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ВСЕМИРНАЯ ОРГАНИЗАЦИЯ ЗДРАВООХРАНЕНИЯ
ЕВРОПЕЙСКОЕ РЕГИОНАЛЬНОЕ БЮРО

INDEXED

Evaluation meeting of the antimalaria programme in Turkey

mal. conf. - Dr C - Turkey

EVALUATION OF THE ANTIMALARIA PROGRAMME IN TURKEY

Report on a Meeting

Copenhagen
6-8 November 1978

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1. Introduction

In response to the urgent appeal issued jointly on 26 October 1977 by Dr Leo A. Kaprio, Director, WHO Regional Office for Europe, and the Turkish Government to Member States of the Region and to international, intergovernmental and bilateral cooperation agencies, and subsequently reiterated by UNDRO throughout the world, 24 countries and agencies have made donations of cash, equipment and staff for initial measures to contain the malaria outbreak in south-east Turkey.

Thanks to these donations and to the noteworthy efforts made by the Turkish Government, a large-scale malaria control campaign was started in 1978 and will be continued, using all the available means, until the epidemic has been completely halted and the danger of malaria spreading to the rest of the country and to neighbouring countries has been totally removed.

To review the situation at the end of the first year of the intensive campaign, a meeting was held at the WHO Regional Office for Europe, Copenhagen, from 6 to 8 November 1978. The main purposes of the meeting were to submit to the donors an account of the ways in which the resources had been used, to report on the results obtained, and to study with them the future prospects and needs of the malaria control programme in the short, medium and long term.

The meeting was attended by representatives of the Governments of Denmark, Finland, Greece, Iraq, Portugal, Switzerland, Turkey, the United Kingdom, Yugoslavia, the Commission of the European Communities (EEC), the United Nations Children's Fund (UNICEF), the United Nations Development Programme (UNDP), the United Nations Disaster Relief Organization (UNDRO), the United States Agency for International Development (USAID), and WHO staff members (see list of participants, Annex V).

Welcoming the participants Dr Kaprio thanked the Turkish Government and all those international agencies and governments which had contributed in building up the logistic and supportive facilities required to accelerate the intensified antimalaria campaign in Turkey. The contributions had been extremely valuable and the results achieved so far were quite encouraging.

Dr T. Görker, Under-Secretary of State, Ministry of Health and Social Assistance of Turkey, joined Dr Kaprio in thanking the international community and the international agencies which had rendered assistance to Turkey at a very critical time, and expressed his thanks to those who were attending the meeting.

After a brief historical review of the successes and set-backs of the National Malaria Eradication Programme (NMES), a detailed account was given of the difficulties encountered by the Government in 1977-78 in restructuring the NMES and in developing the primary health care system to meet the country's needs more adequately, and of the efforts made to overcome outstanding problems.

The measures taken by the Government of Turkey and the prompt response of the international community and international agencies had paved the way for a preliminary success, namely, the containment of the epidemic in south-east Turkey. However, because of financial constraints and the shortage of hard currency, further assistance would be required. Meanwhile, the Government was taking steps to procure the necessary budgetary provisions, in terms of both national and hard currency, for the continuation of the campaign and for the development of the primary health care system, so that in the very near future Turkey could rely on its own resources.

2. Election of officers

Dr E. Aker and Dr M. Postiglione were elected Co-Chairmen of the meeting, and Dr M. Sharif acted as Rapporteur with the technical assistance of Dr N. Tekirli and Dr E. Onori.

3. The situation of the antimalaria programme in Turkey at the end of 1977

The malaria eradication programme in Turkey almost achieved its objective in 1970, when only 1263 cases were discovered in the whole country; 149 of these were reported in Çukurova and Amikova areas, where a serious epidemic is now in progress.

The epicentre of the epidemic is in the provinces of Adana and Içel (Çukurova) and Hatay (Amikova), south of the Tarsus range on the Eastern Mediterranean coast, which have a total population of about 3 million. The dramatic deterioration of the epidemiological situation in this part of Turkey led to a gradual increase in the number of cases diagnosed each year, until

about 30 000 cases were diagnosed in 1976 and 101 742 in 1977 in the three provinces mentioned above. An increase in malaria morbidity was also recorded in other parts of Turkey, mainly in south-east Anatolia.

When the situation was reviewed in 1977 the whole territory of Turkey was divided into four epidemiological strata according to the level of malariogenic potential, on the basis of local receptivity and vulnerability (see Map 1).

The malaria epidemiological situation in the four strata at the end of 1977 is summarized in Table 1.

Table 1. MALARIA EPIDEMIOLOGICAL SITUATION (END 1977)

Stratum	Population (in thousands)	Slides examined	Slides positive	SPR[a] %	ABER[b] %	API[c] ‰
IA Çukurova Amikova	2 837	822 429	101 867	12,4	29,0	35,9
IB S.E. Anatolia	4 502	499 559	11 131	2,2	11,1	2,5
II	16 400	796 251	1 298	0,14	4,87	0,08
III	10 971	388 162	996	0,26	3,54	0,09
IV	7 042	291 000	218	0,08	4,1	0,03
TOTAL	41 752	2 797 401	115 510	4,1	6,7	2,8

The factors leading to the present situation in Çukurova and Amikova were the following:

(i) Increased receptivity due to the extension of the irrigation system which favoured the proliferation of breeding places for *Anopheles sacharovi* created by wastewaters in drainage canals, rice fields and marshes;

(ii) re-establishment of malaria transmission in a few urban centres where rapid and uncontrolled expansion favoured the creation of new breeding places;

(iii) arrival of parasite carriers among the 600 000 - 700 000 labourers who every year move into Çukurova/Amikova from south-east Anatolia at the beginning of and during the transmission season;

(iv) indiscriminate use of pesticides, applied by air on the cotton fields, leading to the development of *A.sacharovi* resistance to DDT, dieldrin, fenthion, bromophos, fenitrothion and propoxur;

(v) insufficient coverage of the surveillance system during the period 1971-75 in the highly receptive and vulnerable areas of Çukurova and Amikova.

In response to the serious situation, especially in Çukurova and Amikova, a state of emergency was declared by the Turkish Government on 5 October 1977. More funds were allocated for the recruitment of additional personnel and for the purchase of essential insecticides and drugs. The Adana Institute of Malariology was reactivated as a training centre for malaria personnel.

Following a visit by the Turkish Minister of Health to the WHO Regional Office on 26 October 1977, an international appeal for help was launched by the Director of the WHO Regional Office for Europe and the Turkish Government to all European countries, followed by a worldwide appeal through

[a] SPR - Slide positivity rate, i.e. percentage of slides found positive during the year.

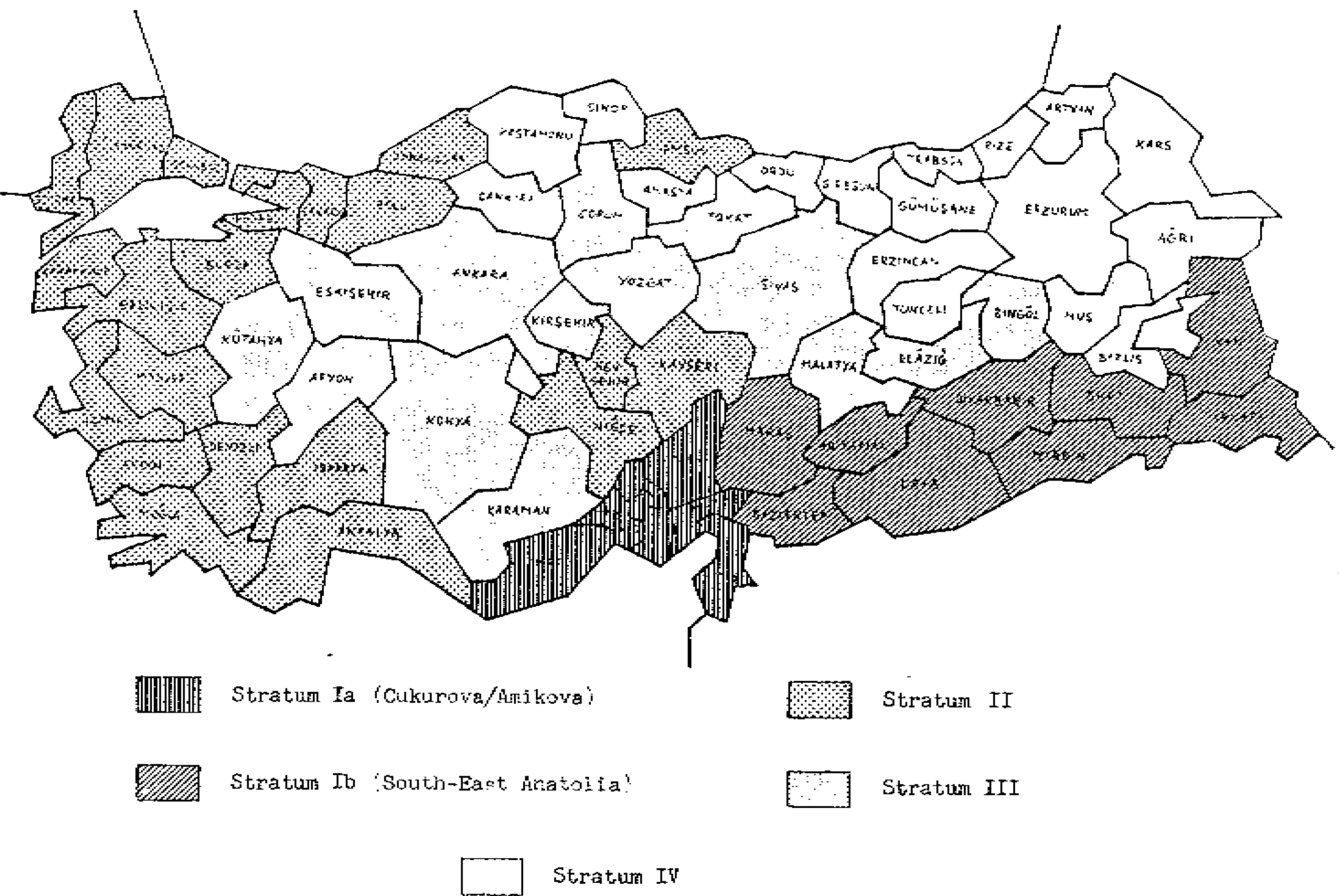
[b] ABER - Annual blood examination rate, i.e. number of slides examined during the year per 100 population covered by case detection.

[c] API - Annual parasite index, i.e. the proportion of malaria cases (per 1000 population) detected during one year.

Map 1

TURKEY

EPIDEMIOLOGICAL STRATA



UNDRO, in order to obtain aid in cash or kind for supplies not available in Turkey. The Director-General of WHO, Dr H. Mahler, allocated a special fund of US$ 100 000 to help the Turkish malaria programme.

4. International coordination established to ensure maximum efficiency and speed in the delivery of aid

A tremendous effort had to be made in order to ensure maximum efficiency and speed in the delivery of aid. As a first measure, a Malaria Committee was established at the WHO Regional Office for Europe and a WHO Intercountry Team was assigned to Turkey. Then, with the assistance of UNDRO, the Emergency Relief Organization unit and other units of WHO headquarters, Geneva, the WHO Regional Offices for the Eastern Mediterranean and Africa, with the strong support of UNDP in the field, and with the Regional Office for Europe acting as main coordinator, donations started to come in from various countries. Supplies not available in Turkey were procured as soon as funds became available and were delivered in the programme area. The daunting administrative and logistic problems could be solved only through the coordinated and devoted efforts of all parties concerned, thus resulting in the implementation of all field activities according to schedule.

5. Evaluation of results of the 1978 campaign

During October 1978 a WHO team comprising a public health administrator, a malariologist, a sanitary engineer and a statistician, together with Turkish counterparts, carried out an evaluation of the 1978 antimalaria campaign in Turkey. More specifically, the objectives of this evaluation were: to assess the malaria situation and the antimalaria measures taken in 1978 and to make short-term, medium-term and long-term projections for the satisfactory continuation of the campaign.

During the mission the team collected detailed information on each aspect of the evaluation, and this was presented at the meeting. The final report, which will contain a large amount of technical documentation, could not be finalized on time but will be available at a later date; a condensed report, however, was made available to the participants.

5.1 Administration and management of the antimalaria programme

5.1.1 National malaria eradication service

The responsibility for the conduct of antimalaria operations rests with the Department of Malaria Eradication in the Ministry of Health and Social Assistance. For this purpose there exists a National Malaria Eradication Service (NMES), headed by the Director-General of the Department.

At the provincial level and at the periphery are zone coordinators and zone chiefs responsible for the delivery of the antimalaria programme. The provinces of Turkey have been divided into 67 zones specifically for this purpose. At a lower echelon there are sector chiefs in charge of individual sectors set up in each zone, who directly supervise the delivery of the antimalaria services by the various categories of staff and labourers.

Several different categories of professional and technical staff are employed, such as physicians, malariologists, epidemiologists, sanitarians, laboratory technicians, microscopists, surveillance agents, etc. Several of these categories need orientation training in their respective antimalaria duties. Hence, training and retraining of staff are two of the important duties of the NMES. During 1978 the Institute of Malariology, which had become defunct earlier, was revived at Adana to serve as a control laboratory, training centre, and eventually as a centre for applied research.

The NMES is responsible for the execution of the technical programme throughout the country. During 1978 it intensified its efforts against malaria with reasonable success.

5.1.2 Some major problems affecting programme implementation

There are certain specific problems of a formidable magnitude which are continuing to contribute to the intensification of malaria and obstructing the ultimate realization of the malaria eradication objective. Most of these are beyond the responsibility, competence and control of the NMES and must be effectively dealt with by other departments concerned. These problems include the following:

(1) The drainage network of the irrigation system

This is the worst culprit in providing breeding-grounds for mosquitoes on an uncontrollable scale. Several hundred kilometres of drainage canals are choked with hydrophilic vegetation like weeds and long reeds which block or slow down the flow of water and cause stagnation along the banks and also ponding, thus allowing extensive mosquito breeding all along their course, and neither chemical larvicides nor larvicidal fish can reach the hidden and well-protected mosquito larvae. The only way to achieve some reduction of the malaria vector mosquito is to remove these large mosquito breeding places once and for all through the proper management of the water system. The responsibility for such management must rest with the State Water Works Authority (DSI), which is willing to undertake the responsibility, provided the necessary machinery and expertise are made avilable to it. FAO and the World Bank, in supporting the agricultural development projects which have brought welcome prosperity to the local agrarian populations, also unwittingly brought about an unprecedented increase in various agricultural and other pests, including the mosquito. Their assistance in reducing the malaria hazard in Turkey is therefore desirable.

(2) The municipal urban and periurban areas

There is also the menace to urban and periurban populations of wastewater and surface water drains in growing cities. Adana Municipality has a dug-earth drain running 15 km around the city, beyond which the periurban population is growing. This drain is a serious health hazard, not least with regard to malaria: this is shown by the high incidence of malaria cases among the population there. Its rectification, by building a cement concrete channel, would cost an estimated TL 1 000 000 000, and would therefore be a major sanitary engineering project.

The city of Iskenderun is encumbered with another problem, that of the permanent inundation of a low-lying part, caused by an overflow from the nearby stream. This area forms a mosquito breeding-ground and poses a major engineering problem for the municipality; the situation must, however, be rectified to secure some reduction of malaria.

(3) The migrant seasonal labour force

Every year some 600 000 - 700 000 labourers and their families move into the fertile agricultural areas of Çukurova and Amikova coming largely from south-east Anatolia. They provide much-needed labour for sowing and harvesting operations, and move on to other developing areas farther west and along the Aegean coast to Izmir. They lead a nomadic life, living in tents and along the water canals, and there is little control over their movements. While in the malaria epidemic zone, especially all the more so during the period of heaviest transmission, they contract malaria and carry it with them to other parts of Turkey. In this way they have contributed much to the spread of malaria to other provinces of the country. Undoubtedly they suffer from and carry other infections and waterborne diseases as well. Once again, this is an administrative problem of considerable significance, which is beyond the responsibilities of the NMES and the Public Health Department and must be resolved by the provincial executive authorities, supported, if necessary, by appropriate legislation.

(4) Lack of development of primary health care in rural areas

The Ministry of Health and Social Assistance is engaged in developing a socialized health service in the country, but this is obviously a long-term programme; this entails the provision of health facilities throughout the country, including the most remote rural areas. Meanwhile, rural areas affected or seriously threatened by malaria are at present suffering from a lack of basic public health services. In fact, this was one of the main reasons why the earlier success in malaria control could not be maintained and a resurgence of the disease has occurred and is threatening the whole country. This situation requires that:

(a) priority should be given to the socialization programme;

(b) as an interim measure, an optimal minimum of public health support should be established directly at the community level on an emergency basis. This includes the establishment of an auxiliary health worker, together with a village midwife, on the scale of one for approximately 2000 population. The functions assigned to this category of staff would include: specific simple antimarlaria duties, health education, and simple functions of a public health nature.

5.2 Evaluation of operational field activities

A tremendous effort has been made by the Turkish Government in reorganizing the antimalaria services; this involved the recruitment and training of large numbers of personnel and the solution of particularly difficult logistic problems. Despite the very short time available for this undertaking, all operations were carried out approximately according to schedule (see Annex I), even though shortcomings became evident in the course of implementation of various field activities.

The entomological component of the programme is very weak and it was difficult to make a proper evaluation of all operational activities. A small nucleus of the entomological section was able to monitor the susceptibility status of *A. sacharovi* populations in respect of malathion in the epidemic areas, and also in respect of DDT and dieldrin in some sectors of Strata IB and II. An assessment of the lasting residual effect of malathion in Çukurova had to be discontinued after a month of observations, owing to shortage of staff.

5.3 Epidemiological evaluation

Antimalaria measures implemented in 1978 can be summarized as follows: (i) retreatment of all positive cases discovered in 1977; (ii) two rounds of malathion indoor residual spraying in Çukurova/Amikova, and one round of focal spraying in south-east Anatolia and unlimited foci in Strata II and III; (iii) larviciding operations in and around urban centres; (iv) mass drug administration in the most receptive areas; (v) large-scale distribution of larvivorous fish; and (vi) increased routine surveillance activities.

In assessing the epidemiological situation during the period January-August 1978 compared with the same period in previous years, the following conclusions can be made.

(a) The number of cases diagnosed in the whole country during the period under review fell from 105 280 in 1977 to 79 354 in 1978.

(b) The epidemic explosion in Çukurova/Amikova (Stratum I) area was contained; more important, although 1978 started with a large reservoir of infection, the measures implemented led to an appreciable reduction in the number of cases during the months of highest transmission (94 825 cases in 1977 compared with 64 778 in 1978).

(c) Similarly favourable results could not, unfortunately, be achieved in south-east Anatolia, where the weakness of the intervention measures resulted in the persistence of local transmission and its spread to large areas, especially in the zones of Urfa and K. Maras (8586 cases in 1977 and 11 953 in 1978).

(d) In other highly receptive and vulnerable areas of Turkey (Stratum II) the situation showed some deterioration; this can be related to the increased number of imported parasite carriers resulting from the great epidemic wave of 1977 and the appearance of a few circumscribed foci of transmission (942 cases in 1977 and 1390 in 1978).

(e) In other areas (Strata III and IV) where the malariogenic potential is, respectively, low and very low, the same trend was observed, with a relatively small increase in the number of cases due to some old infections imported from Çukurova/Amikova (1977 outbreak) and the appearance of very few small foci of local transmission, especially in Stratum III (927 cases in 1977 compared with 1225 in 1978).

5.4 Discussion

A lively discussion followed the presentation of the findings of the multidisciplinary evaluation team. There was a general consensus that, although the results achieved in the epicentre of the epidemic (Çukurova and Amikova) showed an appreciable reduction in malaria morbidity, they also indicated that the emergency situation persisted, and that further aid was needed, at least throughout 1979.

The building up of the malaria reservoir in some zones of south-east Anatolia demands the prompt application of more efficient antimalaria measures in this highly receptive and vulnerable area of Turkey.

Great concern was expressed with regard to the danger of the disease spreading into neighbouring countries, especially those to the south-east, which belong to the same ecosystem. The resurgence of malaria in Syria, though not yet reaching epidemic proportions, constitutes a serious threat, and if adequate antimalaria measures are not taken in the very near future the disease may well spread into Lebanon and Jordan.

The need for timely intervention in Çukurova and other irrigated areas to remove the breeding places along the drainage canals and marshes on a permanent basis was considered to be a *sine qua non* for the successful and effective control of the epidemic as well as for the complete interruption of transmission in these areas. This responsibility cannot be entrusted to the NMES and adequate funds should be provided by different sources for the application of the most appropriate techniques.

An analysis of the 1978 surveillance activity results in the epidemic area clearly indicates that all age-groups have been similarly exposed to the malaria risk, including infants and expectant mothers. These vulnerable groups of the population are more exposed to the deleterious effects of the disease because of their lack of immunity and the fact that malaria suppresses the immunoresponse mechanisms of the individual.

In reply to the question: "What would have been the epidemiological situation in the epidemic area if the emergency plan had not been implemented?" it was estimated that on the basis of the geometrical progression recorded in 1976 and 1977, and of previous experiences recorded in other countries, there might have been, in 1978, a fourfold to sixfold increase in the number of cases recorded in 1977, i.e. 400 000 - 600 000 instead of the 64 000 diagnosed in 1978.

The antimalaria campaign of 1978 had to achieve simultaneously four principal targets, namely, (a) the containment of the epidemic, which in the circumstances was achieved; (b) the launching of initiatives to meet long-term objectives; (c) the continuous in-service training of all categories of operational staff and the training of professional personnel to meet immediate and future needs, and (d) the implementation of operational field research to find answers to outstanding technical problems and achieve better planning and more rational costing of the programme.

While all existing national and international resources will continue to be mobilized to ensure better in-service training of operational staff in 1979, provisions are to be made for the training of professional personnel. The revival of the WHO assisted Health Manpower Development Project in Turkey could greatly assist in providing training facilities for paramedical personnel for the NMES as well as for the primary health care service. Other WHO staff available in Turkey could make a contribution to antimalaria activities as part of the whole integrated programme of activities of the Regional Office in this country; this includes WHO/UNDP projects in the field of health manpower development and environmental health protection.

Operational research activities in 1978 made a start with a study carried out by the Çukurova University on the distribution of G-6-PD deficiency carriers among different ethnic groups in Turkey. These studies must be completed and should be complemented by further investigations to be conducted by the same University, in collaboration with the NMES, in order to identify the best radical treatment for *P. vivax* infections among G-6-PD deficiency carriers. More studies in the field of chemotherapy of *P. vivax* malaria are envisaged and a long list of entomological investigations has been prepared, among which studies for the evaluation of insecticide formulations and equipment such as larviciding, house spraying and fogging, the evaluation of biological control agents and the monitoring of insecticide resistance are the most relevant.

The standard of field operations can only be improved by further in-service training and better supervision. It was suggested, inter alia, that group leaders among the seasonal workers be utilized for the mass drug distribution campaign and that drugs be administered, if possible, on pay-days. Zone chiefs and supervisory personnel at control level should receive some training in managerial procedures; the satisfactory standard already achieved in the maintenance of vehicles in the workshops organized with the cooperation of UNICEF could be further improved by more training and the timely delivery of spare parts.

6. Short-term, medium-term and long-term objectives

The meeting analysed the short-term objectives in detail. The medium-term and long-term projections were discussed on several occasions during the sessions and the main observations and clarifications which emerged are reported here.

6.1 Short-term objectives

These should focus on:

(a) containing the epidemic and bringing the malaria situation under control in the shortest possible time, say within three years;

(b) eliminating the existing foci of malaria transmission, and applying the other measures necessary to prevent the spread of the disease to other highly receptive and vulnerable areas of Turkey (Strata II, III and IV) and to neighbouring countries.

In broad outline, this implies, in practical terms, continuing to apply all the attack measures which have already been implemented in the epidemic areas and the strengthening of field activities whenever and wherever required plus the elimination of operational shortcomings.

In all the other epidemiological strata, especially in Strata II and III, the objectives will be as follows:

(a) the elimination of all localized foci of transmission by the application of antivector and antiparasite measures;

(b) the clear delimitation of the most highly receptive and vulnerable areas in order to carry out antivector measures aimed at reducing receptivity levels;

(c) the strengthening of surveillance activities in Strata II, III and IV, giving priority to areas where the malaria risk is high.

The attainment of the short-term objectives will obviously be the responsibility of the NMES in association with the public health service, and with the collaboration of all the other State authorities concerned. Although some flexibility should be allowed, this objective should be attained within the next three years. This period should also be utilized for the development of the primary health care service network.

To summarize the activities to be carried out in 1979, a plan of action, which the multidisciplinary evaluation team considered to constitute the minimum optimal requirements, was presented (Annex II), together with details of its relative cost (Annexes IIIA and IIIB).

Considering the extremely difficult situation which Turkey would have to face if all the required resources could not be made available in time, an alternative plan has to be prepared and suggestions were put forward in that respect.

6.2 Medium-term objectives

The lessons learnt from the antimalaria campaigns carried out in the past point to the following:

(a) The consolidation of the gains made by the NMES can only be maintained through the early development of an effective primary health care service.

(b) It is, of course, imperative that the improvement of the irrigation system and the removal of all man-made vector breeding places should be achieved in the shortest possible time, and certainly within the next three years. The need for interministerial cooperation is fundamental. It was also suggested that Joint Antimalaria Campaign Committees be set up at central government, provincial, district and community levels.

(c) All further irrigation project developments must give due consideration to public health criteria.

(d) It is equally essential that due attention be given to the continued improvement of the environmental health situation and to the mobilization of the public sector towards full self-help cooperation.

(e) The transfer of responsibilities from the NMES to the primary health care system should be a gradual process. Extreme caution should be observed during this transfer process to ensure that the gains achieved in malaria control are maintained.

It is extremely difficult to fix a time limit for achieving these objectives. However, every endeavour should be made to attain them in the shortest period of time, e.g. within five to eight years. During this period, the resultant gains should be maintained and taken a stage further, with the aim of reducing the malaria incidence to an approximate level of 0.1 per thousand of the population at risk.

The Turkish representatives at the meeting clearly indicated that the Government considered the development of the primary health care system to be one of the main priorities in the health sector.

Three draft laws have been prepared and are to be debated in Parliament before the end of 1978. The aim is to provide primary health facilities for the whole country. In 1978, there were 1350 dispensaries in operation; these were staffed to 80% of their capacity, whereas previously a level of only 40% was achieved. The main objective is to speed up the socialization programme in all provinces of Turkey. By the end of 1978, 36 out of 67 provinces were already covered by the socialization programme, and considering that the socialization of one province costs TL 240 million, it is evident that remarkable efforts have already been made. In 1979 it is planned to extend the programme to the provinces of Mersin, Adana, Hatay and Gaziantep (the first three in Çukurova/Amikova and the last in south-east Anatolia) and the necessary budgetary provisions have been requested. Once again, financial constraints and the shortage of trained staff have slowed down and will continue to hamper the realization of the programme. Hard currency is needed for the procurement of transport, drugs and equipment which have to be imported from abroad.

With regard to the motivation of the community, mass media, e.g. television and radio, have been used to show films and to broadcast programme and messages on malaria. Brochures, posters and leaflets have been distributed to government offices, schools and the public, especially in the affected areas. All these measures have undoubtedly brought about an increased awareness of the problem among the population.

However, a sample survey carried out by a WHO expert in the epidemic area revealed that indoor spraying evokes negative feelings and attitudes among certain sections of the population. It is planned to carry out a special health education programme in 1979 to improve the situation in this respect, together with a programme promoting vector source reduction by environmental sanitation. There is a great potential for educational and informational inputs from various sources into the antimalaria programmes, but efforts need to be coordinated at both country and Regional Office levels.

It would be highly desirable for the World Food Programme (WFP) to participate in the antimalaria programme in Turkey; to this end, preliminary contacts between the Government, UNDP and WFP have already been established. Supplies of food to voluntary health workers, to be selected among religious or educational leaders who enjoy the respect of the villagers, may greatly help to stimulate and motivate the community and at the same time assist the NMES in some field activities.

As already stated, it is extremely difficult to fix a time limit for the complete realization of the primary health care service. The gains already achieved and the Government's intention to continue its efforts to achieve a rapid and permanent solution of the problem are reassuring factors.

6.3 Long-term objectives

The responsibility for the final eradication of malaria in the country and the prevention of its reintroduction will rest mainly with the primary health care service and with the institutions responsible for environmental health.

In order to achieve these objectives it is necessary to implement without delay the various steps listed above, under immediate and medium-term objectives, which relate to primary health care and to environmental aspects.

7. List of donations

A detailed list of donations received from different sources for the Turkish antimalaria programme in 1978 was presented at the meeting, as well as detailed information on the utilization of funds. An up-to-date list of donations is attached (Annex IV).

8. Recommendations

The participants made the following recommendations:

(1) Cooperation between WHO Member States and Turkey in support of the Turkish antimalaria campaign should be continued throughout 1979, the Turkish Government reinforcing its efforts to achieve the immediate, medium- and long-term objectives and Member States and international agencies cooperating through voluntary contributions and by other means.

(2) The National Executive and other departments outside the Ministry of Health and Social Assistance which are directly involved or closely connected with the malaria problem, such as the State Water Works (DSI) and Agricultural Pest Control Departments, municipalities, etc., should establish close collaboration and joint planning at all levels of administration.

(3) International agencies, such as the World Bank (IBRD) and the Food and Agriculture Organization of the United Nations (FAO), should be invited to contribute to the improvement of the water management system in Çukurova and Amikova by providing financial assistance or expertise. The World Food Programme should also be invited to assist the antimalaria programme by providing food incentives to promote community participation.

(4) The Turkish Government should continue to attach primary importance to the development of the primary health care service in order not only to secure health facilities for the community at large but also to assume responsibility for the antimalaria activities once the malaria situation has been brought under control.

(5) At the same time, the Government of Turkey should continue to explore all possibilities for the rapid promotion of environmental and health education activities which could immediately bring tangible and long-lasting benefits to the antimalaria programme.

9. Closing session

Before the closure of the meeting, the participants were addressed by the Minister of Health and Social Assistance of Turkey, Dr M. Tan, who expressed the Turkish Government's deep appreciation for the help so far received and for the good will shown regarding its continuation.

The Regional Director, Dr Leo A. Kaprio, stated that on the basis of the results of the meeting and following the recommendation which was adopted at the twenty-eighth session of the WHO Regional Committee for Europe, he would endeavour to mobilize the resources for technical cooperation that existed in the countries of the European Region.

As a first step in this direction, one copy of the report of the meeting, together with a letter requesting technical cooperation, would be forwarded to all countries of the WHO European Region and to international agencies.

ANNEX I

FIELD OPERATIONS CARRIED OUT IN ÇUKUROVA/AMIKOVA IN 1978

January	February	March	April	May	June	July	August	September	October	November	December

ACTIVE CASE DETECTION

PASSIVE CASE DETECTION

MASS CHEMOPROPHYLAXIS

WINTER RADICAL TREATMENTS

INDOOR SPRAYING: ROUND NO. 1 ROUND NO. 2

REGULAR FOGGING

OILING

LARVICIDING ABATE EMULSION

LARVICIDING ABATE GRANULES

LARVIVOROUS FISH

Antimalaria activities carried out by other authorities:

Maintenance of drainage canals
Urban drainage canals
Filling of pits resulting from road construction

ANNEX II

ÇUKUROVA/AMIKOVA PLAN OF ACTION, 1979

January	February	March	April	May	June	July	August	September	October	November	December

ACTIVE CASE DETECTION

PASSIVE CASE DETECTION

MASS CHEMOPROPHYLAXIS

WINTER RADICAL TREATMENTS

INDOOR SPRAYING:

INDOOR WINTER FOGGING

REGULAR FOGGING

ULTRA-LOW VOLUME SPACE SPRAYING

LARVICIDING: ABATE EMULSION AND GRANULES

LARVIVOROUS FISH

HERBIVOROUS FISH

Antimalaria activities carried out by other authorities:

Maintenance of drainage canals
Urban drainage canals
Filling of pits resulting from road construction

ANNEX IIIA

LOCAL EXPENSES (1979)

1.	Spraying equipment	TL.	10 000 000
2.	Insecticides & solvents	TL.	15 000 000
3.	Spraying supplies	TL.	5 000 000
4.	Petrol, oil, etc.	TL.	10 000 000
5.	Transport maintenance	TL.	10 000 000
6.	Office supplies & equipment	TL.	20 000 000
7.	Meetings, conferences, courses	TL.	5 000 000
8.	Personnel, temporary (vector)	TL.	292 000 000
9.	Personnel, etc. (surveillance)	TL.	375 000 000
		TL.	742 000 000
10.	Reserve		58 000 000
	TOTAL	TL.	800 000 000
		(US$	32 000 000

COST ANALYSIS (1979)

EXTERNAL EXPENSES

Items	Unitary Cost (US$)	Quantity required	Quantity in stock	Quantity to be purchased	Total cost
DDT 75% WDP	Ton 700	52	52	-	-
Malathion 25% WDP	Ton 700	400	120	280	196 000
Malathion 50% WDP	Litre 1 800	1 144	518	626	1 126 800
Malathion 57% E.C.	Litre 2 750	417	12	405	1 113 750
Malathion 400 TF	Litre 2.0	3 100	3 100	-	-
Neopybuthrin	Litre 34.1	200	-	200	6 820
Abate 500 E	Litre 35.0	5 600	10 000	-	-
Abate S.G. 1%	Ton 1 167	30	30	-	-
Insecticides					2 443 370
Swingfogs SN-11	580	180	150	30	17 400
Hudson sprayers	70	2 728	1 900	828	57 960
Nozzle & flow reg.	4.2	6 840	1 500	5 340	22 428
Nozzle cone jet	5.0	490	0	490	2 450
Hudson spare parts	-	-	-	-	15 000
Swingfog spare parts	-	-	-	-	5 000
Fontan sprayers	332	102	150	-	-
Fontan spare parts	-	-	-	-	5 000
Spraying equipment					125 238
Jeeps	8 625	159	67	92	793 500
Pick-ups	5 340	233	53	180	961 200
Trucks	15 000	3	1	2	30 000
Motor cycles	600	66	0	66	39 600
Transport					1 824 300
Malaria drugs					154 432
Laboratory supplies					20 000
					174 432
					US$4 567 340

ESTIMATED POSITION OF THE PROJECT "MALARIA CONTROL PROGRAMME - TURKEY" AS OF 15 NOVEMBER 1978
(EC/TUR/MPD 002/VM)

	DONOR	AMOUNT	TOTAL FOR COMPONENT	EXPENDED OR OBLIGATED	EARMARKED	BALANCE	REMARKS
Duty travel	Iraq	9 905					
	Netherlands	2 500					
	Saudi Arabia	15 000					
	Turkey	2 900*					
	UNDP/Tureky	2 500	31 905	24 079	2 400	5 426	
Experts	Belgium	92 307					
	Saudi Arabia	50 000	142 307	55 878		86 429	
Temporary Advisers	Saudi Arabia	35 000	35 000	2 205		32 795	
Participants	Turkey	18 372*	18 372	18 372		nil	Participants in meetings and workshops
Operational costs	Netherlands	22 500	22 500	8 635	4 900	8 965	Operational support costs
Supplies and equipment	Austria	33 635					Various P.O.s for S.&E. incl. freight and insurance
	Germany, Federal Republic of	175 000					
	Ireland	20 657					
	Luxembourg	7 596					
	Norway	180 404					
	Switzerland	143 449					
	Turkey	47 468*					Purchases to be made in Turkey
	EEC	1 250 655					
	UNDP/Turkey	4 817	1 843 699	1 841 201	690 000**	(687 502)	
Contractual services	Turkey	12 160*	12 160	12 160		nil	To cover local costs, incl. interpretation and transportation contracts
	Total		2 105 943	1 962 530	697 300	(553 887)	

* Funds in trust to be spent in Turkish Lira only

** Earmarked for: 350 tons Malathion
850 Hudson Sprayers

ALL AMOUNTS IN US DOLLARS

Summary of cash donations		
Austria	13 653	
Belgium	92 307	
Germany, Federal Republic of	175 000	
Finland	25 000	
Iraq	9 905	
Ireland	20 657	
Luxembourg	7 596	
Netherlands	25 000	
Norway	180 404	
Saudi Arabia	100 000	
Switzerland	143 449	
Turkey	80 000	
EEC	1 250 655	
UNDP/Turkey	7 317	
Total	2 130 943	2 130 943
Summary of goods in kind (estimated values)		
Bulgaria	4 500	
Denmark	87 200	
Germany, Federal Republic of	80 000	
Greece	4 000	
Hungary	750	
Italy	6 857	
Malta	1 000	
Morocco	3 500	
Netherlands	225 000	
Romania	5 200	
United Kingdom	272 727	
Yugoslavia	14 060	
UNDP	20 000	
UNICEF	168 000	
USAID	700 000	
Total	1 592 794	1 592 794
Additional pledges (estimated values		
Austria	71 428	
France (details still awaited)		
Malta	1 130	
Total	72 558	72 558
Grand total		US$3 796 295
Technical services (specialists) offered by		
Algeria		
Portugal		
Spain		
Yugoslavia		

ANNEX V

LIST OF PARTICIPANTS

DENMARK

Dr S. Fogh
National Serum Institute, Copenhagen

FINLAND

Dr T. Pettersson
Chief Physician, Department for Tropical Diseases, Aurora Municipal Hospital, Helsinki

GREECE

Professor U. Marcelou Kinti
School of Hygiene, Athens

IRAQ

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Director, Malaria Programme, Ministry of Health, Baghdad

PORTUGAL

Dr Lobo da Costa
Medical Officer for Malaria Programme, Malaria Directorate-General of Health, Ministry of Social Affairs, Lisbon

SWITZERLAND

Dr R. Gass
Research Assistant, Swiss Tropical Institute, Basel

TURKEY

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Minister of Health, Ministry of Health and Social Assistance, Ankara

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Under-Secretary of State, Ministry of Health and Social Assistance, Ankara

Dr E. Aker (Co-Chairman)
Deputy Under-Secretary of State, Ministry of Health and Social Assistance, Ankara

Dr B. Akalin
Deputy Under-Secretary of State, Ministry of Health and Social Assistance, Ankara

Mr R. Köksoy
Deputy Under-Secretary of State, Ministry of Health and Social Assistance, Ankara

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Dr N. Tekirli
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Annex V

REPRESENTATIVES OF OTHER ORGANIZATIONS

Commission of the European Communities

Mr J. Russel
Emergency Aid Service, Commission of the European Communities, Brussels, Belgium

United Nations Children's Fund

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Programme Officer, P.K. 407, Ankara

United Nations Development Programme

Mr N. Shallon
Resident Representative, United Nations Development Programme, P.K. 407, Ankara

United Nations Disaster Relief Organization

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Acting Chief, Africa, Middle East and Europe Section, Palais des Nations, Geneva

United States AID

Mr J. Karam
Malaria Adviser, Department of State, Agency for International Development, Washington D.C.

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London, United Kingdom

WORLD HEALTH ORGANIZATION

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Dr Leo A. Kaprio
Regional Director

Mr P.G.T. Dunderdale
Administration and Finance Officer

Dr C. Guttuso
Coordination with Other Organizations

Dr M. Postiglione (Co-Chairman)
Director, Disease Prevention and Control

Mr J.I. Waddington
Director, Promotion of Environmental Health

Mr R. Weil
Director, Support Programme

Headquarters

Dr S.W.A. Gunn
Emergency Relief Operations

Dr J. Hamon
Director, Division of Vector Biology and Control

Annex V

Headquarters (contd)

Dr T. Lepes
Director, Division of Malaria and Other Parasitic Diseases

Dr E. Onori
Interregional Team/Malaria and Other Parasitic Diseases

Project Staff

Mr J.O. Espinoza
Field Operations Manager

Mr P. Jolly
Sanitarian

Dr K. Lassen
Malariologist