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PROJECT COMPLETION REPORT

MALARIA CONTROL PROJECT

391-0424

UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT
ISLAMABAD, PAKISTAN

March 1982

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I. BASIC DATA

Title of the Project	Malaria Control
Project No.	391-0424
Loan No.	391-U-163
Date Authorized	June 30, 1975
Date Agreement Signed	October 10, 1975
Date First Amendment Authorized	September 30, 1977
Date First Amendment Signed	December 3, 1978
Date Second Amendment Signed	May 7, 1980
Original Amount of Loan	\$20,000,000
Additional Amount of Loan	\$ 4,000,000
Total Amount of Loan	\$24,000,000
Amount Disbursed	\$23,942,416.16
Amount Deobligated	\$ 57,583.84
Mondale Rupee Component	\$18,763,434.14 ^{1/}
Project Assistance Completion Date (PACD): Original	December 31, 1978
Revised	June 30, 1981
Borrower's Authorized Representatives:	1. Mohammad Faheem Deputy Secretary Economic Affairs Division
	2. Dr. S.M. Mujtaba Director Malaria Control Project
Implementing Agencies: Federal	Directorate of Malaria Control
Provincial	Provincial Health Departments (Communicable Disease Control Department in Punjab and Malaria Control Organiza- tions in other provinces)

^{1/} Exchange rate of \$1.00 = Rs.9.90

II. PURPOSE OF THE PROJECT

The purpose of the project was to assist the Government of Pakistan to reduce, within a five-year period, the incidence of malaria to a level where the disease is no longer a public health problem in Pakistan and can be prevented by minor public outlays. This achievement would be indicated by the presence of an annual parasite incidence (API) rate of no more than 500 positive cases per one million population (API = 0.5).

III. SERVICES AND GOODS PROVIDED BY A.I.D., OTHER DONORS AND THE GOP

A. A.I.D.

1. Commodities

US dollar funds were used to procure insecticides, larvicides, sprayers, and spare parts as follows:

50% WDP Malathion	22,539 MT
Benzine Hexachloride	1,000 MT
Larvicide	5,000 gallons
Hudson Sprayers	12,788

Spare Parts:

Adapters	4,500
Nozzle Tips	20,000
Larvicide Nozzle Tips	10,000
Tube Adapters	10,000

2. Technical Assistance

- a. One direct-hire resident malaria advisor was assigned to the project from 1976 to November 1979 to assist the GOP to carry out malaria control activities.
- b. The A.I.D. Regional Malaria Advisor spent over 8 months on TDY in Pakistan for the development of the project and to assist in the monitoring and evaluation of the program.
- c. In addition to the above direct-hire personnel, the following short-term technical assistance was provided by A.I.D., financed through sources other than this project:
 - i. 2 to 3 malaria specialists for each one of the annual external assessments;

- ii. a 6-person team from CDC (Center for Disease Control) to carry out malathion intoxication investigation and develop recommendations;
- iii. 5 man-months of technical assistance during the period 1977 to 1980 for pesticide monitoring during spray operations;
- iv. services of a trainer in the safe handling of insecticides; and,
- v. services of a technician from EPA (Environmental Protection Agency) to advise on disposal of toxic malathion.

3. Total Project Cost

- a. A.I.D. provided about \$23 million worth of malathion, BHC and larvicides and about \$ 1 million in spare parts and other equipment = a total of \$23,942,416.16.
- b. A.I.D. also provided the equivalent of \$18,763,434.14 in Mondale Rupees to support part of the operational costs of the GOP's malaria control program.

4. Research Studies

In addition, A.I.D. supported malaria research activities and provided the equivalent of \$1,575,758 in Mondale rupees to the Pakistan Malaria Research Center, (PMRC) Lahore under a separate Mondale Rupee Grant (Project No. 391-0455).

B. W.H.O.

The World Health Organization provided commodities, technical assistance, fellowships, and support for local costs amounting to \$1,160,800 between 1976 and 1981 as follows:

1. Commodities

- a. 6 vehicles (Volkswagon)
- b. Spare parts for vehicles
- c. Laboratory equipment

d. Laboratory reagents

e. 10 Typewriters

f. 4 Photocopiers

2. Technical Advisory Services

a. During the first three years, WHO provided 3 foreign technical advisors to the program. In later years, only one advisor was provided for the program.

b. One malariologist was also provided to assist the Government of Pakistan to implement its integration plan of malaria workers into the general health services delivery system of the provinces.

c. 3 local hire operational officers were provided to assist in the supervision of malaria operations at the provincial levels.

d. 2 to 3 malaria specialists were provided as members for each of the annual assessment teams.

3. Fellowships

15 short-term overseas fellowships were provided for GOP officials under the program.

4. Research Activities

Commodities like laboratory equipment and chemicals were provided for malaria research activities undertaken by the GOP.

C. UNICEF

UNICEF also participated in the malaria control program during the project period and provided the following commodities, the total value of which amounted to \$73,000:

1. Antimalaria drugs

a. Primaquine (7.5 mg) = 2,297,000 tablets

b. Chloroquine Phosphate (150 mg) = 3,599,000 tablets

2. Envelopes for tablets

No technical assistance was provided by UNICEF under the project.

D. GOVERNMENT OF JAPAN

In 1979-80, the Government of Japan also assisted the program and a total of 600 million yen (equivalent to \$2.78 million) for urban malaria control was provided to the GOP. In 1980-81, 866.5 million yen (equivalent to \$4.015 million) was provided. These funds were utilized to purchase the insecticide Sumithion and other equipment as follows:

1. 1979-80

a. 40% WDP Sumithion	450 metric tons
b. ULV Pyrethroid	7,000 litres
c. Microscopes	300
d. Glass Slides	1,000,000
e. Sprayers	1,000
f. LECO ULV Machines	50
g. Jeeps (Toyota)	6
h. Car (Toyota)	4
i. Pickups (Toyota)	15
j. Pumping Machines	25

2. 1980-81

a. 40% WDP Sumithion	860 metric tons
b. ULV Pyrethroid	5,000 litres
c. Audiovisual mobile vans	2
d. Slide Projectors	5
e. 16 mm Film on Malaria Control	1

E. GOVERNMENT OF PAKISTAN

The Government of Pakistan (GOP) contributed the following human and financial resources to the program:

1. Federal Level

At the federal level, the Directorate of Malaria had the responsibility for coordination with the provinces and providing technical guidance, program evaluation, training, research, supplies of insecticides, and equipment. It also had the responsibility for coordinating with the international donor agencies and neighboring countries in the malaria control program.

2. Provincial Level

At the provincial level, Provincial Malaria Control/Communicable Disease Control (Punjab) offices were responsible for implementation of the program. For the urban malaria component of the malaria program, local bodies were responsible for implementation.

The total number of GOP employees who participated in the Malaria Control Program was as follows:

	<u>Number of Regular (Full-Time) Employees</u>	<u>Number of Seasonal (Part-Time) Employees</u>
Federal	79	-
Provincial of which:	5,740	10,000 for spray operations
Punjab	(3,036)	
Sind	(1,159)	
NWFP	(1,148)	
Baluchistan	(397)	

3. Breakdown of GOP Expenditures on Malaria Control Project
(Source: Directorate of Malaria Control)

a. Capital Expenditures (for Procurement of Insecticides and Equipment)

<u>Fiscal Year</u>	<u>Local Currency Costs</u> (in Rs million)	<u>Foreign Exchange Costs</u> (in Rs million)	<u>Total</u> (in Rs m)
1975-76	106.40	104.80	= 211.2
1976-77	54.30	133.80	= 188.1
1977-78	96.30	57.70	= 154.0
1978-79	20.96	39.60	= 60.5
1979-80	25.00	38.00	= 63.0
	Rs 302.90 = \$30.596 million ^{1/}	Rs 373.90 = \$37.768 million ^{1/}	676.8 = \$68.364 million

Of these foreign exchange and local costs, \$23,942,416 in foreign exchange and the equivalent of \$18,763,434 in Mondale rupees, respectively, were reimbursed by A.I.D.

b. Recurrent Expenditures

Approximately Rs 50,000,000 was spent annually on salaries and other recurrent costs by both federal and provincial malaria control agencies.

4. Research Activities

The following studies were carried out by the GOP under the project:

- a. Studies on the chloroquine sensitivity of Plasmodium falciparum in Pakistan.
- b. Study on the efficacy and optimum dosage of ABATE as a larvicide.
- c. Study on the efficacy of DURSBAN as a larvicide.
- d. Evaluation of Pirimiphos Methyl 25% WP (ACTELLIC) as a larvicide.

^{1/} Exchange rate of \$1.00 = Rs.9.90.

IV. STATUS OF COMPLETION OF PROJECT ELEMENTS

A. Insecticides

Most of the malathion and all of the larvicides imported under the project have been expended. A few metric tons of malathion are still available at the provincial and district insecticide stores. Most of the equipment and spare parts procured under the project are still in working condition and are being utilized in the on-going GOP spray operations. The insecticide, Sumithion, purchased under a Japanese grant, is currently being used for spray operations.

B. Vehicles

The vehicles provided by the Japanese Government are in working order and in use.

C. Technical Assistance

A.I.D. technical advisors completed their assignments; at present, there is no expatriate technical advisor in the country for the project.

V. SUMMARY OF ACCOMPLISHMENTS OF THE PROJECT

A. Incidence

Malaria control efforts reduced the incidence to five cases per 10,000 population.

B. Spray Operations

Spray operations were carried out and completed successfully in all years of the project.

C. Surveillance

With the assignment of Malaria Control personnel to health facilities, the number of slides taken was increased and analysis of data gathered was done.

D. Research Activities

Studies on the sensitivity of P. falciparum were carried out in some sectors in the Punjab. Residual spraying trials of Propoxur and Actellic and larvicidal trials with Actellic and Dursban were carried out in the Punjab and Sind.

Insecticide susceptibility activities were also carried out. The equivalent of \$1,575,578 in Mondale rupees was provided by A.I.D. to the Pakistan Malaria Research Center, Lahore for malaria research.

E. Training

In-service and regular training courses were held as planned in the provinces and at the National Malaria Training Center, Lahore. The training center is still being developed.

F. Health Education

Increased efforts in health education through the use of mass media have occurred as a result of the project. Two health education vans, supplied by Japan, are being used for this purpose. Talks have been given on the radio and T.V. about the Malaria Control Program.

G. Urban Malaria

The provincial malaria control program established the urban malaria cells. Federal Government supplied the insecticides, larvicides, transport and spraying equipment to local bodies implementing the urban malaria control activities. The urban malaria program has not yet been effectively developed and needs strengthening.

H. Integration with Health Services

Administrative integration has been carried out in all four provinces but functional integration has been completed only in the province of Punjab.

I. Equipment Maintenance

Vehicle workshops are set up and operating in all four provinces. Each district has trained and recruited a pump repair mechanic.

J. Review

Annual assessments of the program were made in 1976, 1977, 1978 and 1979. The terminal assessment was completed in January 1981.

K. Safety Monitoring

The 1976 episode of intoxication highlighted the need for additional monitoring efforts. In 1977, 1978, 1979 and 1980, spray operations were carried out successfully in regard to the overall safety.

Supervision, protective equipment and cholinesterase testing of spraymen were improved. A.I.D. provided a malaria specialist to monitor the operations in the years 1978, 1979 and 1980.

L. Epidemiological Benchmark

In 1979, total positive slides were 12,304; total p. falciparum 4,907; and slide positivity rate was 0.45.

In 1980, total positive slides were 13,629; total p. falciparum 2,608; slide positivity rate 0.54.

The incidence of malaria was reduced to 5 cases per 10,000 population, i.e., annual parasite incidence rate is less than 500 cases per one million population on a countrywide basis. However, the malaria incidence varies in different areas and different provinces. In some sectors of the Punjab, it may range from 18-20 cases per 10,000 population (1,800 cases per million population). In Sind, it is 1.1 case per 10,000 population (1.1 cases per million).

VI. FURTHER INPUTS TO BE PROVIDED

Although the incidence of malaria has been sharply reduced, the present situation does not reflect the stated additional project purpose (the malaria problem can be prevented by minor public outlay). Further inputs will be required both from the GOP and donor agencies in order to maintain the gains in health improvement achieved by this program. It will be necessary for the GOP to consider malaria control as a long-term health program requiring staff, materials and financial support for many years.

VII. RECOMMENDATIONS ON THE EXTENT AND PERIOD OF FURTHER MONITORING, REPORTING AND FURTHER EVALUATION

A. There should be a continuation of the effort to maintain, or reduce further, the incidence of malaria to a level where

the disease becomes a minor problem in Pakistan's overall health situation. 1/

- B. The urban malaria control program is not yet effectively functioning and needs to be strengthened. 2/
- C. Various methodologies for malaria control, such as biological control, need to be explored.

VIII. STATUS OF PACD

The project assistance completion date was June 30, 1981. All goods and services were delivered by that date. \$57,583.84 which was not utilized by that date was subsequently deobligated reducing total cost of the project to \$23,942,416.16.

The terminal evaluation of the Project in January 1981 indicated that the program had made remarkable gains since 1976 in spite of many difficulties. The impact of the program can be seen in the dramatic reduction of the disease and the slide positivity rate which decreased from 14.9% in 1973 to 0.45% in 1979. The goal of obtaining a case load of 500 per one million population on a national basis was achieved during the life of the Project.

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- 1/ A follow-on A.I.D.-financed five-year Malaria Control II Project is being designed in FY 1982 in response to this need.
 - 2/ The urban malaria control program will be a major element of the new project.