluba, WHO, Representative in Niger, by reading the message of Dr G. L. Monekosso, Regional Director, WHO Regional Office for Africa (Annex 3) and officially opened by His Excellency Dr Abdou Moudi, Minister of Health and Social Affairs of Niger (Annex 4). His Excellency the Minister, outlined the importance of this disease and its negative effects on the health and well-being of Africans and urged the participants to live up to the stated commitment of eradicating the guinea worm disease.

20. Following the opening ceremony, the following officials were elected:

- Chairman: Dr Daga Magagi  
Secretary General of  
Ministry of Public Health and Social  
Affairs of Niger
  
- Vice-Chairman: Prof. A. B. C. Nwosu  
Health Commissioner  
Anombra State  
Nigeria.

- French Rapporteur: Dr Guigemde Tinga Robert  
Médicin-Chef  
Section parasitologie du Centre Muraz, OCCE,  
Bobo-Dioulasso  
Burkina-Faso.
  
- English Rapporteur: Dr Awash Teklenaimanot  
Head, Malaria and other vectorborne diseases  
control services  
Ministry of Health  
Ethiopia

21. Following the election of officials, the proposed programme was presented and adopted by the participants with slight modification. The approved programme is shown in (Annex 1).

22. Dr Daga Magagi, outlined the specific objectives of the workshop to be:

- (a) review data of current surveillance activities from affected member countries;
- (b) enlighten participants about the adverse effects of dracunculiasis on the socioeconomic development of affected countries;
- (c) assist those countries with no plan of action against dracunculiasis to develop appropriate plan of operation;
- (d) evaluate control activities and to identify topics suitable for operational research.

23. Having stated the objectives of the workshop the following papers were presented:

Status of the global dracunculiasis initiatives (by Dr Donald Hopkins)

24. Dr Hopkins discussed the impact of the disease on health education and agriculture of affected countries and the present global status. He stressed the need for member countries to draw plans of action against dracunculiasis based on the current available data. He urged affected countries to take a maximum advantage of the drinking water and sanitation decade to eradicate Guinea worm disease. Dr Hopkins recommended that each country submits its regular disease case report to



WHO/AFRO in Brazzaville on the status of the disease regardless of the completeness of the data; submit articles to the Weekly Epidemiological Record and in general popularize the existence and adverse effects of the disease through local and international journals and other possible media. Dr Hopkins also suggested that participants of the workshop provide their respective current data on the prevalence and distribution of the disease to Dr Susan Watts to update a map showing the geographical distribution of dracunculiasis in Africa.

WHO/AFRO dracunculiasis activities (by Dr Frederick Wurapa)

25. Dr Wurapa conveyed a message from the WHO/AFRO Regional Director which emphasized the importance and need for eradicating guinea worm disease. The speaker outlined the support that can be provided by the Regional Office to the affected countries. Dr Wurapa reminded the participants that WHO/AFRO can effectively be used as a contact point for financial support. He emphasized the need for each country to develop its plan of action and initiate control activities within its available resources.

Dracunculiasis: Life cycle and disease (by Prof. Ralph Muller)

26. Dr Muller reviewed the life cycle of dracunculiasis and discussed various breeding habits of the cyclops and on the seasonality of transmission.

Socioeconomic impact of dracunculiasis (by Dr T. R. Guiguemde)

27. Dr Guiguemde discussed on the interaction of host, agent and environment (sick person + cyclops + water) in the African regions that have different transmission periods. He stressed that the timing of control of cyclops will be different from each zone.

The International Drinking Water Supply and Sanitation Decade (by Dr Peter Bourne)

28. Dr Bourne reviewed the importance and need for launching the International Drinking Water and Sanitation Decade and some of the benefits gained so far. He pointed out that during the first three years since the start of the Decade, 150 million additional people were provided with access to clean drinking water. Dr Bourne stated that dracunculiasis is a disease that is transmitted by drinking water and the

elimination of the disease became part of the water decade goal. Dr Bourne mentioned that because of the water decade there is a change of direction in that emphasis is now given to the rural population for the provision of safe water based on strong health education and community participation using technologies appropriate to those communities. He concluded his remarks by pointing out that guinea worm disease is unique because it is eradicable and thus requires special attention.

Health education strategies for dracunculiasis control

(by Dr Joshua Adeniyi)

29. Dr Adeniyi stressed that complete understanding of the values, customs and habits of people is essential before adopting a control strategy against dracunculiasis or any other disease. He pointed out the need for involving people in all phases of activities right from the start of a control operation instead of taking them for granted.

Vector control strategies for dracunculiasis control

(by Dr Fergus Mc Cullough)

30. Dr Mc Cullough emphasized that no single control method is effective and stressed the need of combining strategies such as health education, chemical control and environmental manipulation. He pointed out that guinea worm is a man-made disease that is eradicable but would require a sustained motivation. He stressed the need to identify where transmission occurs, and the seasonality of the transmission, before the frequency of chemical application is to be considered. He mentioned of the possibility of integrating dracunculiasis control with that of onchocerciasis in areas where the two diseases are found in the same area.

Eradication of guinea worm from a village in Togo

(by Dr Tsogbe Kodjo)

31. An eradication against dracunculiasis was started in 1981 in Kati village. Kati which is situated 25 km from a hospital has a population of 3000. Before the initiation of the project 1, out of 3 people were affected by guinea worm. The control strategy was based on the primary health care approach and concentrated on the provision of safe drinking water. The village constructed 11 wells (8 in Kati and 3 in neighbouring villages). The cost of construction of the wells was covered by the community. Guinea worm was reduced from 928 cases in 1981 to 7 cases in 1985.

32. The presentation of Dr Kodjo was followed with the presentation of a film entitled "Avicenna's thread".

33. Dr Guiguemde de Tanga Robert presented a paper on the socioeconomic effects on dracunculiasis.

34. Dracunculiasis has a limited mortality but a major socioeconomic cost. Because of the coincidence between the occurrence of the dracunculiasis lesions and the peak agricultural activities there are important agricultural losses. In Burkina Faso, it is estimated that these losses may be as much as 10% of the growth national product. In Burkina Faso, 90% of the disability occurs during the season of peak agricultural activities.

35. The disabilities is increased by the location of the worm in the foot and leg. There can be as many as 15 worms in a single individual and the second infection can be disabling for 9 to 12 months. An individual can be infected year after year.

36. The cost of treatment can be substantial. In an uncomplicated case the cost of treatment can be 7500F CFA for a complicated case, (lasting 50 days with 10 separate treatment) the cost can be 55 000F CFA.

37. It is essential to document the agricultural and treatment cost of the disease.

38. Dr Frank Richards argued that surveillance to document the scope of the disease is an essential first step in starting a national eradication programme because it alerts the government and people to the existence of an otherwise forgotten diseases, dracunculiasis is underreported because:

- (a) it does not kill;
- (b) it occurs in rural areas where there are few health facilities;
- (c) it is very localized both in time (short seasons of patent cases) and place (one village heavily affected and neighbouring ones unaffected);
- (d) the cruppling of the disease prevents patients from going to health facilities, and
- (e) the lack of a definitive treatment reduces the incentive to go to health facilities.

39. The surveillance of the disease is easy because it produces symptomatic illness that cannot be confused with another disease.

40. Even so, for 18 countries affected in Africa, for the years 1980-1984 there has been only 29% complete reporting of cases.

41. Dracunculiasis should be made an officially reportable disease. Short questionnaires mailed to health workers in different parts of the country are a simple and efficient surveillance tool. Active surveys are a more complicated and expensive surveillance tool.

42. In Senegal, dracunculiasis is included with other type of filariasis. The present data on the disease is clearly insufficient.

43. Dr Luke Edingbola described the Nigeria national dracunculiasis programme.

44. The 1985 national meeting, attended by 250 health workers and others was extremely important is gaining national interest.

45. The steps presently being followed are to:

- (a) develop the country wide programme;
- (b) collect baseline data;
- (c) make it a reportable disease;
- (d) develop training materials.

46. Some individual states have taken more active roles in programme development. Anambra State estimates as many as 400 000 new cases a year and has set a target to be the first State in Nigeria to eradicate the disease.

47. Nigeria has been very effective in finding local financial support for control activities. Donor organizations like UNICEF have supplied needed hard currency.

48. Dr Donald Hopkins described the national guinea worm eradication programme in India, based on the paper submitted by Dr T. K. Ghosh, citing six key lessons for African programme:

- (a) surveillance was the first step to document importance of the disease;
- (b) the national government made eradication a priority and assigned funds and personnel to the programme;
- (c) a detailed national plan of action was formulated which India implemented with national resources;
- (d) the national plan and progress of the programme attracted specific external donor support;
- (e) other sectors, particularly the water programme are actively involved, and
- (f) the time limited target of eradication attracted national and international support.

49. Temephos and health education are used as a secondary control measure in India; clean water is the major control strategy. The onchocerciasis programme's long experience with temephos should be of great use.

50. Dr T. Stephen Jones presented an economic estimation of the costs of dracunculiasis and its control measures that was prepared by Dr John Paul.

51. The estimations were based on a fictitious rural population of 50 000 using data from Burkina Faso. It was assumed that 36% of the population was affected. The loss of working days in the fields was estimated to be 184 979. The value of agricultural production estimated to be lost was US \$216 124. Assuming that US \$11 is spent on bandages antibiotics and other treatments for a person with the disease, for the approximately 18 000 cases the costs of treatment would be about US \$32 400 per year.

52. An effective disease elimination programme would produce total gains in production and savings in treatment cost of more than US \$500 000 per year which gives an idea of the socioeconomic cost of the disease.

53. Detailed estimates of the costs of community water supply (US \$600 000) and chemical treatment with temephos (US \$33 000) were prepared by the author. Given the high socioeconomic cost of the disease, even an expensive project such as provision of new water supplies appeared to be economically useful.

54. Field studies are sorely needed to provide more realistic estimates of the socioeconomic costs of the disease. Similar estimates adapted to particular countries may be helpful in convincing national authorities of the usefulness of an eradication programme.

#### SUMMARY OF COUNTRY REPORTS

##### Benin

55. An OCCGE team is completing a survey of dracunculiasis, to be completed later this year. A multidisciplinary team will study the disease in 10 villages of the most affected province beginning in October this year. National plan for control of dracunculiasis includes water supply, health education. Intend to start using temephos. Over 5% of population affected in hyperendemic areas; 26% prevalence in some villages. Dracunculiasis is officially reportable.

##### Burkina Faso

56. The disease has been increasing since 1983: 2008 cases reported that year, over 4000 cases reported in 1985. All 30 provinces are affected. An official commission has been established for dracunculiasis control. National plan drawn up last year not yet implemented because of lack of funds. Estimate that only 5%-10% of actual cases are reported. Dracunculiasis is officially reportable.

##### Cameroon

57. Disease occurs in northern Mandara mountains area as limited focus. Recent discovery of other scattered foci in southern areas near Nigerian border. Water supply sources in Mandara areas completely mapped; began using some temephos in 1983. 1650 cases recorded in 1984; 691 in 1985. Consultant from CDC/USAID to assist in preparing national plan in July 1986. The disease is now officially reportable.

Chad

58. Very little data available. Fifty-five cases reported in southern part of the country in 1978.

Côte d'Ivoire

59. National objective is eradication. Water supply is the main control measure, backed by health education (latter since 1982). Several international agencies are assisting vast rural water supply effort. Cases of dracunculiasis are sought by active surveillance. Dramatic impact: reduction of total annual cases from 67 123 in 1966; to 4971 in 1976; to 592 cases in 1985.

Ethiopia

60. The disease is officially reportable, but greatly underreported. Eleven of 15 provinces reported the disease in recent years. Reports not received from other four provinces. 770 cases reported for the whole country in 1985. No control strategy or national plan of action defined yet, but intention is to integrate attach on dracunculiasis with malaria and then efforts in vector borne disease control programme.

Guinea

61. Dracunculiasis is not an officially reportable disease. 30 cases reported in 1960; 42 cases in 1965; none in 1966-1968; disease "reappeared" in 1969, no cases reported since then. Any effort against dracunculiasis would need to be part of a broader environmental health effort.

Mali

62. No national action plan, but health education has been used locally in a project in Dogon plateau in the past four years. Some treatment of cases, water supply efforts. 510 cases reported for the entire country in 1985; 400 of these from Dogon plateau.

### Niger

63. Reports group dracunculiasis with all other filariasis. It is most prevalent during rainy season. Proposes to do survey to distinguish guinea worm cases. 1373 cases of all filariasis reported in 1985. Plan of action against dracunculiasis and schistosomiasis developed as part of a WHO/USAID consultation in 1984; seeking funding to assist implementation. No urban focus of transmission in Niamey.

### Nigeria

64. First national conference held at Ilorin in 1985. Estimate 2.5 million cases annually; 400 000 cases estimated in Anambra alone. The disease is not officially notifiable. On March 1986, the National Council on Health declared guinea worm a serious health problem in Nigeria, adopted report of national conference, National Youth Service Corps has agreed to assign some of its thousands of doctors and nurses to dracunculiasis surveillance and control efforts, beginning later this year. Evidence of some local impact of water supply projects in Kwara, Dino and Gongola States. UNICEF/Nigeria committed to priority for dracunculiasis areas in its water supply projects. Anambra State to begin aggressive effort in October 1986 aimed to be first Nigerian State to eliminate dracunculiasis. Follow up national conference expected to be held in 1987. Steering committee established for national programme. No formal national policy of eradication yet. Proceedings of Ilorin national Conference to be published soon.

### Senegal

65. Dracunculiasis is not considered a major problem in Senegal like schistosomiasis or malaria. Disease is reported recently in regions of St. Louis (adjacent to Mauritania), Tambacounda (adjacent to Mali) and Casamance (borders Guinea and Guinea Bissau). A total of 15 cases (1, 12, 2 respectively) have been reported from those three regions so far in 1986. A study/survey to last three years, beginning late in 1986, is proposed to evaluate the extent of the disease in Senegal and undertake health education measures: submitted to funding sources, but no reply yet.



Sudan

66. The disease occurs in the south, west and eastern regions. Approximately 100-300 cases reported per year from each region. Significantly underreported. Occasional imported cases seen in Khartoum. No systematic control programme; some health education, treatment of water sources.

Togo

67. Compulsory reporting of guinea worm since November 1983. Total of 1839 cases reported in 1984; 1456 cases in 1985. Bassar sub-prefecture highly endemic. Sharp declines in prevalence between 1980-1985 in Tone, Nyala, Haho, Kloto, Zio sub-prefectures. UNICEF and Peace Corps assisting Ministries of Public Health and Education in an eradication programme (EVG) in parts of Plateau (began 1985), Maritime (1986) and central (1987) regions (not clear whether latter will include Bassar). Aimed at health education in affected communities and schools. In 1982, Division of Epidemiology estimated true annual incidence of dracunculiasis in Togo at over 440 000 cases. USAID rural water and sanitation project 8/80 to 9/87 in Plateaux and Savannah regions using dracunculiasis as an impact indicator. Project by World Neighbour/Evangelical Church of Togo in Kati village of Agu subprefecture (3000 inhabitants) used health education alone from 1981 to mid-1983, then began construction of nine wells to date. Result is reduction from 928 cases in 1981 to seven cases in 1985.

Uganda

68. The disease occurs mainly in north-east of the country. Population at risk: 3.05 million. The disease is officially reportable. 6230 cases were reported in 1984; 4070 cases in 1985. Action programme formulated in 1983; interministerial steering committee established; using water supply (UNICEF assistance), health education surveillance, treatment of patients, with population movements, the disease appears to be spreading. The countries unable to attend were as follows: Central African Republic, Gambia, Ghana, Kenya, and Mauritania.

Table 2

## REPORTED CASES OF DRACUNCULIASIS BY YEAR, AFRICA, 1983-1985

	1983	1984	1985
Benin	....	...	...
Burkina Faso	4 362	...	458
Cameroon	....	1 650	691
Central African Republic	....	...	...
Chad	....	...	...
Côte d'Ivoire	3 398	1 479	592
Ethiopia	262	291	770
Gambia	....	...	...
Ghana	3 040	4 244	...
Guinea	....	...	...
Kenya	....	...	...
Mali	428	446	510
Mauritania	1 612	1 241	...
Niger	....	...	1 373*
Nigeria	....	...	...
Senegal	....	...	...
Sudan	....	...	...
Togo	....	1 839	1 456
Uganda	....	6 230	4 070

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... No data available.

\* Includes other filarioses.

## REPORT OF GROUP I

69. The Group's terms of reference were to formulate directives for the national action plan. The draft directives submitted by CDC Atlanta, USA, were adopted unanimously as a working paper, which was therefore tabled for discussion and suggestions for amendments or additions or, possibly, alternative proposals.

70. This report will endeavour in the main to outline the salient features of our discussions and if the present writer has omitted anything you will take the opportunity to assist his memory.

71. It was decided immediately to examine the draft item by item and it was considered necessary to formulate a preamble that had been omitted from the summary of the resolution proposed at the Thirty-ninth World Health Assembly by Burkina Faso, Cameroon, USA, India, Mauritania, Nigeria and Uganda concerning the eradication of dracunculiasis and the necessity for our countries to make a political commitment to basing control of the disease on coherent national plans that would be easy to evaluate at every stage of execution. For that purpose it would be necessary to specify that the directives that would result from our work would be a body of recommendations and that each country could define the objectives to be achieved within specified deadlines and which would be adapted to the particular real conditions in the field.

72. In regard to the first item:

replace the phrase "so that the effort to control dracunculiasis becomes more effective", by "to achieve effective elimination of dracunculiasis".

73. The gravity of the problems, both health and socioeconomic ones, should be emphasized in order to encourage the authorities of our countries to appoint an official as head of the national programme on dracunculiasis control, so that special priority is given to the collection of data on the real prevalence of the disease in the country.

74. Paragraphs 3 and 4 consider the procedure for collecting epidemiological data. The study of this revealed a number of problems. Should an agency or a structure be set up, or should a department be made responsible for it? This might lead to improved follow-up instead of having it done by a single person. It emerged from the discussions that it is important to maintain the proposal that a particular person should be appointed as Head of Programme and that proper work of coordination

should be carried out at the responsible ministry, but that an intersectoral plan of action should also be laid down which would require cooperation from other ministries or bodies concerned in eradication of the disease.

75. In this regard, the Indian example is a success that should inspire us all. The work of the official responsible for the national programme could be carried out full-time or in some modified manner, depending on the country concerned.

76. The plan of action that we formulate should be accompanied not merely by pious hopes but by firm recommendations that our States should commit themselves to implementing.

77. Certain members of the group considered that the draft plan of action contained several items dealing with the same problem, but after discussion it was agreed that it was necessary to retain all the items concerned, since while they all admittedly raised the same question they did so in a somewhat different and complementary manner.

78. In regard to the collection of epidemiological data, both the active and the passive methods could be approved and a recommendation would be made to the effect that Dracunculiasis medinensis should be a notifiable disease and that notification should in future be carried out regularly by WHO.

79. The eighth item on the national plan was the subject of lively discussion: should a definitive date be set for an action that might cover an extended period of time? Rapid eradication of the disease was of course desirable. The phrase "in an appropriate period of time after 1986-1990" should therefore be added. The same observation applied to paragraph 9.

80. Paragraph 12 elicited proposals recommending that priority should be given to:

- health education;
- prophylaxis.

81. One important fact should be borne in mind, namely that our States do not have immediately available the financial resources required for action against the disease, for example the execution of a safe drinking-water supply programme constitutes a heavy financial burden and will be a long-term project, however a programme of Information and Education for Health could be launched rapidly through the mass media.

82. The proposal contained in item 12 was retained in its entirety. Each country would define its priorities in action to control the disease.

83. In conclusion, the group noted: The need for cooperation between countries sharing common frontiers and the same epidemiological context in regard to the prevalence of Dracunculus medinensis.

84. The need to situate certain activities, that had to be carried out as in the plans of action, in the framework of primary health care which had been accepted by all our countries, for example the training of community health workers who would give the best possible assistance to health services in popularizing simple basis sanitary measures and prevention of disease.

## REPORT OF GROUP II

### Introduction

85. Group II, composed of 12 persons, discussed needs and possibilities for applied research dracunculiasis control. We list below the needs in order of priority and the possibilities for related research that emerged from discussions.

### Theme for applied research

86. Fourteen themes for research were approved. In order of priority, they were:

(i) Sociocultural studies:

- customs of the populations;
- perception of disease;
- behaviour in regard to water;
- traditional legislation in the village.

- (ii) Studies of health education strategies.
- (iii) Studies of appropriate technologies for prevention (e.g., screen, filter).
- (iv) Studies of economic impact on disease.
- (v) Hydro-geological and geographic studies to determine the types of water point installation.
- (vi) Research in traditional pharmacopoeia.
- (vii) Studies on new molecules for the treatment of disease (Ivermectin).
- (viii) Tests on clinical treatment of water points with temephos (Abate).
- (ix) Comparative cost/effectiveness study of the various control methods.
- (x) Study of appropriate evaluation methods for control programmes.
- (xi) Study of cyclops population dynamics.
- (xii) Studies on other vector control substances apart from temephos.
- (xiii) Study on methods of early diagnosis of diseases.
- (xiv) Organization of a workshop on applied research on surveillance and control of dracunculiasis.

### Possibilities of research

#### Financial possibilities

87. All financial possibilities of the countries will be mobilized, but it will remain absolutely indispensable to obtain external support.

#### Human resources

88. In regard to most research themes adopted, there are qualified personnel available at national or local/regional level in the framework of TCDC but the possibility of external assistance is not excluded.

Membership of Group II

1.	Dr Ernesto Puiz-Tiben	USA
2.	Mr Ousseini Garba	Niger
3.	Dr Sofo Issa	Niger
4.	Dr Ambroise Able	Côte d'Ivoire
5.	Dr Fodé Diouf	Senegal
6.	Dr Bopan Tekenet	Chad
7.	Dr Ousmane Balde	Guinea
8.	Mr R. Koffi Kekeh	Togo
9.	Mrs Marie Magdeleine Petit	Togo
10.	Dr Désiré Jacob Houeto	Benin
11.	Dr Tinga Robert Guiguemde	Burkina Faso
12.	Dr Basile Kollo	Cameroon

RECOMMENDATIONS

89. The workshop unanimously endorsed WHA resolution 39.21 on eliminating dracunculiasis and expressed hope that the resolution will be reviewed and supported by the African Regional Committee of WHO at its September 1986 meeting and, further invited OCCGE, OCEAC, and WAHC to increase their role in the control and eradication of dracunculiasis.

90. Considering the social and economic impact of dracunculiasis and the necessity to break the epidemiologic cycle of the disease as a way to attain the social objectives of HFA/2000, the participants formulated some recommendations on the steps to be taken for the control and eradication of the disease.

91. These recommendations are directed to the governments of the countries affected by the disease, the international organizations within the United Nations, intergovernmental and nongovernmental and donor agencies.

92. Governments affected by dracunculiasis are invited to:

- (i) put in place or reinforce a national surveillance system based on obligatory notification of cases of the disease;
- (ii) separate the reporting of dracunculiasis from other filarial infections;

- (iii) utilize preferentially active surveillance and passive and sometimes combined methods to gather reliable data to be used to notify cases to bordering countries and interested organizations (principally WHO/AFRO), but above all as a basis for appropriate decisions and actions;
- (iv) if possible, before the end of 1987, develop a national plan of action with precise objectives and a specific operating strategy;
- (v) increase the inter- and intrasectoral cooperation (particularly with water services) to maximize the impact of disease control activities;
- (vi) utilize mass media to sensitize and mobilize people through publicizing a better understanding of the epidemiologic cycle of the disease and how to apply simple and effective measures that will eradicate the disease;
- (vii) collaborate closely with neighbouring countries to coordinate actions to implement strategies to combat the disease;
- (viii) demonstrate their national commitment by providing in their national budgets the necessary funds to put their action plans into effect;
- (ix) organize every two years national meetings on the control and research of dracunculiasis.

WHO

93. The Director-General and Regional Director (AFRO) of the WHO are invited to:

- (i) assist countries to put together coherent and effective plans of action;
- (ii) reinforce its cooperation with the affected countries by placing at their permanent disposition epidemiological/officials placed at the Subregional Office, Bamako, and eventually at Headquarters;
- (iii) facilitate training health personnel in this subject;



- (iv) improve the "feedback" to the countries on the epidemiological situation and the development of control programmes;
- (v) assist in mobilizing extrabudgetary funds to sustain the action plans of member countries;
- (vi) support operational research on dracunculiasis in specifying it as a part of the budget of the tropical disease research programme (TDR);
- (vii) establish epidemiological standards;
- (viii) assure the follow-up of regional workshops on the control and operational research on the disease during the first quarter of 1989.

Intergovernmental, nongovernmental and bilateral organizations:

94. They are requested to collaborate closely with responsible government officials and WHO representatives in the countries to:

- (i) mobilize external resources to support the national plan of action;
- (ii) sustain operational research on dracunculiasis, including study of the impact of the disease on agricultural production and study of the effectiveness of disease control interventions.

Cooperation with OCP

95. The participants in the Workshop have appreciated the outstanding success of the onchocerciasis control programme. Given that the ecological zones of onchocerciasis and dracunculiasis often overlap, and considering the new policy of the OCP in the acceleration of HFA/2000 on the basis of primary health care, the participants strongly invite the OCP Director, the Regional Director of WHO (AFRO), the Director-General of WHO, their collaborators and the governments to rapidly study the possibility of integrated or complementary action in surveillance and vector control.

PROGRAMME OF WORK

Programme of 1 July 1986

Time	Session Number	Subject	Resource Person
8.00	1	Registration	
8.50		Arrival of invited guests and Government officials.	
9.00		Opening session. - Address by His Excellency the Minister of Public Health and Social Affairs. - Message from the Regional Director, WHO/AFRO.	
10.00		Break	
10.15		Group photo.	
10.30		Election of officers. Adoption of programme.	
10.45	2	Status of the global dracunculiasis initiative.	Dr Donald Hopkins Centers for Disease Control
11.15		WHO/AFRO dracunculiasis activities.	Dr Frederick Wurapa WHO/AFRO.
11.30		Dracunculiasis: life cycle and Disease	Prof. Ralph Muller Commonwealth Institute of Parasitology.
12.00	2	Socioeconomic impact of dracunculiasis	Dr T. R. Guiguemde Centre Muraz, OCCGE.

Annex 1

Time	Session Number	Subject	Resource Person
12.30	3	Lunch	
15.30		Moderator Dr Camara	
		The International Drinking Water Supply and Sanitation Decade	Dr Peter Bourne Global Water.
16.00		Health education strategies for dracunculiasis control.	Dr Joshua Adeniyi University of Ibadan.
16.30		Break	
16.45		Vector control strategies for dracunculiasis control.	Dr Fergus Mc Cullough WHO/Geneva.
17.15		Eradication of guinea worm from a village in Togo.	Dr Tsogbe Kodjo
17.45		Film: "Avicenna's Thread".	

Programme of 2 July 1986

Time	Session Number	Subject	Resource Person
7.30	4	Moderator - Dr Samba Diop	
		Surveillance: The foundation for control and eradication.	Dr Frank Richards Centres for Disease Control.
8.00		The Indian guinea worm Eradication programme.	Dr Donald Hopkins Centres for Disease Control.

Annex 1

Time	Session Number	Subject	Resource Person
9.00		Dracunculiasis epidemiology and control in Nigeria.	Dr Luke Edungbola University of Florin.
9.00		Costs of different dracunculiasis control strategies.	Dr T. Stephen Jones CDC.
9.30		Break	
10.00		Country reports: - Benin - Burkina Faso - Cameroon - Central African Republic - Chad - Côte d'Ivoire - Ethiopia - Ghana - Guinea - Mali	
12.30	5	Lunch	
15.30		Moderator: Dr Atanga  Country reports: - Mauritania - Niger - Nigeria - Senegal - Sudan	

Annex 1

Time	Session Number	Subject	Resource Person
16.30		Break	
16.45		Country reports: - Togo - Uganda	
17.15		Round Table: Assuring financial and technical support for national programme	

Programme of 3 July 1986

Time	Session Number	Subject	Resource Person
7.30	6	Moderator - Dr Kale Summary of country reports	Dr Frederick Wurapa WHO/AFRO.
8.00		Work Group I - Guidelines for national plans of action (Discuss and prepare draft).	Dr Guiguemde
		Work Group II - Needs and opportunities for applied research (Discuss and list priorities).	Dr Kebe

Annex 1

Time	Session Number	Subject	Resource Person
10.00		Break	
10.30		Reports from Work Groups and discussion.	Dr Guiguemde
11.30		Plenary: Discussion of draft recommendations and communique.	Dr Kebe All participants
12.30		Lunch	
15.30	7	Moderator - Dr Nwosu	
		Plenary: Adoption of Recommendations and Communique.	All participants
16.30	7	Break	
16.45		Summary and Conclusions.	
17.15	8	Closing Ceremony:	
		- Reading of final communique.	Rapporteurs
		- Address by President of Workshop.	
		- Address by His Excellency The Minister of Public Health and Social Affairs.	

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INTRODUCTORY REMARKS BY DR G. L. MONEKOSSO,  
REGIONAL DIRECTOR OF WHO FOR AFRICA

Honourable Minister of Health,  
Your Excellencies,  
Ladies and Gentlemen,

I deeply regret the fact that it has not been possible for me personally to be with you at this very important workshop. I would like to thank the Government and people of Niger for having kindly agreed to host the workshop. I also would like to thank our various international collaborators and friendly governments who have supported our fight against endemic diseases, including guinea worm disease in our Region. It is my fervent hope that this third workshop in a series of international reviews and planning of control strategies will be another landmark in our progress towards elimination of guinea worm disease from our Region.

Guinea worm disease still presents a serious health risk for millions of rural villagers in 19 Member States of the Region. Although the disease is an affliction of antiquity, the relatively low mortality attributed to the disease combined with ineffective medical management have contributed to its relative neglect. The lack of concern about guinea worm has retarded economic development in rural areas in Africa, India and the Middle East. Several studies in the past 10 years have demonstrated the tremendous economic loss to agricultural communities in rural and peri-urban areas, where guinea worm disease continues to incapacitate farmers during the planting or harvesting periods. Other studies have demonstrated tremendous school absenteeism resulting from guinea worm disease. The impact of guinea worm in countries facing rapid population increases and dwindling food production has therefore become very clear. The plight of the affected poor rural peasants has been recognized.

Annex 3

Fortunately international awareness of the disease has increased in the last few years. This increased awareness has resulted from the collective efforts of various institutions and organizations of the international community. This international collaboration has resulted in two previous workshops - one in 1982 in Washington DC, the other a national workshop in Ilorin, Nigeria. The initiation of the eradication programme in India has certainly increased the worldwide awareness of the problems of guinea worm disease. Although most African countries have not embarked on planned programmes of guinea worm elimination/eradication, the events of the past five years have encouraged several countries in the African Region to start planning for the control of the disease.

The first objective of this workshop is to review the progress so far made in establishing reasonable baseline for the surveillance necessary for effective control. Suitable surveillance methods that are being used will be described and information shared. It is our hope that the accounts from the individual countries will reflect national commitment towards the control of the disease as well as satisfactory progress over the past five years. The second objective of the workshop is to clarify for ourselves the extent to which guinea worm disease has been retarding the progress of our affected communities in their socioeconomic development. In this regard, it is expected that the results of recent studies in several countries will be presented and discussed. Convinced of the negative impact of this disease on the overall development of our rural communities our resolve to tackle the disease will be stronger. The third objective of the workshop is to review the various methods available for guinea worm control and to consider various suitable alternative in terms of their cost effectiveness. In order to achieve this objective, we will need to work very hard in our respective work groups to produce comprehensive outlines of national plans of action against guinea worm disease for the countries which do not as yet have such plans.

Annex 3

It is our hope that the invited background papers prepared for the workshop and the deliberations on these papers will provide every country with an appropriate strategy to adopt. Finally the workshop aims at identifying areas in which specific research is required. In this regard, the development and evaluation of prototype health education materials for use in affected communities would be a subject of high priority. Other field operational issues that need to be addressed to facilitate implementation and evaluation of control activities will need to be considered.

Elimination/eradication of guinea worm disease will be a difficult task. We need to prove ourselves equal to the task. This workshop can be an important milestone in this endeavour and I certainly wish you every success in your deliberations.

ANNEX 4

ADDRESS BY HIS EXCELLENCY THE MINISTER OF PUBLIC HEALTH  
AND SOCIAL AFFAIRS ON THE OCCASION OF THE OPENING OF THE  
NATIONAL CONFERENCE ON CONTROL AND ERADICATION OF DRACUNCULIASIS

Honourable Ministers  
Your Excellencies the Ambassadors and  
Representatives of the countries and international organizations  
Distinguished Delegates  
Ladies and Gentlemen

On behalf of the Supreme Military Council and of the Government I am happy to welcome to Niger all participants in this regional conference on control of dracunculiasis.

The subject which brings us together today, dracunculiasis, is indisputably one of the concerns of our health officials and at the same time a health problem the gravity and importance of which is clear to us all. Dracunculiasis is known in Niger as "Kourkounou", a parasitic disease linked to filaria medinensis, and is one of the oldest filarial diseases known to man, since the Old Testament alludes to it. It has caused much human suffering and has often been responsible for a considerable decline in productivity in thousands of African patients, and has in consequence reduced food production in many of our towns and villages.

It is different from many infectious diseases that are prevalent in our developing countries and which have a high mortality rate in that dracunculiasis is to be evaluated mainly in terms of incapacitating people for work and days of work lost.

This incapacity concerns from 10% to 40% of the patients affected and lasts on average from one to three months. It mainly affects the rural, farming populations, and maximal transmission of the disease coincides with periods when labour is in great demand. It therefore has a highly compromising effect on total farm production and at worst can

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cause food shortages and malnutrition, famine, anxiety and fear. It does not spare schoolchildren, and studies carried out in 1979 on 13 schools in the infected regions have shown that a very high rate of absenteeism may be attributed to dracunculiasis. Despite that, for many years it has failed to arouse sustained attention in questions of research or even of control. Until recent times, activities designed to help its victims were limited to registering and treating patients and evaluating its importance in relation to homes affected. In recent years, however, dracunculiasis has emerged from the sidelines to which it had been relegated and is attracting increasing attention from the international community. Two events seem to me underlie this occurrence. The first was the launching in 1981 of the eradication programme in India. The second would appear to be the proclamation of the International Drinking Water Supply and Sanitation Decade, whose steering committee approved the idea of making dracunculiasis control an indicator of the effect of the Decade on health in regions where the disease is endemic. In May 1981, the World Health Assembly adopted a resolution (on the subject of the International Drinking Water Supply and Sanitation Decade) in which dracunculiasis was mentioned (resolution WHA34.25 of 22 May 1981). In that resolution we find that the Decade presents an opportunity to eliminate dracunculiasis (guinea worm disease) as a public health problem in affected areas, where the prevalence of the disease could serve as a uniquely visible and measurable indicator of progress for the Decade. Still more recently, on 16 May 1986, the Thirty-ninth World Health Assembly, deploring the considerable adverse effects on dracunculiasis (guinea worm disease) on health, agriculture, education, and the quality of life in affected areas of Africa and southern Asia, where over 30 million persons still remain at risk of the infection;

Called on all affected Member States:

To intensify national surveillance of dracunculiasis, and report the resulting information regularly to WHO;

Invited bilateral and international development agencies, private voluntary organizations, foundations, and appropriate regional organizations:

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To assist countries' efforts to add, within the context of primary health care, a dracunculiasis control component to ongoing or new water supply, rural development, health education and agricultural programmes in endemic areas by providing required support;

To provide extrabudgetary funds for this effort we should also mention that dracunculiasis has been the subject of study during workshops organized by national and international institutions, in particular the workshop organized by the Board of Science and Technology for International Development of the National Research Council on the subject "How to control dracunculiasis" held at Washington from 16 to 19 June 1982.

In Niger, because of the scarcity of studies on this disease, the epidemiological characteristics are based essentially on analysis of data obtained from reports during the exercise of curative medicine.

Thus, in 1976, the main focus of activity was the Tera district in Liptako-Gourma, which notified most of the 2200 cases recorded. In 1978, 5560 cases were notified, or about 112 cases for 100 000 inhabitants.

In November 1976, a survey by the section of parasitology of the Muraz Centre, that was conducted in 11 villages of the Torodi region, recorded 4.70% of cases affected out of a population examined of 2280.

The highest rate was recorded in 1980, when 6000 cases were notified, with a 1.6% mortality rate. In regard to these figures, which certainly underestimate the real situation, dracunculiasis is the subject of particular attention in the execution of our national programme of village hydraulics, extension of health coverage in the framework of primary health care, the gradual establishment of a national health education programme, which are all valuable cards to play in containing this disease in future years. Furthermore, for reasons of efficiency in control of diseases such as dracunculiasis, we have decided to examine, during the forthcoming health congress next August, at Diffa, the ways and means of achieving greater intersectoral participation, with a view to formulating a national policy on primary health care. I am sure that these concerns are shared by all the countries present here, and I am therefore convinced that the proceedings at Niamey will mark an important stage in our common struggle for the welfare of our respective peoples.

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Ladies and Gentlemen, there is so much at stake during this meeting that it is your duty to make it a success, and I am sure that you will be able to do so.

I therefore wish you every success in your labours and declare open the African Regional Conference on the Control and Elimination of Dracunculiasis.

Thank you.