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CRITERIA FOR THE CERTIFICATION OF DRACUNCULIASIS ERADICATION



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CRITERIA FOR THE CERTIFICATION OF DRACUNCULIASIS ERADICATION¹

CONTENTS

	Page
1. INTRODUCTION	3
2. DEFINITIONS	4
3. ZONOTIC ASPECTS	4
4. CERTIFICATION PROCEDURES	
4.1 National preparations for certification	4
4.2 International preparations for certification	5
4.3 Strategies for certification	5
4.4 Operation of International Certification Teams	6
5. CRITERIA FOR CERTIFICATION OF ERADICATION	6
5.1 Countries with dracunculiasis transmission during the 1980s	6
5.2 Formerly endemic countries (transmission occurred before 1980)	7

¹ This document contains the revised version of the Report of an informal consultation on the criteria for the certification of dracunculiasis elimination (eradication) (Division of Control of Tropical Diseases, WHO, Geneva, 19-21 February 1990). The original report was issued in the WHO/FIL series under the serial number WHO/FIL/90.185. The present revised report is based on comments and modifications made by a Round Table on the criteria for the certification of dracunculiasis eradication held on 26 March 1993 in Cotonou, Benin, on the occasion of the Second Meeting of Programme Managers for dracunculiasis eradication, organized by the WHO Regional Office for Africa in collaboration with UNICEF, Global 2000 and the WHO Collaborating Centre for the Eradication of Dracunculiasis (Cotonou, 23-26 March 1993). The list of participants in the Round Table, which is divided into the English-speaking group and the French-speaking group, is given at the end of Annex I.

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6. STRATEGIES	7
6.1 Countries where pre-certification surveillance programmes are carried out immediately after the dracunculiasis eradication campaign	7
6.2 Countries where pre-certification surveillance programmes are carried out many years after the last known case of dracunculiasis	8
7. STEPS IN THE CERTIFICATION PROCESS	8
REFERENCES	10
TABLES AND MAPS	12
ANNEX 1. LIST OF PARTICIPANTS	17
ANNEX 2. ZOO NOTIC ASPECTS	22
ANNEX 3. OPERATION OF INTERNATIONAL CERTIFICATION TEAMS	26
ANNEX 4. COUNTRY REPORT	27

1. INTRODUCTION

Dracunculiasis (or guinea worm disease) is a disease which is endemic in certain communities without access to safe sources of drinking-water and which has serious adverse effects on health, agricultural production and school attendance. The disease occurs in India and Pakistan, and in 16 African countries, extending from West Africa across the Sahel to East Africa, excluding probably Gambia, Guinea-Bissau and Somalia where apparently the disease is no longer endemic (see Map 1). An estimated 120 million persons are at risk of the infection in Africa (Watts, 1987), and 10 million in Asia. About 2 to 3 million persons contract the disease each year (Muller, 1992). In 1992, 15 countries reported a total of 374 202 cases of dracunculiasis to the World Health Organization. More than 99.6% of these cases were reported from Africa (WHO, 1993).

Early in the twentieth century, human dracunculiasis apparently disappeared spontaneously from some countries where it had been endemic, e.g., Egypt. In previous centuries dracunculiasis had been introduced into several countries of mainland North, Central and South America (e.g., Brazil) during the African slave trade, but the disease later died out (Hoepplie, 1969). It was eradicated from Iran towards the end of the 1970s (Sahba, 1973; Sahba et al., 1992) and from Uzbekistan in the 1920s (Litvinov & Lysenko, 1982). In India dracunculiasis was eradicated from Tamil Nadu State in 1984 (Kapali et al., 1984) and later, in 1991, from the States of Gujarat and Maharashtra (WHO, 1992). Within the context of the United Nations International Drinking Water Supply and Sanitation Decade (1981-1990), a global campaign to eradicate dracunculiasis was started in the early 1980s, and, today, the eradication programme is nearing completion.

The regional conference on dracunculiasis eradication in countries of the WHO Eastern Mediterranean Region, held in Islamabad, Pakistan, in April 1989, recommended that WHO should develop agreed-upon criteria for certification of dracunculiasis eradication from formerly endemic countries (WHO, 1989). These criteria were needed urgently in the WHO Regions of the Eastern Mediterranean, South-East Asia and Africa. In addition, with the approval of resolutions WHA39.21 in 1986, WHA42.29 in 1989 (WHO, 1990), and WHA44.5 in 1991 (WHO, 1991), the World Health Assembly endorsed the efforts to eradicate dracunculiasis country by country and fixed the goal of interrupting transmission by 1995 and achieving certification of eradication, at the global level, by the end of the 1990s (WHO, 1991).

The aim of the present paper is to describe criteria and procedures for verifying the absence of dracunculiasis transmission and for certifying its eradication from formerly endemic countries. The various stages in national eradication programmes are indicated in Table 1. Standard criteria for certification are needed for the following reasons:

- (a) To ensure international credibility for the expected, future claim that dracunculiasis has been eradicated from an area.
- (b) To have a formal mechanism for judging the success of recent national dracunculiasis eradication programmes.
- (c) To have a standard, effective procedure to identify and eradicate any previously unknown foci of transmission.
- (d) To help in the investigation of rumoured or sporadic occurrences of the infection in unconfirmed potentially endemic areas.

The need for certification of attainment is inherent in the goal of an eradication programme, as opposed to the lack of such a need in a control programme. There must be an objective basis, according to agreed criteria, for determining whether dracunculiasis has indeed been eradicated; the criteria must take into account the risk of importation from neighbouring countries as well as the need for maintaining surveillance in neighbouring countries. It is expected that certification of eradication of dracunculiasis for individual countries will be conducted until the final goal of certifying global eradication of dracunculiasis is achieved.

2. DEFINITIONS

A case of *dracunculiasis* is defined as an individual exhibiting or having a history of a skin lesion with emergence of a guinea worm (WHO, 1988). A recent history (within one year) of a skin lesion with emergence of a guinea worm is the only time-frame which must be used in surveillance programmes.

Local eradication of dracunculiasis is the confirmed absence of clinical illness (the interruption of transmission of *Dracunculus medinensis* in man) for three years or longer from a sizeable geographical unit (e.g., a country) with such a low risk of reintroduction of the parasite that preventive measures could be reduced to a strict minimum.

Total eradication of dracunculiasis is the confirmed absence of clinical manifestations (the interruption of transmission of *Dracunculus medinensis* in man) for three years or longer at the global level.

3. ZONOTIC ASPECTS

No animal reservoirs of infection have been identified (see Annex 2).

4. CERTIFICATION PROCEDURES

4.1 National preparations for certification

The methods employed in national preparations for the certification will depend on whether an eradication campaign is followed immediately by a surveillance phase and by preparations for the certification, or if pre-certification activities are carried out many years after the last known case of dracunculiasis. Countries should include in their plans of action provision for support for the implementation of the national surveillance activities in preparation for the certification process. Countries should contact WHO to initiate the verification and certification process. Part of the certification process will include a detailed report on the history and current status of dracunculiasis in the country. Country reports should include the following information:

- (1) An historical account of dracunculiasis in the country, including a detailed overview of the dracunculiasis eradication campaign(s) as well as of the status of water and sanitation projects and of their contribution to the eradication effort.
- (2) The results of active case detection including: (i) data from at least three annual reports of case detection, based on the monthly readings of daily case registers regularly up-dated at the village level, (ii) any evidence of validation of results from active searches and case containment measures, and (iii) the results from any other assessments carried out, e.g., in schools, markets, or other places where nomadic or migratory people congregate.
- (3) An evaluation of the effectiveness of the routine disease reporting system, including: (i) the number and distribution of primary health posts, health units, health centres, etc., throughout the endemic areas, (ii) evidence of the inclusion of dracunculiasis as a reportable disease on the official disease reporting forms, (iii) the regularity and completeness with which the health reporting units reported, (iv) validation of the reports, and (v) records of action taken when dracunculiasis cases were reported during the latter stages of the campaign.
- (4) A description of all public health education campaigns, including, if applicable, details of whether any rewards have been paid for reporting cases of dracunculiasis and the results of these efforts.
- (5) Demographic information, including population distribution by geographical region and known significant migration patterns.

Some countries, especially currently endemic countries, may convene a national commission or group to examine programme activities and give evidence before the International Certification Team (ICT).

4.2 International preparations for certification

The reliability of certification of dracunculiasis eradication will depend on the lapse of time since the last known indigenous case and on the intensity and effectiveness of surveillance procedures. If active surveillance, begun during a national eradication programme, is continued for three years beyond the occurrence of the last known indigenous case, that period will be sufficient to judge whether or not eradication has been achieved. In countries where a longer period has elapsed since the last known case of the disease, without there having been specific searching for dracunculiasis, it must not be considered that a less sensitive surveillance will be sufficient to detect transmission. Dracunculiasis occurs among populations living in remote places, and consequently disabled, infected individuals may be unable to seek medical attention even at the nearest primary health post which may be some considerable distance away. In order to prepare for certification, which shall preferably be conducted on a subregional basis, WHO should consider the following approaches:

4.2.1 Emphasize the importance of certification by increasing relevant communication between WHO staff and appropriate national authorities.

4.2.2 Develop a standard format to be used by formerly endemic countries in the preparation of a country report. The format should clearly outline what is needed, such as maps, figures, tabulations, etc.

4.2.3 Establish, as in the procedures developed for certifying the eradication of smallpox (Fenner et al., 1988), an independent international commission which would advise the Organization on criteria, procedures and progress made towards verification of absence of transmission and also contribute actively to the national certification process.

4.2.4 Designate a panel of experts from which International Certification Teams (ICTs) can be chosen for assignment, as outlined in Annex 3.

4.2.5 Coordinate national preparations for certification by promoting regular visits by WHO staff, members of the designated ICT, or special consultants to the country or subregion concerned.

4.2.6 Establish a register of countries requesting certification and also of those countries where official certification of eradication is pending. In addition, WHO would establish an official register, listing countries where dracunculiasis has been eradicated, based on evaluations by ICTs.

4.2.7 Mobilize funds required for implementation of the certification process.

4.3 Strategies for certification

In addition to the collection of baseline data to assess the status of dracunculiasis in each country, visits by WHO staff and consultants may be necessary to: (i) review questions raised by the reports and (ii) assess the situation through active searches.

WHO will need to consider the selection and operational activities of the ICTs. Their functions should include evaluation of reports provided by countries and by WHO consultants, and a thorough in-country review of the surveillance and eradication activities which led to the request for certification. ICT members should not include individuals who have actively participated in the national programme which the team intends to evaluate. The composition of ICTs may change from time to time, but each new team should include at least one or two members who have had experience of an earlier evaluation. ICTs will be asked to reach one of two possible conclusions: either (i) they are satisfied that eradication has been achieved, or (ii) they are not satisfied (e.g. certain conditions, to be specified by the ICT, have not been met). The government of the country being certified should guarantee to the ICT full access to all documentation of programme activities and give the team free access to all parts of the country where further investigation is needed.

WHO and/or an international commission will need to consider which level of investigation will be appropriate for countries requiring certification. For example, one or more of the following activities may be required: a visit by an ICT; visits by selected expert(s); submission of a detailed written country report or written statements by health officials of that country, etc.

Table 2 lists those countries where human dracunculiasis has been: (i) endemic during the 1980s, (ii) endemic before 1980, (iii) endemic at one time in history, (iv) sporadically reported without knowledge of endemic disease. Map 2 shows the countries that are included in the four categories in Table 2. The anticipated schedule of the requests for certification of eradication of dracunculiasis are shown in Table 3. At the present time (1993) there is still a lack of knowledge on when guinea worm transmission was interrupted in many countries. The listing of countries given in Table 2 will be updated as new information becomes available during certification activities. The reliability of the data will also be checked and updated where necessary.

4.4 Operation of International Certification Teams

See Annex 3.

5. CRITERIA FOR CERTIFICATION OF ERADICATION

On the basis of the current status of dracunculiasis, the efforts made to eradicate the disease country by country, and the mandates provided by the resolutions WHA39.21, WHA42.29, and WHA44.5 adopted by the World Health Assembly (WHO, 1990, 1991) and by the resolution AFR/RC38/R13 adopted by the WHO Regional Committee for Africa (WHO/AFRO, 1988), the following criteria for certification of eradication are proposed.

5.1 Countries with dracunculiasis transmission during the 1980s

National governments, requesting certification of eradication, must submit to WHO a country report (see Annex 3) which describes the procedures and provides evidence in support of the assertion that dracunculiasis has been eradicated.

In these countries, eradication will be considered to have been achieved when adequate surveillance systems have not discovered any evidence of transmission derived from careful annual searches, carried out during the expected transmission season, for three consecutive years. Surveillance, to be adequate, should include active case detection carried out, if necessary, in the most remote areas of the country. For details of adequate surveillance systems, reference should be made to the *Guidelines for surveillance in dracunculiasis eradication programmes* issued by the WHO Collaborating Centre for Research, Training and Eradication of Dracunculiasis (1989). The establishment of a claim in relation to a specific defined area, must fulfil the following conditions:

5.1.1 Proof that an active case detection system has operated in the area for at least three years since the occurrence of the last known indigenous case. The best would be to use a village-based surveillance system remaining in place in every formerly endemic village with a system for the rapid reporting of information to the next surveillance level. Surveillance coverage will be considered to be truly adequate: (i) if 85% or more of the village clusters placed under surveillance submit their reports in good time each month, or (ii) if each village under surveillance provides its report at least nine months out of 12. A reward for the patient detected as well as for the health worker who identified the patient and took the appropriate measures (i.e. containment or hospitalization) would strongly reinforce the viability of this approach.

Rationale

There is no asymptomatic carrier state in dracunculiasis, the incubation period does not exceed one year, and there is no known animal reservoir. Therefore the absence of indigenous cases for a three-year period, in the presence of adequate case detection, can be accepted as proof of local eradication of the disease.

5.1.2 In the event of importation to an area not endemic for dracunculiasis, it must be established that each confirmed case was in fact imported by tracing the case to its origin in a dracunculiasis endemic area. Where the origin of the imported case has been definitely established and where transmission does not continue for more than one transmission cycle, the importation and subsequent spread will not be considered to represent an indigenous focus. If, following importation, transmission occurs for more than

one transmission cycle or if the origin of the case is not identified, the focus will be considered one of endemic transmission.

5.1.3 Maintenance of a register of suspected cases of dracunculiasis reported or discovered during the three-year period. It is recommended that each case of dracunculiasis be diagnosed, preferably when the blister forms or before, and that adequate measures be implemented (i.e. containment or hospitalization and surgical extraction of the worm if risk of bacterial infection can be kept low). The register must also mention: (i) the movements and activities of the patient since the emergence of the worm in order to identify all sources of possibly contaminated drinking water, and (ii) the origin and possible source of the infection.

Rationale

Each worm emergence that is not detected carries the risk of new infections a year later. Unlike smallpox, there is no vaccine with which to contain the spread of dracunculiasis by protecting individuals at risk of infection. Therefore, surveillance for dracunculiasis must be active and village-based. Effective containment of residual cases is critical.

5.1.4 Give a detailed account of the history of dracunculiasis in the country (see Annex 4).

Rationale

The objective of surveillance for dracunculiasis during the three-year pre-certification period is to detect rapidly and contain any cases that might occur in order to prevent further transmission. Confirmation of the absence of transmission in a country is judged on the basis of: (i) an assessment of the capability of the surveillance system to detect cases of dracunculiasis should they occur, and (ii) the records compiled by the national authorities, the quality of which can be determined during a field appraisal by an international certification team. In general, the reliability of certification will depend on the amount of time that has elapsed since the last known case and on the sensitivity of active surveillance.

5.2 Formerly endemic countries (transmission occurred before 1980)

In these countries certification of eradication may be granted after the provision of satisfactory documentation relating to the following issues:

5.2.1 A detailed description of the extent of former endemic area(s).

5.2.2 The findings of one active case search, conducted within the last two years in formerly endemic areas during the expected transmission season and carried out village-by-village using recognition cards. The results should ascertain that residual foci of infection no longer exist. To this end, data obtained by passive surveillance will also be given due consideration.

6. STRATEGIES

6.1 Countries where pre-certification surveillance programmes are carried out immediately after the dracunculiasis eradication campaign

6.1.1 Enhance the sensitivity of case detection nationwide by maintaining a high degree of public awareness of dracunculiasis and its eradication, of the importance and need of reporting cases of dracunculiasis, of rewards for reporting cases, and of procedures for the containment of cases. Monitor the awareness campaign periodically to assess coverage and comprehension of messages, particularly in remote rural areas where potential for dracunculiasis is thought to be highest.

6.1.2 Maintain compulsory notification of cases of dracunculiasis by all units (i.e., primary health care posts, health centres, and hospitals) of the national passive surveillance system.

6.1.3 Maintain a village-based surveillance and containment programme, in all villages formerly affected by dracunculiasis.

6.1.4 Maintain a register in all endemic or formerly endemic villages of suspected dracunculiasis infections reported or discovered during the pre-certification period, and indicate for each confirmed case that it was either imported, by tracing the case to its origin, or indigenous.

6.1.5 Incorporate surveillance of other diseases or other health and development activities into the surveillance system for dracunculiasis, or vice-versa.¹

6.2 Countries where pre-certification surveillance programmes are carried out many years after the last known case of dracunculiasis

6.2.1 Enhance the sensitivity of case detection nationwide by promoting a high degree of public awareness of dracunculiasis and its eradication in neighbouring countries, and by stressing: (i) the importance and need of reporting cases of dracunculiasis, (ii) the offering of rewards for the reporting of cases, and (iii) the measures required for the containment of cases. Monitor the awareness campaign periodically to assess coverage and comprehension of messages, particularly in remote rural areas where potential for dracunculiasis is highest (e.g., villages without safe sources of drinking water and situated near borders with other countries affected by dracunculiasis or in a formerly endemic area).

6.2.2 Institute compulsory notification of cases of dracunculiasis by all units (i.e., primary health care posts, health centres, and hospitals) of the national passive surveillance system.

6.2.3 Maintain a register of dracunculiasis cases and use it to: (i) note any suspected cases of infection reported or discovered during the pre-certification period, (ii) indicate that each confirmed case was either imported, by tracing the case to its origin in a dracunculiasis endemic area, or indigenous. Ascertain that all reports were well documented.

6.2.4 Conduct at least one active case detection survey, village-by-village, in formerly endemic areas during the transmission season using case recognition cards and the local vernacular name for dracunculiasis. School-based (Chippaux & Larsson, 1991) and market-based (Brieger, 1991) surveys as well as surveys of relevant data collected by nongovernmental organizations (NGO) working in the field can be useful in eliciting information about villages where cases might have occurred during the last transmission season.

7. STEPS IN THE CERTIFICATION PROCESS

The proposed sequence of events listed below should be kept flexible. This listing summarizes the process for certification.

7.1 WHO will distribute a set of international guidelines on verifying the absence of dracunculiasis transmission and certifying its eradication.

7.2 Countries where dracunculiasis was formerly endemic will be encouraged to submit a formal request to WHO to verify the absence of transmission and accordingly to certify its eradication.

7.3 Such formal requests must conform with the procedures given in the guidelines, prepared by the WHO Collaborating Centre for Research, Training, and Eradication of Dracunculiasis (1989). In particular, the requesting countries will produce a detailed report on all surveillance and eradication activities. Such countries may find it useful to designate a national committee to evaluate the report on the dracunculiasis eradication programme before its formal submission to WHO.

¹ In countries that have almost eradicated dracunculiasis it would be too costly to maintain a surveillance system for this disease alone, to meet the requirements for certification. Control of dracunculiasis by means of health education, the provision of cloth for filtering all drinking water, the provision of safe sources of drinking water, the chemical destruction of cyclops, and the disinfection and dressing of guinea worm lesions may be assumed by the primary health care services alone. Once national dracunculiasis eradication efforts have been successful in achieving their goal, the links established with these remote and disenfranchised village populations during the eradication campaign should progressively be utilized by the health system. Surveillance for dracunculiasis could be coupled with that of other diseases, with the vaccination of children, or with any other national health initiative.

7.4 WHO will designate an International Certification Team (ICT) with the mandate to evaluate the country report and to determine, in collaboration with the host country, the status of the certification schedule.

7.5 The ICT will carry out the certification process, and make appropriate recommendations to WHO regarding approval of the claim that dracunculiasis has been eradicated.

7.6 If certification of eradication is granted, the country will then be listed on a WHO official register of areas now verified as free of dracunculiasis transmission.

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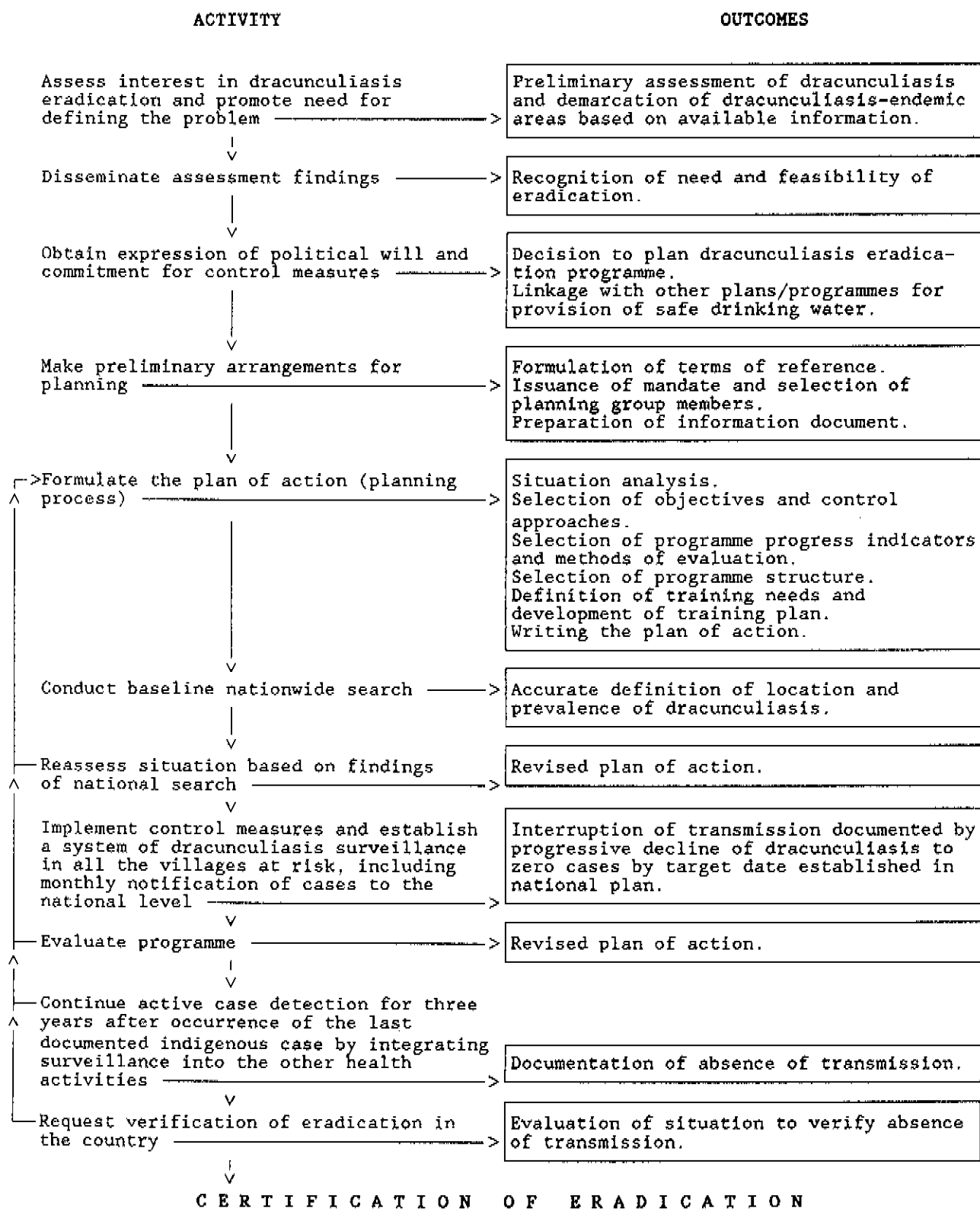
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TABLE 1. STEPS IN THE PLANNING, IMPLEMENTATION AND EVALUATION OF PROGRAMMES TO ERADICATE DRACUNCULIASIS

(from WHO Collaborating Centre for Research, Training and Eradication of Dracunculiasis, 1989)



**TABLE 2. PROVISIONAL LIST OF COUNTRIES AND TERRITORIES
WITH A HISTORY OF DRACUNCULIASIS IN HUMANS**

Countries with endemic disease during the 1980s (Group A)

1. Benin	7. Ghana	13. Nigeria
2. Burkina Faso	8. India	14. Pakistan
3. Cameroon	9. Kenya	15. Senegal
4. Chad	10. Mali	16. Sudan
5. Côte d'Ivoire	11. Mauritania	17. Togo
6. Ethiopia	12. Niger	18. Uganda

Countries with a history of endemic dracunculiasis before 1980 (Group B)

1. Central African Republic	4. Guinea-Bissau	7. Sierra Leone
2. Gambia	5. Iran	8. Somalia
3. Guinea	6. Liberia	9. Zaire

Other countries and territories with a possible history of endemic dracunculiasis (Group C)

1. Afghanistan	15. Grenada	28. Myanmar
2. Algeria	16. Guyana	29. Oman
3. Argentina	17. Haiti	30. Qatar
4. Barbados	18. Indonesia	31. Saudi Arabia
5. Brazil	19. Iraq	32. Sri Lanka
6. Colombia	20. Israel	33. Suriname
7. Comoros	21. Jordan	34. Tajikistan
8. Cuba	22. Kuwait	35. Tanzania
9. Djibouti	23. Libya	36. Thailand
10. Dominican Republic	24. Madagascar	37. Tunisia
11. Egypt	25. Malawi	38. United Arab Emirates
12. Equatorial Guinea	26. Mexico	39. Uzbekistan
13. French Guiana	27. Morocco	40. Yemen
14. Gabon		

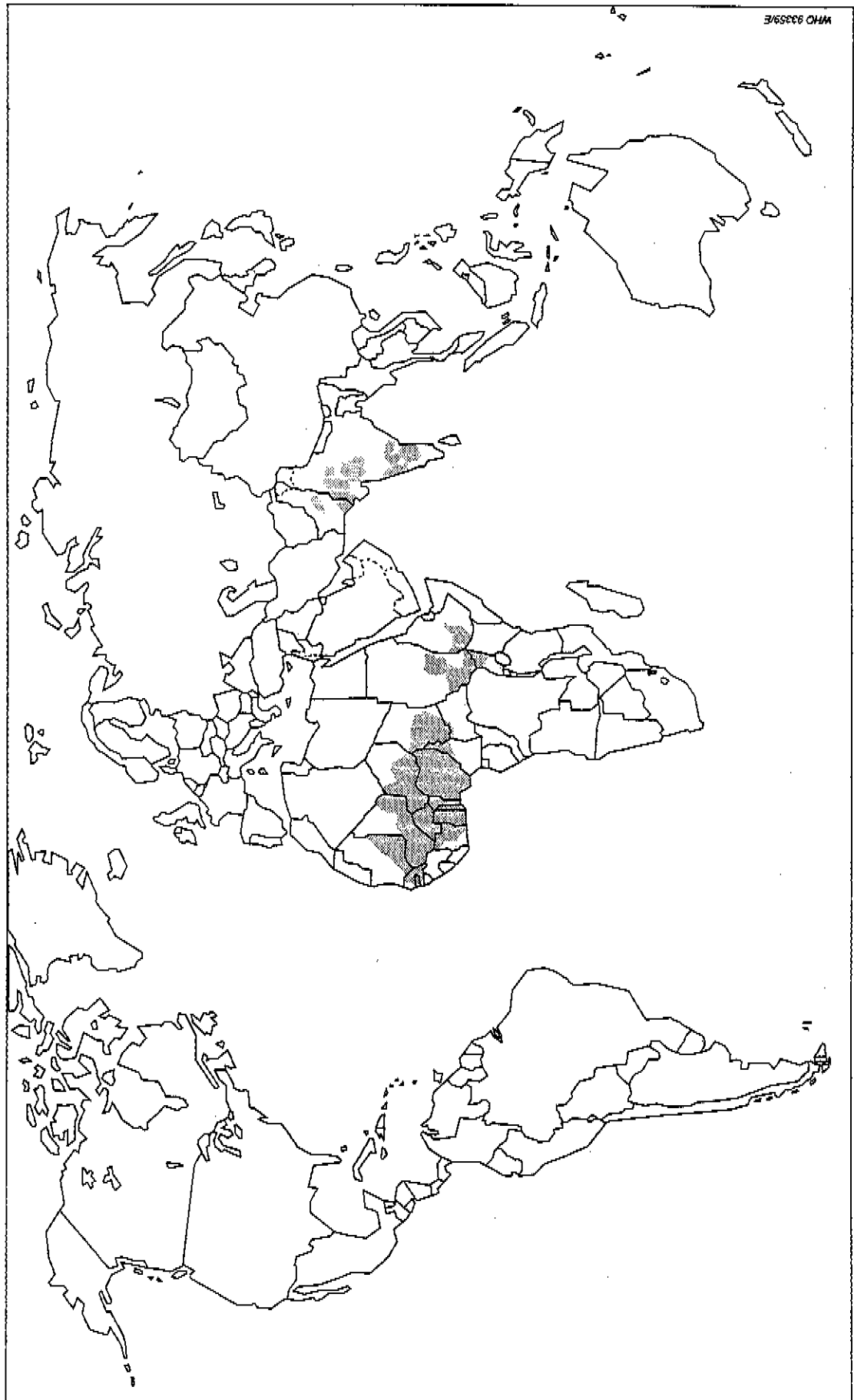
Sporadic indigenous cases but no history of endemic disease (Group D)

1. Japan	2. Korea
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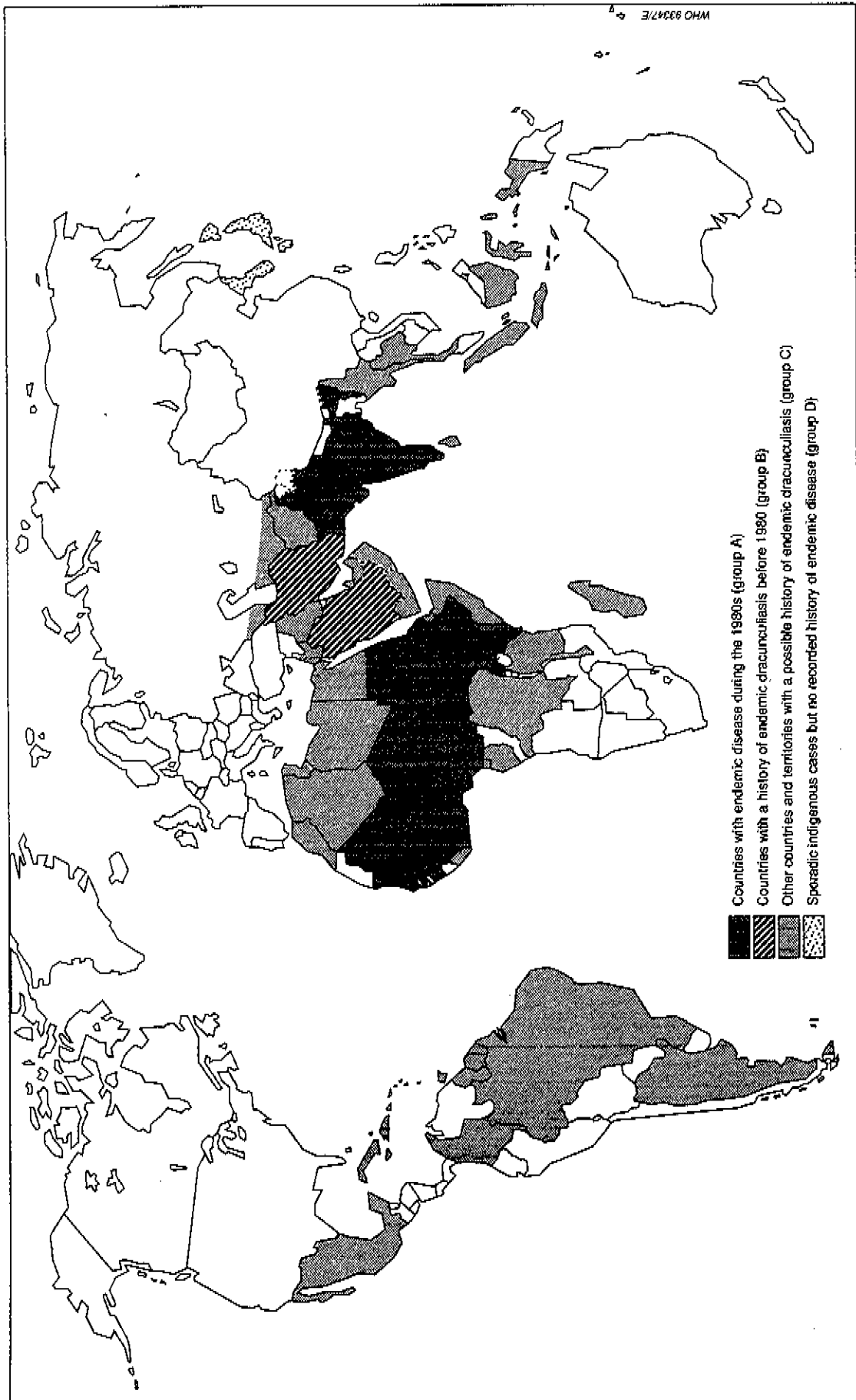
**TABLE 3. ANTICIPATED SCHEDULE OF REQUESTS FOR CERTIFICATION
OF ERADICATION OF DRACUNCULIASIS**

Year	Countries	No. of countries per year
1993	Central African Republic, Gambia, Guinea, Guinea-Bissau, Pakistan, Saudi Arabia, Yemen	7
1994	Cameroon, Ghana, Liberia, Sierra Leone, Uzbekistan, Zaire	6
1995	Iran, Tajikistan	2
1996	India, Mali, Mauritania, Nigeria, Senegal	5
1997	Benin, Burkina Faso, Côte d'Ivoire, Niger, Togo	5
1998	Chad, Kenya, Uganda	3
1999	Ethiopia, Sudan	2
	TOTAL	30

Map 1. Areas in which dracunculiasis is reported or probably exists, 1992



Map 2. Countries and territories with a history of dracunculiasis in humans (according to provisional list in Table 2)



LIST OF PARTICIPANTS

Members*

Dr Akoa Amanaman, Sous-directeur des Grandes Endémies et Coordonnateur national des Soins de Santé primaires, Direction de la Santé publique et de la Population, B.P. V 16, **Abidjan**, Côte d'Ivoire

Dr J. Breman, Center for Infectious Diseases, Centers for Disease Control and Prevention, **Atlanta**, Georgia 30333, United States of America

Dr S. Bugri, National Coordinator, Ghana Guinea Worm Eradication Programme, Global 2000 Guinea Worm Project, Kotoka International Airport Post Office, Private Mail Bag, **Accra**, Ghana

Dr Cheikh Ould Dah, Chef, Services Maladies transmissibles, Ministère de la Santé, **Nouakchott**, Mauritania

Dr Batchassi Essosolem, Médecin-Chef, Subdivision sanitaire de la Kozah, Chr. Kara, B.P. 18, Kozah, **Lomé**, Togo

Dr Abou Beckr Gaye, Médecin-Chef du Service national des Grandes Endémies, Ministère de la Santé publique, **Dakar**, Senegal

Professor Robert Guiguemdé, Secrétaire général adjoint, Organisation de Coordination et de Coopération pour la Lutte contre les Grandes Endémies, B.P. 153, **Bobo Dioulasso 01**, Burkina Faso

Dr Abdoullaye Chirifi Haïdara, Coordonnateur national de la Lutte contre la Dracunculose, Division Epidémiologie et Prévention, B.P. 228, **Bamako**, Mali

Dr Donald R. Hopkins, Global 2000, 1840 N. Hudson, **Chicago**, Illinois 60614, United States of America (**Chairman**)

Dr R.L. Kaiser, Director, Division of Parasitic Diseases, Center for Infectious Diseases, Centers for Disease Control and Prevention, **Atlanta**, Georgia 30333, United States of America

Dr Matthieu Kamwa, Directeur adjoint de la Médecine préventive et rurale, Ministère de la Santé publique, **Yaoundé**, Cameroon

Dr Larba Théodore Kangoye, Directeur du Contrôle des Maladies transmissibles, Ministère de la Santé et de l'Action sociale, B.P. 7019, **Ouagadougou**, Burkina Faso

Dr Moussa Keita, Médecin épidémiologiste-paludologue, Directeur national de Lutte contre le Paludisme et autres Maladies parasitaires, B.P. 817, **Conakry**, Guinea

Mr Maman Kelzou-Gana, Ingénieur sanitaire, Division de l'Hygiène et de l'Assainissement (DHA), Ministère de la Santé publique, B.P. 371, **Niamey**, Niger

Dr Farouk Ahmed el Khitam, Technical Director, Office of the Ministry of Health, **Khartoum**, Sudan

Dr Daniel Kouka-Bemba, Secrétaire-général, Organisation de Coordination pour la Lutte contre les Endémies en Afrique Centrale (OCEAC), B.P. 288, **Yaoundé**, Cameroon (**Vice-Chairman**)

Dr S.K. Litvinov, Chief, Laboratory of Coordination and International Relations, Central Research Institute of Epidemiology, Ministry of Health, Novogireevskaya St. 3A, **Moscow 11123**, Russian Federation

* Unable to attend: Mr Kotiga Guerinan, Ministre de la Santé public, B.P. 440, **Ndjaména**, Chad;
Dr Abdullahi Ali Hersi, c/o WHO Representative, P.O. Box 374, **Mogadishu**, Somalia.

Annex 1

Dr F.S. McCullough, Independent Consultant on Human Ecology and Health, Villard, 01220
Divonne-les-Bains, France

Dr Celestino M. Mendes Costa, Directeur, Centre de Médecine tropicale de Bissau, B.P. 50, Bissau, Guinea-Bissau

Dr G.B. Mpigika, Assistant Director of Medical Services/Communicable Disease Control, Ministry of Health, P.O. Box 8, Entebbe, Uganda

Dr R.L.J. Muller, Director, CAB International Institute of Parasitology, 395a Hatfield Road, St Albans, Herts AL4 0XU, United Kingdom (**Rapporteur**)

Dr Sheik Ahmed Nisar, Deputy Director, National Institute of Health, Islamabad, Pakistan

Dr Mostafa Pourtaghavi-Shahrestani, CDC Adviser, Ministry of Health, 68 Avenue Iran Shahr, Teheran, Islamic Republic of Iran

Professor A. Rougemont, Unité de Santé communautaire et Médecine tropicale, Hôpital Cantonal, 1211 Genève 4, Switzerland (**Rapporteur**)

Dr Ernesto Ruiz-Tiben, Chief, Guinea Worm Task Force, Division of Parasitic Diseases, Center for Infectious Diseases, Centers for Disease Control and Prevention, Atlanta, Georgia 30333, United States of America

Dr Hassan Mohammed Sabah, c/o WHO Representative, c/o United Nations Development Programme, P.O. Box 2047, Alwiyah Post Office, Baghdad, Iraq

Dr Lola Sadiq, Assistant Director, Disease Control and International Health; National Coordinator, Nigerian Guinea Worm Programme and National Schistosomiasis Control Programme, Ikoyi, Lagos, Nigeria

Dr S. Sahadeb Chandra, Deputy Director General of Health Services, Ministry of Health and Family Welfare, Government of India, Nirman Bhavan, New Delhi 110011, India

Dr D.K. Sang, Senior Parasitologist, Division of Vector-borne Diseases, P.O. Box 20750, Nairobi, Kenya

Dr Seyoum Taticheff, Deputy General Manager and Head of the Department of Microbiology and Epidemiology, National Research Institute of Health, P.O. Box 1242, Addis Ababa, Ethiopia

Professor Théophile Zohoun, Agrégé de la Santé publique, Directeur, Protection sanitaire nationale, Ministère de la Santé publique, B.P. 882, Cotonou, Benin

Secretariat

Mr H. Benaziza, Chief, Audiovisual and Programme Support, Division of Health Education, World Health Organization, 1211 Geneva 27, Switzerland

Mr R. Bos, Community Water Supply and Sanitation, Division of Environmental Health, World Health Organization, 1211 Geneva 27, Switzerland

Ms C. Bwakira, Office of International Cooperation, Office of Director, Planning, Coordination and Cooperation, World Health Organization, 1211 Geneva 27, Switzerland

Ms T. Gastaut, Director, Office of Information, World Health Organization, 1211 Geneva 27, Switzerland

Dr R.H. Henderson, Assistant Director-General, World Health Organization, 1211 Geneva 27, Switzerland

Mr H. Hueb, Community Water Supply and Sanitation, Division of Environmental Health, World Health Organization, 1211 Geneva 27, Switzerland

Dr Sujarti Jatanasen, Regional Adviser on Communicable Diseases, WHO Regional Office for South-East Asia, World Health House, Indraprastha Estate, Mahatma Gandhi Road, New Delhi 110002, India

Dr B. Knudsen, Training, Division of Control of Tropical Diseases, World Health Organization, 1211 Geneva 27, Switzerland

Dr R. Le Berre, Chief, Filariasis Control, Division of Control of Tropical Diseases, World Health Organization, 1211 Geneva 27, Switzerland

Dr A. Maïga, Bureau de la Sous-Région I, World Health Organization, P.O. Box 192, Bamako, Mali

Dr K.E. Mott, Chief, Schistosomiasis Control, Division of Control of Tropical Diseases, World Health Organization, 1211 Geneva 27, Switzerland

Dr J.A. Najera-Morrondo, Director, Division of Control of Tropical Diseases, World Health Organization, 1211 Geneva 27, Switzerland

Dr N. Neouimine, Regional Adviser, Parasitic Diseases Programme, WHO Regional Office for the Eastern Mediterranean, P.O. Box 1517, Alexandria 21511, Egypt

Dr A. Prost, Programme Development and Monitoring, World Health Organization, 1211 Geneva 27, Switzerland

Dr C.P. Ramachandran, Secretary, Steering Committee on Filariasis, UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases, World Health Organization, 1211 Geneva 27, Switzerland

Dr P. Ranque, Filariasis Control, Division of Control of Tropical Diseases, World Health Organization, 1211 Geneva 27, Switzerland (Secretary)

Mr A. Rotival, International Drinking Water Supply and Sanitation Decade, World Health Organization, 1211 Geneva 27, Switzerland

Ms R. Villars, Office of Governing Bodies and Protocol, Office of Director of Planning, Coordination and Cooperation, World Health Organization, 1211 Geneva 27, Switzerland

Dr C. Vlassoff, Social and Economic Research, UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases, World Health Organization, 1211 Geneva 27, Switzerland

Observers*

Mr Bonev, United Nations Development Programme, Petit-Saconnex, Switzerland

Dr Aloysius Hanson, Director, Liberian Institute for Biomedical Research, P.O. Box 1012, Monrovia, Liberia

Dr J. Sherry, Senior Adviser, Office of the Director, Programme Division, United Nations Children's Fund, United Nations Plaza, New York, N.Y. 10017, United States of America

* Unable to attend: Dr Prince Akpabio, Patron, Nigerian Guinea Worm Eradication Foundation; Clinical Lecturer, UCM, Dental School, University of London, Senate House, London, WC1, United Kingdom; Dr Ashok Kumar, Deputy Director and Head, Division of Helminthology, NICD, 22 Shammath Marg, P.O. Box No. 1492, New Delhi 110051, India.

**LIST OF PARTICIPANTS IN ROUND TABLE ON CRITERIA FOR THE CERTIFICATION
OF DRACUNCULIASIS ERADICATION**

Cotonou, Benin, 26 March 1993

English-speaking group

Dr M. Azam, Programme Manager, Guinea Worm Eradication Programme, **Islamabad**, Pakistan

Mr E.M. Bawa, Water and Sanitation Officer, UNICEF, **Accra**, Ghana

Mr A. Bello, Project Officer, Primary Health Care, UNICEF, **Khartoum**, Sudan

Professor E. Braide, Zonal Facilitator (South-East), Nigerian Guinea Worm Programme, **Calabar**, Nigeria

Dr S. Bugri, National Coordinator, Guinea Worm Eradication Programme, **Tamale**, Ghana

Mr L. Donaldson, Water and Sanitation Officer, UNICEF, **Kampala**, Uganda

Professor L. Edungbola, Zonal Facilitator (North-West), Nigerian Guinea Worm Programme, **Ilorin**, Nigeria

Dr G. Greer, UNICEF Consultant, Tulane University, **New Orleans**, Louisiana, United States of America

Dr D.R. Hopkins, Global 2000, **Atlanta**, Georgia, United States of America

Dr A.O. Jah, Programme Manager, Guinea Worm Eradication Programme, **Banjul**, Gambia

Professor O. Kale, Zonal Facilitator (South-West), Nigerian Guinea Worm Programme, **Lagos**, Nigeria
(Moderator)

Dr A. Kofi, Head, Epidemiology Unit, Ministry of Health, **Accra**, Ghana

Mr Chandra Prakash Kumbhat, SWACH, **Panchwati Udaipur**, Rajasthan, India

Mrs R.M. Malkki, Resident Adviser, Global 2000, Ugandan Guinea Worm Eradication Programme, **Entebbe**, Uganda

Dr G. Mpigika, Programme Manager, Ugandan Guinea Worm Eradication Programme, **Entebbe**, Uganda

Mr B.C. Nwobi, Zonal Facilitator (North-East), Nigerian Guinea Worm Programme, **Lagos**, Nigeria

Mr J. Okidi, Field Coordinator, Ugandan Guinea Worm Eradication Programme, **Gulu**, Uganda

Dr E. Ruiz-Tiben, Global 2000/Centers for Disease Control and Prevention, **Atlanta**, Georgia, United States of America
(Rapporteur)

Dr L. Sadiq, National Coordinator, Nigerian Guinea Worm Programme, **Lagos**, Nigeria

Dr G.H. Sahba, Professor of Parasitology, School of Public Health, **Teheran**, Iran

Dr A. Sam-Abbenyi, Programme Manager, Guinea Worm Eradication Programme, **Yaoundé**, Cameroon

Dr D.K. Sang, Programme Manager, Guinea Worm Eradication Programme, **Nairobi**, Kenya

Dr A. Seim, Health and Development International, **Fagerstrand**, Norway

Mr A. Sirrag el Gizouli, Programme Manager, Guinea Worm Eradication Programme, **Khartoum**, Sudan

Dr T. Verghese, Director, National Institute for Communicable Diseases, **Delhi**, India

Dr F. Wurapa, Regional Adviser, Parasitic Diseases Programme, WHO/AFRO, **Brazzaville**, Congo
(**Rapporteur**)

French-speaking group

Mr Amegbo Komi, Directeur, Programme d'Eradication du Ver de Guinée, **Lomé**, Togo

Mr Bamazé Tchao, US Peace Corps, B.P. 3114, **Lomé**, Togo

Dr H. Boualou, Directeur, Programme d'Eradication du Ver de Guinée, **Abidjan**, Côte d'Ivoire

Dr J.-P. Chippaux, Centre Pasteur Cameroun, **Yaoundé**, Cameroon (**Rapporteur**)

Dr Dama Mana, Directeur départemental Mayo Sava, Programme d'Eradication du Ver de Guinée, **Mora**, Cameroon

Dr B. Dieng, Directeur, Programme d'Eradication du Ver de Guinée, **Conakry**, Guinea

Mr J. Dossou-Yovo, Directeur, Programme d'Eradication du Ver de Guinée, **Cotonou**, Benin

Dr A.A. Edoth, Ministère de la Santé, **Lomé**, Togo

Ms L. Foden, Directrice, US Peace Corps, **Bamako**, Mali

Dr A.B. Gaye, Directeur, Programme d'Eradication du Ver de Guinée, **Dakar**, Senegal

Professor R.T. Guigemdé, Organisation de Coordination et de Coopération pour la lutte contre les Grandes Endémies, **Bobo-Dioulasso**, Burkina Faso (**Rapporteur**)

Dr R. Hien Sié, Directeur, Programme d'Eradication du Ver de Guinée, **Ouagadougou**, Burkina Faso

Dr V. Hounkounou, Programme d'Eradication du Ver de Guinée, Ministère de la Santé, **Cotonou**, Benin

Mr P. Jékinnou, Administrateur Action Sociale, **Abomey**, Benin

Mr M.S. Kané, Directeur, Programme d'Eradication du Ver de Guinée, **Niamey**, Niger

Dr A. Maïga, Equipe Technique Interorganisations (OMS/UNICEF), Programme d'Eradication de la Dracunculose en Afrique, **Ouagadougou**, Burkina Faso

Dr G. Mélémo Ndiala, Ministère de la Santé, **Bangui**, Central African Republic

Dr M.M. Petit, Géographe épidémiologiste, Université de Nouakchott, **Nouakchott**, Mauritania

Dr P. Ranque, WHO/Headquarters, **Geneva**, Switzerland (**Moderator**)

Mr M. Saint-Lôt, Ingénieur UNICEF, **Bamako**, Mali

Dr Sidi Mohamed Ould Lemine, Coordonnateur, Programme d'Eradication du Ver de Guinée, **Nouakchott**, Mauritania

Dr V. Van Steirteghem, UNICEF, **Bamako**, Mali

ZOOBOTIC ASPECTS

No animal reservoirs of infection have been identified. Although it can be difficult to differentiate dracunculids, infections allegedly caused by *Dracunculus medinensis* have been reported from a wide variety of animals in many parts of the world. These animals include dogs, cats, horses, cattle, wolves, foxes, badgers and leopards. Most reports have been from dogs. However, there is no evidence that either domestic or wild animals act as reservoir hosts capable of transmitting the infection to man. Nevertheless, infection in dogs is still said to occur in regions where human dracunculiasis was formerly endemic, e.g., Uzbekistan (Litvinov & Litvinov, 1981; Litvinov & Lysenko, 1982) and Tamil Nadu State in India (Joseph & Kandasamy, 1980; Lalitha & Anandan, 1980).

Domestic and wild mammals presumably become infected by accidental ingestion of infected copepods while drinking water. Although this mechanism is possible, it probably occurs rarely for two reasons. First, these animals drink water by lapping, an inefficient mechanism for the ingestion of copepods since the lapping action itself disturbs the water surface sufficiently to drive the elusive and rapid-swimming copepods away from the immediate area. Secondly, the altered swimming behaviour of infected copepods (Muller, 1971; Crichton & Beverley-Burton, 1977) makes their presence near the water surface unlikely. A potential alternative and likely mode of transmission is through paratenic (transport) hosts, such as frogs or fish, which ingest copepods and are capable of concentrating infective larvae in their tissues. Such a mechanism of transmission has been postulated for dracunculids of racoons (Procyonids), mustelids and reptiles (which drink directly very little, if any, water), and has been experimentally confirmed (Brackett, 1938; Crichton & Beverley-Burton, 1977; Eberhard, 1989, personal communication).

Documented transmission of *Dracunculus medinensis* from animals to man is extremely rare; only two, apparently *bona fide*, cases have been described; one case from Korea (Hashikura, 1926, 1927), and another from Japan (Kobayashi et al., 1986). In both instances there was no evidence to indicate that the patients had travelled to endemic countries during the 12-24-month period preceding patency. Moreover, there is no record that foci of human dracunculiasis in Korea or Japan have ever existed. What was common to both occurrences was a history of ingestion of uncooked loaches (small fresh-water fish of the Cobitidae family). Loaches are effective predators of copepods from which they acquire *Gnathostoma*. This nematode, which is a parasite of carnivores, only accidentally infects humans in Asia who eat raw loaches; it causes ocular and visceral manifestations as well as larva migrans syndrome. There was no subsequent transmission to other humans in either case.

At a time when *Dracunculus medinensis*, the causative agent of human dracunculiasis, is on the brink of being eradicated, WHO felt that it was absolutely necessary to carry out precise identification of *D. medinensis* isolated from humans in different ecological and climatic environments in Africa and in India. It would also be useful to compare *D. medinensis* isolated from humans with *Dracunculus* spp isolated from mammals in endemic or formerly endemic areas. A taxonomical study using recent technology (DNA probes) will start in 1993.

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Annex 2

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OPERATION OF INTERNATIONAL CERTIFICATION TEAMS

The timing of the International Certification Teams' (ICTs) visits to the countries and team membership will be decided by WHO in consultation with national authorities. Persons selected as team members should be able to be critical in their assessments, and their views as experts should be respected both nationally and internationally. Members should be chosen from many different areas of the world so that the nature and extent of the efforts made to document the interruption of transmission may become widely known. Scientists working on dracunculiasis and countries with eradication programmes should both be represented on ICTs so that technical expertise can be exchanged and applied to the certification process. Potential conflicts of interest, such as nomination of a national from a country under review as a member of the certification team, should be avoided. In general, contiguous formerly endemic countries should be considered for certification at the same time.

The principal aim of an ICT visit to a country will be to evaluate the reliability of that country's report, by interviewing health personnel and examining records at both central and peripheral levels in order to ascertain the likelihood that dracunculiasis transmission has been interrupted as claimed. Because team members will not usually be able to spend more than 3-4 weeks in a country, the objective will be to assess the quality of the surveillance programme and to determine the probability of detecting dracunculiasis cases if transmission had occurred during the preceding three years. Preliminary visits by selected team members may be arranged by WHO to examine the status of documentation and to recommend any additional measures they think are indicated before the visit by the full team.

After arrival in the country, the ICT would spend 2-3 days in the capital to review the country report with nationals of the host country and to listen to presentations by designated officials concerning the activities carried out. To facilitate visits to all epidemiologically important areas the team would divide into groups of 1-2 members. The areas selected for visits would be those identified as having the least satisfactory documentation or as being at unusual risk of continuing transmission, for example: (i) areas near countries with affected populations, (ii) previous highly endemic areas, (iii) areas where the last cases occurred, (iv) areas with little progress in the provision of safe sources of drinking water, and (v) areas with a history of poor surveillance for dracunculiasis. Team members will decide exactly which areas, villages and health posts they wish to visit each day.

COUNTRY REPORT

1. Description of the routine reporting system.
 - Number and distribution of health units/hospitals, including a map showing their distribution.
 - Frequency and completeness of disease reporting.
 - Actions taken when dracunculiasis is reported.
2. An account of the active surveillance measures taken, both in high-risk areas and throughout the country, including the methods used to assess the quality of the searches.
 - Village-based monthly reporting.
 - National or area-wide case searches carried out, as far as possible, right at the end of the transmission season in the following places:
 - areas bordering on countries in which dracunculiasis was recently endemic;
 - areas with recent extensive population movements;
 - primary schools, health units, markets, nomadic camps, to elicit information about places with presumptive cases.
 - Assessment by an international or independent team of the effectiveness of the searches (in 10% of the units searched).
3. An account of the publicity given to the need for reporting dracunculiasis cases, indicating, where appropriate, the rewards offered for finding/reporting a case and the public awareness of such rewards and mentioning records of any rumoured cases. Measures taken may include:
 - The use of radio, newspapers, television, leaflets, posters, recognition cards, loud-speakers, and/or other means of communication.
 - Assessment of knowledge about the rewards offered and their value.

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