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SOCIAL COUNCIL



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UNITED NATIONS CHILDREN'S FUND

Programme Committee

Recommendation of the Executive Director for an Allocation
JORDAN
Malaria Eradication Programme^{a/}

1. The Administration recommends an apportionment of \$72,000 for the provision of insecticides, drugs, sprayers, laboratory equipment and vehicles to be used for the years 1956 and 1957 of a 5-year malaria eradication programme in Jordan (1956-60) ensuring the protection of 1,185,000 persons throughout the country. This programme will be integrated with the Government/UNRWA 5-year scheme, begun in 1954, for the control of the disease in the Yarmuk/Jordan Valleys. The Administration also recommends the approval in principle of the entire project for which further allocations would be requested, mainly for insecticides, in the remaining years. These would probably amount altogether to between \$50,000 and \$90,000 depending on the insecticide used in later years, and the success achieved in completely interrupting transmission in the first year of spraying.

2. The malaria eradication programme will be carried out by qualified Jordanian medical and technical personnel who have been in charge of anti-malaria work in the Jordan Valley since 1949 and will benefit of the combined assistance of WHO, UNRWA and UNICEF. A National Malaria Eradication Service with an autonomous budget will be responsible for the execution of the programme with the assistance of a special Malaria Eradication Board grouping representatives from Governmental, international and bilateral agencies immediately concerned with the work.

3. The estimated total yearly cost to the Government for carrying out this programme is JD.40,000, equivalent to \$112,000. Half of these obligations will be assumed by the United States Operations Mission to Jordan of the

^{a/} First request for aid to this programme

/International Cooperation

International Co-operation Administration, within its programme of assistance to the country in the field of health and sanitation.

The malaria problem

4. The agricultural life of Jordan, which is mainly a country of hilly lands and arid plains, revolves around a valley 65 miles long, and 3 to 14 miles wide, called the "Ghor" or rift along which runs the Jordan River. The floor of this rift varies between 696 and 1,286 feet below sea level. While the fertile lands on both sides of the Jordan River provide means of livelihood to settled rural communities and semi-settled refugee groups, as well as to nomadic tribes and seasonal workers, the area's sub-tropical climate and the relatively wide water surfaces presented by the river in its very tortuous course, constitute such favourable conditions for the breeding of anopheline vectors. For ages the "Ghor" was notorious for its hyperendemicity, and for a malaria transmission which goes on for six months of the year.

5. From this reservoir of infection the disease is spread into the country inland by the seasonal workers returning to their villages from the "Ghor" and by the nomadic tribes who span the country in extensive migratory wanderings. Under these conditions the disease, which is recognized as being Jordan's most prevalent and economically serious health problem, evolved in the past in a constant endemic form throughout the country with sharp epidemic outbreaks occurring in a cyclical regularity. An illustration of this situation is provided by the epidemiological surveys carried out by UNRWA in 1949 and 1950, which showed that, in certain villages of the hyperendemic zone, almost all infants contracted the disease in their first year of life. The average indices found in these surveys were:

<u>Year</u>	<u>Parasite Index</u>	<u>Spleen Index</u>
1949	48%	73%
1950	27%	84%

/Government and

Government and UNRWA efforts

6. Since the time of the mandatory administration of West Jordan, the authorities have made continued efforts towards controlling the disease. These efforts were backed by a special legislation governing such matters as irrigation works, rice cultivation, and maintenance of water cisterns. "Malaria Supervisors" of the Health Department were and still are responsible for the enforcement of this legislation and for the education of the population on the fundamentals of protection against the disease. Although the work of these Supervisors was limited from the technical standpoint, it greatly helped to make the country's population aware of the malaria problem and of the necessity for dealing with it.

7. Following the exodus into the country of some 400,000 Palestinian refugees who were partially attracted towards the Jordan Valley, UNRWA came into the picture and, in 1949, started spotty protection measures against malaria in the refugee camps and, a year later, undertook a systematic campaign with DDT-residual spraying covering some 85,000 persons, mainly refugees, living in the Jordan Valley. While the work progressed, it became evident that the main vectors in that valley, A. sergenti and A. superpictus instead of resting on insecticide-covered surfaces, resorted to the numerous caves and geological fissures prevailing in the valley's ramparts. The protection strategy had, therefore, to be changed and a larvicidal campaign was launched alongside the DDT-residual spraying operations. This involved the yearly treatment of some 50 million square metres of water surfaces (in weekly repetitive operations stretching over 8 months). The success of these measures, as illustrated by average parasite and spleen indices of respectively 9% and 20% for 1954, prompted a movement of rural colonization of the valley and several villages sprang up in the area during the last three years.

8. As engineering schemes involving irrigation and hydro-electric works were planned for the Jordan Valley and the adjacent Yarmuk Valley, an agreement was concluded in 1954 between the Jordanian Government and UNRWA in respect of a

5-year malaria control programme aiming at the protection of the engineering and survey crews carrying out studies for the development of these valleys.

9. Meanwhile, in line with the precepts of the new strategy of malaria eradication (and with the resolutions of the WHO Regional Sub-Committee which met in Beirut in September 1955 and calling for the implementation of this strategy in the Eastern Mediterranean countries). Dr. Paul F. Russell, special malaria consultant to WHO and Dr. M. Farid, the regional malaria adviser, visited Jordan and discussions were held between the Jordanian Government, UNRWA, WHO, and UNICEF. It was agreed to consider a new 5-year programme covering the country as a whole and aiming at the total eradication of the disease. The Yarmuk/Jordan scheme would form an integral part of the large scheme. This programme, which aims at the protection of 1,185,000 persons including the 200,000 persons covered by the Yarmuk/Jordan scheme, would be conducted, beginning in 1956, by a qualified national staff trained by UNRWA and now partly transferred to Government service. UNRWA will continue its contribution to the Jordan/Yarmuk scheme, and UNICEF supplies are requested only for the remainder of the campaign.

Plan of operations

10. The plan of operations would be signed by the four parties concerned with the programme, namely the Jordanian Government, UNRWA, WHO and UNICEF. The objectives would be:

- (i) To achieve complete eradication of malaria from the country within 5 years through larvicidal measures, residual spraying of insecticides and drug administration.
- (ii) To develop adequate epidemiological surveillance measures in order to permit the cessation of initial measures when the interruption of transmission would have been achieved for three consecutive years.
- (iii) To train local personnel, including malariologists, entomologists, sanitarians and laboratory technicians, in modern methods of malaria eradication and epidemiological surveillance.

/Plan of action

Plan of action

11. The malaria eradication programme in Jordan is planned to cover simultaneously through 5 consecutive years, beginning in 1956, all the areas where there is malaria transmission (approximately 1,185,000 inhabitants). The Government and UNRWA agree to integrate in this national programme their anti-malaria scheme for the Yarmuk/Jordan Valleys.

12. Operations will include the consolidation of previous anti-malaria measures and the expansion of these measures to all endemic areas of the country.

The following targets are set with regard to these operations:

<u>District</u>	<u>Number of persons to be protected</u>
Amman and Balqa	197,500
Ajlun	227,500
Karak	78,000
Jerusalem	150,000
Nablus	200,000
Hebron	132,000
Yarmuk/Jordan Valleys	200,000
Total:	<u>1,185,000</u>

13. Protection measures will be maintained for the 5-year duration of the programme in accordance with the above schedule, except in localities where the interruption of transmission has been achieved for not less than three consecutive years. In such localities, permanent arrangements for epidemiological surveillance will be established at least one year before any cessation of the protection measures takes place. On account of the arid nature of the country and the fact that A. sergenti with its outdoor resting habits is the main vector, operations will be mostly larviciding. Only in the case of 100,000 people, where the protection of larviciding may be incomplete, will house spraying be done as well.

14. The surveillance arrangements that will in due course cover the whole country will be organized in such a manner as to detect and treat all autochthonous and/or imported cases. Malaria will be declared a notifiable disease. Medical officers and technicians who will be in charge of the surveillance set-up will confirm microscopically every clinical case of malaria reported and carry out epidemiological investigations.

/15. Malariometric...

15. Malarimetric investigations will be continued throughout the country during 1956 and the following years. Periodical blood surveys on infants, younger age groups, school children and nomads will be carried out in order to assess the progress of the eradication programme, and to detect, investigate and treat all positive cases. The strategy of the campaign may be readjusted in accordance with the findings of these investigations.
16. Special arrangements will be made for the interception of the mass movement of nomadic tribes for the purposes of epidemiological investigations, protection and treatment, where necessary, with anti-malarial drugs.
17. The programme will be conducted under the responsibility of the Government through a National Malaria Eradication Service specially established for that purpose and having financial, administrative and transport autonomy. The Jordanian malariologist who has been working on the Yarmuk/Jordan malaria control scheme will be transferred from UNRWA to the Government's Department of Health, where he will assume the responsibilities of Chief of the National Malaria Eradication Service.
18. UNRWA will maintain the technical and administrative supervision of operations in the Yarmuk/Jordan Valleys, but agrees to delegate authority to the Chief of the National Malaria Eradication Service for the conduct of these operations.
19. The Headquarters of the National Malaria Eradication Service will be established in Amman, and will include facilities for laboratory work and for the training of malaria technicians. In conjunction with this Headquarters, two Sub-Headquarters under the supervision of Malaria Medical Officers will be established, the one in Amman and the other in Jerusalem. Furthermore, two District Malaria Centres will be set up at Irbid and Ma'an in East Jordan and two similar centres at Nablus and Hebron in West Jordan. All these centres will be staffed with technicians transferred from the Yarmuk/Jordan scheme or trained at the Amman Headquarters.

/20. A special....

20. A special Malaria Eradication Board will be substituted to the previous High Malaria Committee and will be constituted as follows:

- (a) The Minister of Health or his representative, Chairman
- (b) A representative from the Ministry of Agriculture
- (c) A representative from the UNRWA Health Division
- (d) A representative from the Health and Sanitation Division of the U.S. Operations Mission to Jordan (International Co-operation Administration)
- (e) A representative from the Army Medical Corps
- (f) The Chief of the National Malaria Eradication Service.

This Board will convene periodically to review the progress of the work and to discuss and take appropriate action on the technical and operational problems that the National Malaria Eradication Service may encounter in the execution of the programme. The Chief of that Service will act as the Rapporteur of the meetings.

21. With the assistance of the WHO Regional Office for the Eastern Mediterranean, the programme will be fully co-ordinated with anti-malaria operations in neighbouring countries. Special arrangements will be made for the co-ordination of the work with Syria, whose common borders with Jordan in the south-west corner are known to be highly endemic.

Target time schedule

22.	January-March 1956	(a) Establishment of National Malaria Eradication Service and initiation of training courses for Malaria Medical Officers and technicians. (b) Conduct of pre-operational surveys. (c) UNRWA Entomologist to join programme. (d) Arrival of UNICEF supplies.
	1-10 April 1956:	Training of labourers, foremen and scouts.
	1 April - 30 Nov. 1956:	Larvicidal and residual spraying operations in the Yarmuk/Jordan Valleys and their feeding tributaries.
	1 May - 30 June 1956:	Residual spraying operations covering borderline villages, El-Azrak Oasis and other inland localities.
	1 May - 30 Sept. 1956	Larvicidal measures covering streams and springs of East and West Jordan Plateaux.

Commitments of WHO

23. (a) Personnel:
One short-term consultant malariologist for 2 months in 1956 and in 1958.
Services of Regional Consultant Sanitary Engineer as needed.
- (b) Fellowships:
One short-term fellowship for Chief of National Malaria Eradication Service in 1957.
One year fellowship for one Malaria Medical Officer during 1959 to specialize in Tropical Medicine and Hygiene.
Two fellowships for three months each for Malaria Sanitarians during 1958
- (c) Invitation to Chief of National Malaria Eradication Service to inter-regional and inter-country conferences.

Commitments of UNICEF (covering areas outside the Yarmuk/Jordan valleys)

24. (a) Insecticides for 1956 and 1957
For Residual Spraying to protect 100,000 inhabitants:
- | | | <u>U.S. \$</u> |
|--|----------|----------------|
| DDT 75% wettable powder | 14 tons) | |
| |) | 20,000 |
| Dieldrin 50% water dispersible powder | 5 tons) | |
| <u>For Larviciding</u> | | |
| Paris green | 4 tons | 4,000 |
| (b) <u>Equipment for Spraying (for the whole campaign)</u> | | |
| 96 Compression Sprayers) | | |
| 250 Hand Sprayers) | | 4,500 |
| Rubber Boots) | | |
| (c) <u>Technical Equipment (for the whole campaign)</u> | | |
| 6 Monocular Compound Microscopes) | | |
| with lamps, 1 Binocular Microscope) | | |
| Laboratory equipment and supplies) | | 2,000 |
| (d) <u>Anti Malaria Drugs (1956 and 1957 requirements)</u> | | |
| Camoquin and Primaquine | | 6,000 |

/(e) Transport

	<u>U.S. \$</u>
(e) <u>Transport</u> (for the whole campaign)	
7 utility cars, 4 wheel drive)	
1 station waggon" " ")	
3 trucks, " " ")	24,000
1 five-ton truck	
 (f) <u>Contingencies</u>	 5,500
Total Supplies	<u>66,000</u>
Freight	6,000
Total Recommended Allocation.....	<u><u>\$72,000</u></u>

25. Subject to the Government making the necessary administrative and financial arrangements for the implementation of the 5-year malaria eradication programme, UNICEF will continue its assistance to this programme up to five years, with annual amounts of the above types of supply in accordance with technical requirements. Because of the risk of building up anopheline resistance by using DDT for larviciding, paris green will be used at least for 1956, while the risk is being further evaluated. The disadvantage of this solution is that it adds greatly to the labour costs by requiring frequent (e.g. weekly) applications. If it is later decided to use DDT or dieldrin for "residual larviciding", the annual cost to UNICEF would be approximately \$10,000 more than with paris green. In the light of this, and of the prospect of achieving three years interruption of transmission with less than five years operations, the cost to UNICEF of supporting the remainder of the campaign should be between \$50,000 and \$90,000.

Commitments of UNRWA

26. UNRWA will put at the disposal of the national malaria eradication programme the funds, equipment, supplies and facilities which it had previously made available to the Yarmuk/Jordan scheme at a cost of approximately \$70,000 per annum, including:

Salaries, wages, allowances and insurance charges,
Transport, fuel and maintenance,
Field, laboratory and office equipment,
Insecticides and other supplies,
Premises.

/UNRWA's participation

UNRWA's participation in the programme beyond 1959 will be made subject to the extension of its mandate beyond that date.

27. UNRWA will also provide an international Entomologist to the programme for one year, and will make available the services of its Epidemiologist when required.

Commitments of the Government

28. The Government will take the necessary measures for making available an autonomous budget covering its 5-year obligations in the programme. These obligations are estimated at JD.40,000 (US \$112,000) per year, and will cover items not included in the commitments of the three other parties. The Government will provide in particular:

(a) Premises

Headquarters for the Malaria Eradication Service and training centre in Amman.

2 Sub-Headquarters in Jerusalem and Amman.

4 District Centres.

Storage facilities as necessary.

(b) Personnel

3 medical officers (including malariologist, Chief of National Malaria Eradication Service)

21 Sanitarians and laboratory technicians

35 office clerks, typists, drivers, mechanics, etc.

143 foremen, scouts and labourers.

(c) Technical and Field Equipment

(d) Office furniture, equipment and stationery

(e) Fuel for heating, animal transport etc.

29. The Government will ensure that the WHO commitments referred to under paragraph 23 above will be included in its annual programme-request to the Technical Assistance Board under Priority I.

WHO's technical approval

30. This plan of operations has the technical approval of WHO.

Cost per caput

31. The cost per caput is the equivalent of between 90¢ and \$1.00 in U.S. \$ equivalents for five years or approximately 20¢ per year.