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WORLD HEALTH
ORGANIZATIONORGANISATION MONDIALE
DE LA SANTÉWHO/Ma1/162 ✓
1 February 1956

ORIGINAL: ENGLISH

THE WORLD HEALTH ORGANIZATION AND
MALARIA ERADICATION

The attitude adopted by the World Health Organization concerning malaria eradication should be brought to the knowledge of the members of the Expert Advisory Panel on Malaria, for their information.

The present document reproduces the resolution on malaria eradication of the Eighth World Health Assembly and, in Annex I, the relevant part of a document prepared by the Director-General for the Assembly. In Annex II are reproduced the relevant resolutions and discussions of the Regional Committees in 1955.

MALARIA ERADICATION - RESOLUTION WHA8.30 (26 May 1955)

The Eighth World Health Assembly,

Having considered the comprehensive report and proposal on malaria eradication submitted by the Director-General,¹

Having examined the recommendations of the XIV Pan American Sanitary Conference in Santiago, Chile, in October 1954 and of the Malaria Conference for the Western Pacific and South-East Asia Regions in Baguio, Philippines, in November, 1954, concerning the danger constituted by the potential development of anopheline resistance to insecticides and concerning measures to obviate that danger,

Considering resolution EB15.R67, adopted by the Executive Board at its fifteenth session after a study of the reports available up to that time,

¹ Extracts of this submission are reproduced in Annex I.

Considering that the ultimate goal of malaria control programmes should be the eradication of the disease,

- I. 1. REQUESTS governments to intensify plans of nation-wide malaria control so that malaria eradication may be achieved and the regular insecticide spraying campaigns safely terminated before the potential danger of a development of resistance to insecticides in anopheline vector species materializes;
2. AUTHORIZES the Director-General to request those governments in whose countries malaria still exists to give priority to malaria eradication projects in their requests for assistance under the United Nations Expanded Programme of Technical Assistance, and to provide the locally available resources which are required to achieve malaria eradication;
- II. DECIDES that the World Health Organization should take the initiative, provide technical advice, and encourage research and co-ordination of resources in the implementation of a programme having as its ultimate objective the world-wide eradication of malaria;
- III. 1. AUTHORIZES the Director-General to obtain financial contributions for malaria eradication from governmental and private sources;
2. ESTABLISHES, under Financial Regulations 6.6 and 6.7, a Malaria Eradication Special Account, which shall be subject to the following rules:
 - (1) The Special Account shall be credited with voluntary contributions received in any usable currency and shall also be credited with the value of contributions in kind, whether in the form of services or supplies and equipment;
 - (2) The resources in the Special Account shall be available for incurring obligations for the purposes set out in (3) below, the unexpended balances of the Account being carried forward from one financial year to the next;

(3) The Special Account shall be used for the purpose of meeting the costs of:

(a) research;

(b) such supplies and equipment, apart from minimal requirements to be provided from Regular and Technical Assistance funds, as are necessary for the effective implementation of the programme in individual countries, and

(c) such services as may be required in individual countries and as cannot be made available by the governments of such countries;

(4) The operations planned to be financed from the Special Account shall be presented separately in the annual programme and budget estimates, this presentation to include an indication as to whether the resources required are known to be available in the Special Account or from another source;

(5) In accordance with Financial Regulations 6.6 and 11.3, the Special Account shall be maintained as a separate account, and its operations shall be presented separately in the Director-General's annual financial report;

IV. AUTHORIZES the Executive Board or a committee of the Board to which it may delegate authority to act between sessions of the Board to carry out the following functions:

(1) to accept contributions to the Special Account as provided under Article 57 of the Constitution, and

(2) to advise the Director-General from time to time on any questions of policy relating to the administration of the Special Account or to the implementation of the programme.

EXTRACTS FROM DOCUMENT ON MALARIA ERADICATION
SUBMITTED BY THE DIRECTOR-GENERAL TO THE
EIGHTH WORLD HEALTH ASSEMBLY
(AG/P&B/10, 3 May 1955)

Introduction

1. The eradication of malaria from the world as a public health problem is a basic objective of WHO. Thanks to the remarkable properties of DDT, a number of national health departments, often assisted by WHO, UNICEF or USA bilateral aid programmes, have made truly amazing progress towards this objective. Until recently the goal had seemed to become increasingly attainable. However, it has now become apparent that there may be a time limit beyond which the new insecticides, which have made nation-wide malaria eradication projects financially feasible, may no longer kill the mosquitoes that carry malaria. Resistance to DDT has appeared in several species of Anopheles malaria vectors after some six years of exposure. Hence the present concern of WHO that nation-wide malaria eradication projects be pushed ahead with the utmost speed and vigour.

Present status of malaria eradication

2. Today certain wide areas in the Americas, Europe and Asia have been cleared of malaria by DDT residual spraying. Nation-wide malaria control projects are well advanced in a number of countries. In a total world population of just over 2.5 billions, some 600 millions¹ are exposed to malaria, but of these, some 230 millions¹ either have been freed from malaria or are now being protected, chiefly by residual DDT spraying. Nevertheless, with an estimated 370 millions still unprotected against malaria it is obvious that world-wide malaria eradication remains a great task. The important point to be emphasized is that, excepting only tropical Africa, there are now in each continent malaria-cleared areas that demonstrate beyond doubt the economic and technical feasibility of malaria eradication by residual spraying.

¹ These figures do not take into account the Union of Soviet Socialist Republics, the People's Republic of China and a few other countries, for which adequate data are not available.

Annex IDevelopment of resistance to insecticides

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3. Resistance was not noted in the Anopheles vectors of malaria until 1951. In that year it appeared in A. sacharovi in Greece, after six years of exposure to DDT. This resistance has steadily become more marked so that in numerous areas of Greece today malaria control by DDT residual spraying is not possible. Such resistance has extended to related insecticides and has appeared in other Anopheles species. It has also appeared in A. sacharovi in two villages of Lebanon and in A. sundaicus in two small areas of Java.

4.

5. Elsewhere, malaria vectors remain fully susceptible to DDT, in some cases after ten years of exposure to it. For example, in Venezuela, Italy, India and Ceylon there is so far no evidence of any resistance or any behaviour change in any malaria vector. Thus, on the evidence, one can reasonably expect in most areas that DDT residual spraying will effectively kill malaria mosquitos of a given community season after season for at least six years. There is also reason to fear that sooner or later repeated exposure of a community of Anopheles mosquitos to DDT or related insecticides will result in the development of strains which will either not be poisoned, or else will avoid contact with treated surfaces.

Malaria eradication

6. The term "malaria eradication" should not be confused with the expression "vector eradication"; the latter implies complete extirpation of the malaria-carrying species of Anopheles from a given area. This is neither economically feasible nor technically possible except under unusual conditions. Well-implemented attempts in Cyprus and Sardinia to eradicate Anopheles mosquitos failed, although in each case malaria was eradicated.

7. Malaria eradication, possible today by DDT residual spraying, implies the planned elimination of the disease from an entire country within a period of ten

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years or less. Planning further implies that by regional and inter-regional co-operation, neighbouring countries will co-ordinate their programmes so that a cleared area will not be threatened by one where malaria is still endemic. The plan should ensure that no given area would be exposed to residual insecticides for more than six years.

8. Such a bold concept is not considered to be unrealistic by those best qualified to judge. For example, the XIVth Pan American Sanitary Conference, in October 1954, resolved, as regards malaria: "that the Member Governments should convert all control programmes into eradication campaigns within the shortest possible time, so as to achieve eradication before the appearance of anopheline resistance to insecticides...". Also the WHO Malaria Conference for the Western Pacific and South-East Asia Regions, in November 1954, in Baguio: "having reviewed the evidence that it is possible by DDT residual spraying to terminate malaria transmission over wide areas, recommends that the ultimate goal of a nation-wide malaria control programme be the eradication of the disease".

9. In practice, when all factors are favourable, experience shows that one year's spraying with residual DDT will stop malaria transmission in a given area (see table). However, unless this freedom from transmission is actively maintained for three years, the reservoir of infection in the human population will not die out. Since there are often unfavourable factors, and because a margin of safety is required, it is now generally considered that routine spraying will be necessary for four years. If there is then adequate evidence that transmission has been completely blocked, spraying may be terminated provided that the area is kept under strict surveillance by trained vigilance teams. All cases of fever must be investigated, residual pockets of malaria must be eliminated by adequate therapeutic measures, and, if necessary, spraying must be reinstated where evidence indicates that renewed transmission is likely or is taking place.

10. While it is generally not economically or socially feasible to use antimalaria drugs to eradicate the disease when it is widely prevalent, their use may be indicated in the later stages of a nation-wide malaria eradication plan, when small foci of malaria are being found and dealt with by vigilance teams. However, in some areas, it may be found advisable to make use of drugs as a supplementary measure at an earlier stage.

TABLE

SCHEME OF THE SEQUENCE OF EVENTS IN MALARIA ERADICATION PROGRAMMES

YEARS	-1	1	2	3	4	5	6	7	8	9	10	
(a) Exceptionally favourable conditions: Infant Parasite Rate negative after first spraying												
PHASE	SURVEY	ATTACK	CONSOLIDATION	M A I N T E N A N C E								
Spraying operations (on a total coverage base)		XXXXXXXXXXXXXXXXXXXX			No more spraying except for special interventions							
Infant parasite rate	+++	-	-	-								
Epidemiological surveillance: new malaria cases traced	(?)	(?)	(?)	+	-	-	-					
Protection from reintroduction of: a) DDT-resistant mosquitos b) malaria carriers												
(b) Average conditions: Infant Parasite Rate negative after second year of spraying												
PHASE	SURVEY	ATTACK	CONSOLIDATION	M A I N T E N A N C E								
Spraying operations (on a total coverage base)		XXXXXXXXXXXXXXXXXXXX			No more spraying except for special interventions							
Infant parasite rate	+++	+	-	-	-							
Epidemiological surveillance: new malaria cases traced	(?)	(?)	(?)	(?)	+	+	-	-	-			
Protection from reintroduction of: a) DDT-resistant mosquitos b) malaria carriers												

Note: Interruption of spraying; when infant parasite rate has been negative for three years.
 Malaria is no longer endemic when epidemiological surveillance has failed to trace new malaria cases, presumably infected (for three consecutive years) in the area of eradication.

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11. By definition, when in a given area there has been no locally contracted case of malaria for a period of three years as determined by adequate surveillance, then the disease is no longer endemic (see table). At this point the special malaria eradication organization can safely leave an area, and the local health department can take over the responsibility for detecting and dealing with any reappearance of malaria. Thus, in planning nation-wide malaria eradication, it is usually necessary to visualize four years of residual spraying followed by at least three more of special surveillance. As, under average conditions, some areas will always lag behind others, the special organization for nation-wide malaria eradication should probably be planned for a period of ten years. Thereafter, the specially trained personnel will be available to attack other health problems.

12.

Benefits

13. The benefits of substituting malaria eradication programmes for routine malaria control derive from the fact that the former will be self-limiting, whereas the latter has no discernible end. Italy had thousands of cases of malaria in 1939 after many years of classical malaria control by drugs, drainage and larviciding. Vigorous malaria control of a similar type was carried out at enormous cost in the United States from about 1915 through 1945, but the country remained malarious - highly so in some counties. The cost of the accelerated programme with DDT residual spraying, which virtually eradicated malaria from the United States in the years from 1946 to 1952, was a good investment.

14. There can be no doubt about the general economic and social benefits that malaria eradication brings to the countries cleared of the disease (see WHO Chronicle Vol. 9, No. 2-3). As regards non-malarious countries, obviously they too will share in the benefits if they have import or export business with countries once malarious and now freed of this burden.

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Conclusion

15. The reasons for an accelerated programme are to be found in the fact that the mosquito vector may become resistant to DDT if the attack is prolonged and that eradication thereafter would be unreasonably costly and often impossible. There is therefore today no other logical choice: malaria eradication is clearly indicated, presents a unique opportunity and should be implemented as rapidly as possible. Time is of the essence.

International implications of a world-wide malaria eradication programme

16. An important international implication of malaria eradication derives from the fact that infective Anopheles mosquitos or insecticide-resistant strains of vector mosquitos or human malaria carriers infective to mosquitos can easily cross national boundaries. Such an interchange of mosquitos and malaria parasites between countries may have little importance if the countries are malarious, but in some cases the investment made by a country in eradicating its malaria may be jeopardized by a neighbouring country which has not taken similar measures. The spread of DDT-resistant strains of malaria mosquitos might be particularly dangerous. Also, it is quite possible for imported infective mosquitos or infective human carriers to start the transmission anew in a country where such transmission had been interrupted. Hence the importance of regional and inter-regional programmes and the special significance of plans such as that to eradicate malaria from all the Americas. There is urgent need for full international co-operation and co-ordination as well as international assistance in malaria eradication programmes.

17. Another international implication of malaria eradication is that today there are several agencies dispensing money for social and economic improvement of under-developed countries. These agencies are greatly interested in practical projects that promise important gains at reasonable cost. Malaria eradication by residual spraying is now a thoroughly practical proposition in many areas and is thus receiving considerable financial support. But once Anopheles resistance to insecticides develops, the costs of control are apt to become so much higher that questions of economic feasibility will arise.

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18. Moneys for international aid have great importance in assisting countries to carry out malaria eradication programmes; in fact, without this aid some countries would find it impossible to adopt such programmes and would thus remain malaria foci dangerous to surrounding countries.

19. Adequate planning is of great importance in connexion with international assistance, and such planning must include the national and international aspects of malaria eradication. Total coverage, which is essential, may in some cases be unusually expensive. Hence, in some countries it may be necessary for the central government to provide increased financial support to the local authorities for the implementation of the eradication programme. Sometimes it will be necessary for countries to merge a part of their programme into an inter-country programme so that contiguous areas will receive simultaneous and thorough treatment. Regional Offices of WHO can be of great assistance in drawing up and promoting such inter-country plans and agreements.

20. In some cases eradication will have to proceed by areas, which should be chosen on the basis of (1) a topographical configuration or other conditions that can provide barriers so that after the area has been cleared of malaria, spraying can be safely discontinued; and (2) the willingness and ability of the country concerned to carry out the programme. Co-ordination of programmes in time and in efficiency as well as in topography is indispensable.

21. As already noted, all national malaria control programmes should aim at malaria eradication. It seems feasible to plan continent-wide programmes for the Americas and Europe and large sub-continental programmes in the Eastern Mediterranean, the South-East Asia and Western Pacific Regions. On the African continent south of the Sahara, since there have not yet been demonstrations of any wide areas being cleared of malaria by residual spraying, it seems premature to plan in terms of continent-wide eradication. The problem of finding an effective and economical method of eradicating malaria in tropical Africa has not yet been solved. Pilot projects are being carried out, and these require increased emphasis and assistance in order that a solution may be obtained as quickly as possible.

RESOLUTIONS AND DISCUSSIONS OF THE
REGIONAL COMMITTEES 1955

REGIONAL COMMITTEE FOR AFRICA

AFR/RC5/R.9 Malaria Eradication Programme (Resolution)

The Regional Committee for Africa

TAKES NOTE of resolution EBL6.R16¹ adopted by the Executive Board at its 16th session.

REGIONAL COMMITTEE FOR THE AMERICAS

Malaria eradication

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To facilitate the implementation of the programme, the PASB/WHO established early in 1955 the Co-ordination Office of the Malaria Eradication Programme (COMEP), a special unit whose headquarters were initially located in Mexico City for administrative and technical reasons. The broad objectives of COMEP have been described as: (a) developing technical standards for programmes in the hemisphere; (b) giving technical advice to governments in the planning, operation, and evaluation of projects; (c) advising on the training of personnel for malaria eradication activities; (d) devising terminal procedures for assuring the successful completion of the programme; and (e) developing a system for evaluating field activities. Steps have been

¹ The Executive Board,

Considering the decision of the Eighth World Health Assembly that the World Health Organization should take the initiative in the implementation of a programme having as its objective the world-wide eradication of malaria,

Considering that the Eighth World Health Assembly established a Malaria Eradication Special Account to be used for specified purposes, in accordance with Financial Regulations 6.6 and 6.7,

1. REQUESTS the Director-General to continue with the implementation of the programme as set out in resolution WHA8.30, paragraphs I, II and III;
2. DEFERS until its seventeenth session the consideration of the establishment and terms of reference of a committee to act between sessions of the Board, as authorized in paragraph IV.

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taken to assure a proper co-ordination with the Zone Offices, which will maintain direct responsibilities for the operation of the malaria eradication projects within their respective geographical jurisdictions.

It was stressed that PASB/WHO collaboration in the malaria eradication programme, now starting at a low level of expenditures, is expected to increase rapidly once the plans for individual national projects have been prepared. It was noted that in the conversion of control programmes into eradication campaigns, a task that requires intensive and extensive work and a new approach to the problem, most of the expense inevitably will have to be borne by the governments themselves, as there is no international agency capable of defraying all of them.

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REGIONAL COMMITTEE FOR THE EASTERN MEDITERRANEAN (SUB-COMMITTEE A)

RC5A/EM/R.10 Malaria Eradication Programmes in the Eastern Mediterranean Region (Resolution)

The Sub-Committee,

Noting the resolution of the Eighth World Health Assembly (WHA8.30) concerning the eradication of malaria;

Having studied the document submitted by the Regional Director;

Considering the danger constituted by the potential development of anopheline resistance to insecticides;

Recognizing the great importance of malaria as a cause of high mortality and morbidity rates in the Region, with resultant economic loss;

Noting with satisfaction the plans already drawn up for continued assistance by the Organization; and

Noting that up to 50% of the total cost of eradication programmes can be met from international or other forms of aid;

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1. CALLS upon the Governments of States Members within the Region in which such programmes are feasible, to draw up long-term plans for eradication of malaria and to press their respective legislative bodies to commit adequate funds in advance for a five-year programme;
2. REQUESTS the World Health Organization and the United Nations Children's Fund to provide the maximum possible aid to countries concerned.

REGIONAL COMMITTEE FOR EUROPE

Malaria eradication programme

Reports were received on progress in malaria eradication in Algeria, Greece, Morocco (French Zone), the Netherlands, Turkey and Yugoslavia. The importance of inter-country co-operation was repeatedly stressed as an absolute necessity in antimalaria campaigns and it was recommended that the necessary arrangements be made to establish such co-operation as soon as possible. Considerable importance was attached to the inter-regional conference on malaria which is planned to take place in Athens during 1956 and the wish was expressed that this should take place as early as possible and preferably before the coming malaria season.7

REGIONAL COMMITTEE FOR SOUTH-EAST ASIA

SEA/RC8/RL5 Malaria Eradication (Resolution)

The Regional Committee,

- I. Having considered the recommendations of the Eighth World Health Assembly on the subject of malaria eradication;

Realizing that eradicating malaria and discontinuing regular insecticide spraying before the development of vector resistance to insecticides, is of the utmost importance, and

Reviewing the progress and present status of national malaria-control programmes in the Region,

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RECOMMENDS to the Governments of the countries in the Region:

- (1) that malaria eradication be adopted as the goal of all national malaria control programmes in the Region, and
- (2) that in view of the practical difficulties in many countries in the Region, in immediately implementing nation-wide malaria eradication schemes, the existing national programmes be intensified and accelerated with a view to attaining the goal of eradication of malaria and discontinuing regular insecticide-spray campaigns as soon as control measures have achieved total interruption of transmission for several years, care being taken that the area is not endangered by contiguous uncontrolled areas;
further

II. Recognizing the difficulties of maintaining the eradication objectives, once they have been achieved, involving the maintenance of a vigilance organization throughout the affected areas,

REQUESTS the Regional Director to:

- (1) arrange a meeting in 1956 of chiefs of malaria services in the Region, to discuss the difficulties being experienced in pursuing the policy of eradication;
- (2) utilize short-term consultants to assist, as appropriate, the Regional Office and the countries of the Region;
- (3) arrange for specially selected malaria advisory teams to be employed within the Region to make an assessment of national malaria programmes, and/or to carry out experimental projects which would be of particular interest to a country;
- (4) award fellowships to senior malaria officers to study control and eradication methods in other countries, and
- (5) consider the provision of research grants to specially approved projects for investigation into the problems involved in malaria eradication.

Annex IIMalaria eradication (Discussion)

The Committee discussed the problems of malaria eradication as applicable to South-East Asia and adopted resolution SEA/RCS/R15 on this subject. During the discussion, the following points were stressed:

- (1) Malaria eradication requires a vigilant health organization throughout the affected areas. Such facilities do not exist at present in many rural areas affected by malaria.
- (2) Countries of this region should progress towards eradication by, first of all, a rapid intensification of present control programmes.
- (3) The danger of infiltration from contiguous and non-controlled areas was stressed.
- (4) Substantial help was needed from WHO and other organizations in the next few years in advisory services, in personnel training and with supplies. The need for consultants, special assessment teams, research grants and exchange of information was stressed.

REGIONAL COMMITTEE FOR THE WESTERN PACIFIC

WP/RC6.R13 Malaria Eradication (Resolution)

The Regional Committee,

Having considered the report on malaria eradication submitted by the Regional Director,

Noting the recommendation of the Malaria Conference for the Western Pacific and South-East Asia Regions in Baguio, in November 1954, that the ultimate goal of a nation-wide malaria control programme be the eradication of the disease,

Considering resolution EB15.R67, adopted by the Executive Board at its fifteenth session, calling attention to the urgency and importance of malaria eradication,

Noting resolution WHA8.30 of the Eighth World Health Assembly requesting governments to intensify plans of nation-wide malaria control so that malaria

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eradication may be achieved and the regular insecticide spraying campaigns terminated before the potential danger of a development of resistance to insecticides in anopheline vector species materializes,

Realizing that in some countries in the Western Pacific Region, the problem of finding an effective and economical method of eradicating malaria has not yet been solved, but that pilot projects have been started and are expected to start in areas to help solve this problem,

Realizing, further, that lack of adequately trained local personnel as well as financial considerations have prevented many countries in the Region from undertaking a more vigorous malaria control campaign,

Taking note of the establishment of a Malaria Eradication Special Account for the purpose of assisting governments in undertaking research and in providing supplies, equipment and technical advice, to facilitate the world-wide eradication of malaria;

REQUESTS governments to intensify their plans of malaria control so that malaria eradication may be achieved as soon as possible;

STRESSES the importance of intra- and inter-regional co-ordination of malaria campaigns;

REQUESTS the Regional Director to obtain information from governments of malarious countries with a view to determining what assistance would be needed to expedite the eradication of malaria from the Region.

Malaria eradication (Discussion)

The Committee took note of resolution EBI5.R67 of the Executive Board and resolution WHA8.30 of the World Health Assembly and requested Member States to intensify their plans for malaria control so that malaria eradication might be achieved and the regular insecticide spraying campaigns safely terminated before the potential danger of a development of resistance to insecticides materialized. The importance of intra- and inter-regional co-ordination of malaria campaigns was stressed. Further, the Regional Director was requested to obtain information from governments of malarious countries to determine what assistance would be needed to eradicate malaria from the Region (WP/RCS.R13).

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Note was taken by the Committee of the establishment of a Malaria Eradication Special Account. The representative of China stated that his Government was arranging to donate 10 tons of DDT and 60 sprayers, both of which were manufactured in Taiwan, to the Special Account, and that this would probably be confirmed shortly. The representative from Japan also indicated that his Government would probably donate malaria control supplies and equipment, as well as the services of malaria control specialists.

Finally, the Committee requested the Regional Director to communicate to the Director-General the desire of the Committee to hold a Third Asian Malaria Conference in 1956 or 1957.7