

PD-AAA-497
ISN: 37732

U.S. ASSISTANCE
TO
MALARIA CONTROL IN SRI LANKA
SEPTEMBER 1981 - SEPTEMBER 1982

U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT
COLOMBO, SRI LANKA
OCTOBER 1982

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BASIC PROJECT IDENTIFICATION DATA

1. COUNTRY : Sri Lanka
2. PROJECT TITLE : Malaria Control
3. PROJECT NUMBER : # 383-043 LOAN # 383-U-019, 019A, 019B.
4. PROJECT DATES :
 - a. Loan Agreement Signed : February 28, 1978.
 - b. Loan Amendment Signed : August 30, 1979.
 - c. Project Activity Completion Date : October 31, 1984.
5. PROJECT FUNDING :
 - a. AID Bilateral Funding (loan) : \$ 16.0 million
 - b. Other Major Donors (WHO, UK, Dutch) : \$ 6.5 million
 - c. Host Country Counterpart Funds : \$ 15.2 million

TOTAL \$ 37.7 million
6. MODE OF IMPLEMENTATION:
 - a. Loan Agreements between USAID/Sri Lanka and GSL.
 - b. Program is implemented by the Anti-Malaria Campaign (AMC), Directorate of Health Services.
7. PROJECT DESIGN :
 - a. AID in coordination with the GSL and World Health Organisation (WHO)
8. RESPONSIBLE MISSION OFFICIALS :
 - a. Mission Directors : Tom Arndt 1976-1978
Sarah Jane Littlefield 1978-Present
 - b. Project Managers : L Cowper 1978-June 1982; R Chamberlain 1982-present
9. PREVIOUS EVALUATION AND REVIEWS :

Annual External Reviews are done by the GSL with technical representatives of the WHO, USAID, UK, Netherlands. All reports available in AID/W.

 - a. First Annual External Review : October 20-November 16, 1978.
 - b. Second Annual External Review : February 06-March 01, 1980.
 - c. Third Annual External Review : May 25-June 13, 1981.
 - d. AID Project Evaluation Summary (PES) covering Period of February, 1978-September, 1981 completed September 1981.
 - e. Fourth Annual External Review : May 17-30, 1982.
10. COST OF PRESENT EVALUATION
 - a. Direct Hire : \$ 2500
 - b. Contract :
 - c. Other :

**U.S. ASSISTANCE TO
MALARIA CONTROL IN SRI LANKA
SEPTEMBER 1981 - SEPTEMBER 1982**

**Report of a Program Evaluation conducted by USAID/Sri Lanka
in conjunction with the Annual External Review of the
GSL Anti-Malaria Campaign carried out May 17-30, 1982**

by

- | | | |
|--|---|---|
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**With advice and assistance of Dr R Subramaniam, Superintendent of
the Anti-Malaria Campaign.**

**U.S. Agency for International Development
Colombo, Sri Lanka.
October 1982**

I. EXECUTIVE SUMMARY

Problem and Overview

The Island of Sri Lanka lies within the world's malaria belt and approximately three-fifths of the country is endemic for malaria with variations of endemicity related to the topography and the rainfall pattern. The country had a mid-year population of 14.94 million in 1981, of which 10.66 million (71.4%) live in the malarious area. Historically, Sri Lanka has had numerous major epidemics of malaria. It is reported that abandonment of the ancient cities of Anuradhapura and Polonnaruwa was partially due to a series of severe malaria epidemics. With the advent of an organized malaria control effort in the late 1940's the disease was systematically reduced and by 1963 the disease had almost vanished from Sri Lanka. However, the very success of this effort led to its failure as funds, attention and personnel were severely reduced with the result that by the early 1970's a massive epidemic was again underway. DDT, which had been so effective in past years, was now found ineffective as the malaria vector mosquito, Anopheles culicifacies, had become resistant to that insecticide. The alternative insecticide of choice was determined to be Malathion and a malaria program using this material was drawn up for the period 1977 - 1982. The GSL requested external donor assistance to support this effort as epidemic malaria was hindering development plans and projects and causing sickness and death to thousands of its citizens. The Intensive Anti-Malaria Campaign has been in progress now for five years.

U.S. Assistance

As a result of GSL requests to provide assistance to their malaria control effort, the U.S. along with the Government of the Netherlands, the British Government and the World Health Organization (WHO) agreed to provide financial and technical support. In February, 1978, the U.S. signed a loan agreement for \$ 12.0 million for malaria control. In August of 1979, the loan was increased by \$ 4.0 million to support malaria control operations in the Mahaweli and other settlement areas. Thus a total of \$ 16.0 million was provided by the U.S. to this GSL effort which is presently estimated to cost \$ 38.0 million over the life of the Project (LOP). The U.S. contribution was primarily in support of insecticides, but funds for limited amounts of equipment, training and research were included. Technical assistance was provided through the services of the Asia Bureau's Regional Malaria Advisor stationed in Sri Lanka until June 1982 and through short-term consultants who participated in each of the yearly multi-donor project evaluations.

The project is aimed at assisting the GSL in reducing the incidence of disease to a level where this disease is no longer a public health problem in Sri Lanka's health environment. In addition, the project aimed specifically at drastically reducing the percentage of P. falciparum with the target of its eventual elimination.

Purpose of the present evaluation

The present evaluation is one of a series of evaluations which have occurred over the life of the project. This AID evaluation had the following specific terms of reference :

1. To fulfill USAID responsibilities to evaluate project progress on a periodic basis with specific focus on the effectiveness of U.S. assistance to GSL's malaria control effort during the September 30, 1981 - September 30, 1982 period.
2. To provide an over-view of the present status of the Anti-Malaria Campaign (AMC) as presented by the report of the Fourth External Review Team which was prepared from May 17 - May 30, 1982.

This evaluation is interlinked with the May 17 - May 30, 1982 External Review which was carried out by the GSL with participation from representatives of WHO, USAID and the British Government. A copy of the External Review Team (ERT) Report will be presented as Chapter III of this evaluation as the ERT report presents in detail the technical, operational and administrative status of Anti-Malaria Campaign as evaluated by a team of malaria consultants, financial experts and planning specialists.

This evaluation was arranged at this time to provide USAID with an updated data base on the project as it reaches its final year and to determine if future U.S. assistance will be required in the field of malaria control in Sri Lanka.

AID accomplishments

AID has been the principal donor of insecticide for Sri Lanka since 1978 and without this assistance the Sri Lankan Government would not have been able to contain the epidemic of malaria and to institute measures for long term control and integration into the general health services. AID has taken the lead in establishing and maintaining a multi-donor assistance effort to combat malaria. Without AID leadership in this co-ordination effort, it is doubtful that either the British or the Netherlands Government would have provided such major financial inputs. Through the evaluation process promoted by AID, a number of technical as well as managerial improvements have been included in the working program. The training support provided for four senior AMC medical officers has resulted in new understandings of what can be done in the use of alternative control methodology. The AID is also providing funding for the construction of an insectary for the national program. This insectary has recently been constructed and is in the process of being established as a part of the program. One of the major accomplishments of AID assistance has been the emphasis on health safeguards for the spray operations. In the FY 1978 - 1982 period using the health practices and safeguards recommended by AID in the spray operations, there has not been a single serious case of insecticide intoxication in spite of using well over 14 million pounds of Malathion in the operation - a remarkable record.

Effectiveness of the Program

AID has been an effective supporter of the Sri Lanka malaria control program in helping it to meet its goals since 1978. While the program has not met as yet the target set for 0.5 case per thousand population (API 0.5) (Page 28, 1977 - 1981 Plan of Operation), in many of its areas there has been great improvement over the API level of 18.7 which existed in 1977 to the 1981 level of 3.2 API. In addition, the dramatic reduction of P. falciparum from 10,431 cases in 1977 to 1,211 cases in 1981 is a benchmark of success as the reduction of this species of malaria is an indication of the interruption of malaria transmission. The overall reduction of malaria from an estimated 1.0 million cases at the beginning of the Intensive Malaria Program to the 47,383 cases in 1981 is considered an outstanding accomplishment. AID is credited by the GSL as having assisted them in an emergency situation and in providing the tools as well as technical assistance to carry out plans for island-wide malaria control. It is possible that the project accomplishments could have been greater if a full time malaria advisor had been positioned in Sri Lanka as planned in the draft Project Paper and Project Paper Amendment. Because of only the part time availability of the Regional Malaria Advisor, some decisions were delayed or taken which might have been different had a full time advisor been available, such as, delays in reaching a decision of program stratification and the preparation of the 1982 - 1986 Plan of Operation.

Fortunately, to date no chloroquin drug resistance or insecticide resistance to malathion has been detected which would seriously impede the progress of the program. The program over the last year has increased its epidemiological capabilities through an increase of almost 300 surveillance agents. With this new addition of personnel and the increased data, the program can now move on a more cost effective basis as the foci of the disease can be now identified quickly and proper field actions taken by the AMC. There has also been a major improvement in warehousing as the new central store has been completed and is adequate to hold 4.0 million pounds of insecticide.

The effectiveness of the AMC spray program over the project period has had its costs as total coverage of the malarious areas has been continued longer than planned in the 1977 - 1981 Plan of Operation. This Plan foresaw a major reduction in spray coverage by 1981 but this reduction was not made in many areas due to the lag in developing the epidemiological surveillance system and in the response of the parasite to spray applications. As a result, there has been a heavier than expected draw-down on funds for insecticide procurement which may result in a shortfall of insecticide for the 1983 program unless the GSL can identify and obtain additional resources. It appears that commodity credits may be available to the GSL for malaria control from other donors for the 1983 period, but final negotiations have not been completed.

Major Recommendations for Consideration

1. To continue implementation of the existing program to bring it to a successful conclusion by the following actions :
 - a) Ensure that procurement preparations for U.S. source insecticides required for the 1983 AMC operation are scheduled and implemented,

If U.S. loan funded insecticides are to reach Sri Lanka by July 1983, bids must be finalized by mid January, 1983. This timetable requires that an IFB be presented to the commercial market by December 1, 1982. It requires approximately three weeks in Washington to prepare necessary documentation and present the IFB. This procurement is the fifth (and last) procurement action under the present loan and will amount to approximately \$ 1.7 million.

- b) Providing close co-ordination between AID and the AMC should be maintained in relationship to the additional donor support required for insecticides in the 1983 period.
 - c) Requesting upto three weeks TDY for a malaria consultant to carry out field monitoring of the AMC operations in the application of U.S. source insecticides some time during the January - March 1983 period to ensure health safeguards are in place.
2. In view of the GSL request for further USAID assistance to malaria control in the 1982 - 1986 period which was presented at the July 7, 1982 donor meeting, the USAID should :
- 1) make a firm decision to support malaria control in the 1984 - 1985 period and
 - 2) prepare a Project Identification Document (PID) for malaria control. If approved, the Project Paper Team should be organized for early in the Fourth Quarter of 1983.

BASIC PROGRAM IDENTIFICATION DATA

1. Country : Sri Lanka
2. Project title : MALARIA CONTROL
3. Project number : # 383 - 043 Loan number : 383-U-019
4. Project implementation
 - a. Loan Agreement signed : February 28, 1978.
 - b. Loan Amendment signed : August 30, 1979.
 - c. Project Activity Completion Date (PACD) : October 31, 1984.
5. U.S. contribution to Project funding
 - a. AID Bilateral Funding (LOP) \$ 16.0
 - b. Other major donors :
 - i. World Health Organization 0.5
 - ii. Government of the Netherlands 4.0
 - iii. United Kingdom 2.0
6. Mode of implementation
 - a. Loan Agreements between USAID/Sri Lanka and GSL External Resources Division.
 - b. Program is implemented by the Anti-Malaria Campaign (AMC) which is an activity under the Directorate of Health.
7. Responsible Mission Officials
 - a. Mission Directors : Tom Arndt 1976 - 1978
Sarah Jane Littlefield 1978 - present
 - b. Responsible Project Officers : Larry Cowper February 1978 - May 1982
Bob Chamberlain June 1982 - present
8. Previous evaluations and reviews
 - a. First Annual Evaluation : October 20 - November 16, 1978.
 - b. Second Annual Evaluation : February 6 - March 1, 1980.
 - c. Third Annual Evaluation : May 25 - June 13, 1981.
 - d. Project Evaluation Summary covering period February 1978 - September 1981 : September 1981
 - e. Fourth Annual Evaluation : May 17 - 30, 1982.
9. Host Country exchange rates
 - a. Name of currency : Rupee
 - b. Exchange rate at time of the project: Rs. 14.00 = U.S. \$ 1.00

PART II

CONCLUSIONS AND RECOMMENDATIONS

This evaluation covers the period from September 30, 1981 to September 30, 1982. The major findings and conclusions of this evaluation are summarized together with one or more major recommendations which are derived from an in-depth joint GSL/WHO/AID/U.K. malaria assessment held during the period 17 May to 30 May 1982 and an independent AID Mission review carried out in October 1982.

MAJOR CONCLUSIONS AND RECOMMENDATIONS

1. Impact of the Sri Lanka Malaria Program

During the five year intensive malaria control program implemented from 1977 - 1982, the Anti-Malaria Campaign (AMC) effectively halted the wide-spread malaria epidemic raging throughout much of Sri Lanka and contained the disease to manageable levels. It was estimated that over one million cases of malaria were occurring at the initiation of the Intensive Malaria Control Program in 1977. In 1981, the yearly case load was reported as 47,383 with 1,211 cases of P. falciparum, the species of malaria which is most virulent and is life threatening. In 1977, P. falciparum accounted for 10,431 cases of malaria. There have also been major reductions in the Annual Parasite Incidence (API) in the various health areas of the country. In 1977, 5.5 million people lived in areas of 10 API (Annual Parasite Incidence) or higher. In 1981, only 1.4 million people lived in hard-core malaria areas. The API country-wide has dropped from 18.7 in 1977 to 3.2 API in 1981. This drop in incidence has resulted in the orderly development of new settlements in both the Mahaweli and other areas, the reduction of curative services for malaria treatment within health institutions for the disease, increased human productivity in chena, gem mining and other areas affected by the disease and resultant economic benefits.

2. Political commitment of the Sri Lanka Government (GSL)

The GSL commitment to the malaria control effort can be quantified in an economic sense as well as in a political sense. In 1981, the AMC budget represented 10.6% of the total health budget compared to 9.6% in 1980. The AMC 1981 budget of Rs.105,543,300 represented an increase of 7.7% over 1980 budget levels. In view of the large scale across-the board cuts in funding GSL activities in 1981, this increase is even more noteworthy. In the field of personnel requirement needs, the GSL authorized a staff increase from 3734 to 4122 in 1981. These new staff are now on-board and functioning. A review of the GSL budget commitments to the AMC in the 1977-1981 period can be found in the External Review Report in Annex 1.

The Ministry of Health has consistently stressed by both work and deed that malaria control is a priority program due to its economic and social importance in the development of the country.

Recommendation

The U.S. Agency for International Development (AID) at all levels should continue to support this GSL program until effective malaria control is obtained and is at a level which can be maintained by the GSL. A serious reduction in assistance at this point in time would probably result in another rise in malaria. AID assistance should include technical services, support to research and training, and commodities, aimed at promoting and implementing alternative malaria control techniques where applicable, integration of malaria control into the general health services, supporting limited operational research and reducing the present level of the disease even further.

3. Recent developments in the effectiveness of the GSL Malaria Control Effort

The effectiveness of the GSL malaria control effort has greatly increased over the past year in a number of areas. The epidemiological services which carry out screening for malaria mainly in Health Institutions has developed rapidly. In 1977/78 only 36 Indicator Institutions were operating in Sri Lanka. By 1981, a total of 474 health institutions were manned by AMC personnel.

Approximately, 70% of this increase of epidemiological services came into existence in 1981/82. The spraying operation has not developed as well over the project period and in 1982 only 60% of the houses in the operation area were being totally sprayed during spray cycles. There are increasing refusals to the spray operation due to :

1. malaria seems no longer a major threat to the public and
- ii. there has been repeated spraying of houses over the years and people are weary of the bother of having the house sprayed.

The AMC has been very effective in organizing community efforts for malaria control. There are now an estimated 3,000 volunteer treatment centers in Sri Lanka, mainly operated by village volunteers.

The effectiveness of the program has been greatly assisted by the fact that chloroquine remains an effective drug and there has been no malathion resistance detected in the vector mosquito.

The effectiveness of the program in reducing malaria to its present level has been possible only with the pressure exerted by the intensive spray operation over the last four years. However, this spray operation did not reduce malaria as rapidly as foreseen in the 1977-1981 Plan of Operation and, as a result, widespread insecticide coverage had to be maintained during this period. The 1977-81 Plan of Operation projected a reduced spraying pattern by 1980 but this reduction was not possible due to the lack of reliable epidemiological data. The result of continuing the insecticide pressure has been to use additional quantities of insecticide in 1980-82 period. Thus, a shortfall in availability of insecticide for 1983 will occur unless additional amounts of insecticide are procured. The AMC, at present, has sufficient insecticide to cover the January-April 1983 period. There is \$ 1.7 million left in the AID loan. The GSL is now making arrangements to obtain \$ 1.3 million from other donor sources. If this \$ 1.3 million can be obtained, then the shortfall will be minor. If these funds cannot be obtained, then there will be gaps in the spray program for 1983.

Recommendation

1. The effectiveness of the epidemiological services is of utmost importance if a cost-effective and efficient malaria control program is to be carried out. The AMC should increase its efforts in obtaining accurate, timely data in order to rapidly modify its spray operation. This improvement will come from better supervision, refresher training, a responsive logistic system. The spray operation is satisfactorily organized but requires more health education inputs to increase house coverage. The continuation of the volunteer program is encouraged. More focus to this aspect should be given from Regional Staff in areas where the program is not active as it could be.
2. The USAID should maintain close co-ordination with the AMC in the matter of additional donor funding for 1983 and encourage the GSL to seek out necessary support for the program.

4. Effectiveness of AID support

The support of AID of the GSL malaria control activities has been timely, effective and adequate during the report period as well as from the initiation of the project. Technical assistance from AID has been consistent with the plans laid out on the approved Project Paper and influential in both the managerial and technical needs of the program. Commodity procurement has been completed as scheduled. At no time did the program lack materials which were specifically required from AID. The mechanism created by the AID Technical Advisor and the AMC Superintendent for the yearly insecticide procurement is a model of joint agency co-ordination. Over the project period there have been four major procurement actions which have all worked smoothly.

Although AID does not provide direct technical assistance on a day by day basis to AMC, many of the suggestions provided by AID have resulted in program improvements. For example, the stratification of the program was strongly urged by AID and is now the basis of the 1982 - 1986 Plan of Operation. In addition, the construction of the new warehousing system was proposed by AID and accepted by the GSL. This system is now becoming a reality.

AID's inputs have assisted the GSL to overcome its major malaria problem and move towards a workable policy of malaria control.

Recommendation

AID along with other donors should continue to provide support to the AMC as it enters its more critical period of developing its malaria control activity. There are many operational and technical unknowns to be faced in the years just ahead in developing a viable institution which is responsive and effective in meeting the malaria challenge. Assistance in the training of personnel or specialized technical assistance in epidemiology, report systems or logistics should be available to the GSL/AMC, if required, from USAID sources.

5. Other donor assistance activity

The technical advisory services of the World Health Organisation (WHO) has been provided as agreed and has been useful in the program. WHO has provided three full time advisors to the AMC as well as a number of specialized short-term consultants. WHO provides a number of training fellowship and has been active in supporting limited research.

The Government of the Netherlands (GOTN) provided the bulk of the first year's requirements of insecticide to the AMC and can be credited with a prompt response to an urgent need. Some GOTN funds have also been used to construct warehouse facilities. Representatives of the Government of the Netherlands participated in the annual evaluation and are present at the final presentations to the MOH.

The British Government provided the bulk of the new AMC vehicles which have been granted to the AMC over the life of the project. Some 130 landrovers are now a part of the AMC fleet from the British grant. The British Government also provided a senior vehicle specialist for over a year to the AMC to improve vehicle maintenance control. However, the British have not provided the amount originally planned for in the project paper of \$ 4.0 million. Approximately \$ 2.0 million has been provided by the UK to the AMC effort upto the present time.

The AMC has made attempts at other donor support in addition to those mentioned. The Government of Japan has been approached and has agreed in principle to furnish upto ten vehicles each year over the next Plan of Operation period (1982 - 1986).

6. USAID - Proposed Project for FY 84 - 86

The continuation of U.S. support to malaria control in Sri Lanka either through a single project related to malaria control or including malaria control in an integrated preventive health service project is supported by the results of the evaluation. This support recommendation is also in accord with the recent GAO report on malaria which urges AID to re-examine its policy on malaria and points out that AID needs to maintain its flexibility to meet humanitarian needs on a case by case basis. Such a project would also be in accord in the AID Policy and Mission CDSS Statements on the importance of preventive health services.

It is important that other donor support be identified by the GSL. It appears that the GSL has been able to identify a possible additional source for insecticide in FY 1983 through the use of Finnish commodity credits. It also appears that if the Mahaveli Project is to receive large scale malaria control services, that part of those costs should be shared under that Ministry.

Recommendation

The provision of continuing U.S. support should be contingent on :

- a. continued GSL program priority for malaria control as expressed through adequate levels of funding and personnel,

- b. approval of the newly prepared 5-year Plan of Operation by both the GSL and the WHO, Note : this Plan of Operation was signed on September 1, 1982, by the GSL and the WHO.
- c. increased attention to operational research to search out innovative and cost effective methods to carry out malaria control,
- d. improvement of refresher, in-service, basic and inter-agency training to improve staff efficiency,
- e. better co-ordination between the MOH and other agencies in considering malaria control in development activities, such as, roads, irrigation systems and settlements. Special efforts should be made in co-ordinating the settlement proposals of the Mahaweli Authority with the AMC, so that advance preparation can be made to provide adequate malaria control services.
- f. Active GSL promotion in developing additional donor support, such has been the case with the Government of Japan.

OTHER CONCLUSIONS AND RECOMMENDATIONS PRESENTED BY THE

FOURTH ANNUAL EXTERNAL REVIEW AND SUPPORTED BY THIS EVALUATION

7. Epidemiological Surveillance

a. Indication Institutions

In order to reduce the work load on laboratories, there should be developed representative areas for a particular epidemiological situation which would be then studied as to program effectiveness rather than attempting to do the entire country.

Recommendation

1. To select representative areas such as areas of P. vivax, P. falciparum, gemming areas, chena areas, project areas, dry and intermediate zone areas for study.
2. To develop new forms to facilitate study and analysis of data, from such areas so as to develop an early warning system.

b. Radical treatment of fever cases

During the evaluation it was learned that many fever cases attending health institutions were not given anti-malaria drugs at the time a blood film is collected. It is essential that early treatment of cases be carried out in order to limit transmission and reduce focal outbreaks.

Recommendation

All fever cases reporting to institutions should be provided adequate drug treatment and that all clinically diagnosed malaria cases be given 5 day treatment.

8. Program Planning

The new approaches to malaria control require much more training and attention to the epidemiological dynamics of malaria.

Recommendation

- a. The AMC should include 2 days of epidemiological training and review at its annual conferences with the Regional Officers.
- b. The Regional Malaria Officer (RMO) in the AMC should be delegated more responsibility and authority in dealing with focal outbreaks or pending outbreaks of malaria.
- c. The use of more integrated control measures is urged such as biological control, source reduction and water management.

9. Field Applied Research

There are numerous areas for research which will improve and/or are useful in monitoring the AMC program.

Recommendation

- a. A study on the single dose treatment of P. vivax be a part of the operational research.
- b. Continual monitoring of P. falciparum for susceptibility to chloroquin and other anti-malaria drugs should be done.

10. Management aspects

The operation of a nation-wide malaria control effort demands responsive and effective management. In many malaria programs as well as in other activities the progress of the program depends on sound management systems. The evaluation found that the AMC had a good system developed in many cases, but it was not always functioning at full efficiency.

Recommendation

- a. The Regional Malaria Officer (RMO) vacancies need to be filled as quickly as possible to provide field leadership.
- b. To assist in the analysis of spray operation a new method of field reporting is recommended which will include additional information on sprayed surfaces.
- c. To accelerate the filling of supply requisitions and to notify field areas if such orders cannot be filled.
- d. To improve the insecticide storage facilities especially at the sub-regional level by either constructing new facilities or renting adequate buildings.
- e. To improve the office and work areas in some regions as many of the offices are small and poorly lighted.

- f. Intensive training of supply and procurement personnel is required on a continuing basis if these key personnel are to provide the necessary support services.
- g. The present safety measures be strictly adhered to in field operations and provision and use of protective equipment be enforced by supervisors. Adequate monitoring of the field operations should be done from Regional as well as National levels.

11. Integration with the General Health Services

While integration of the AMC into the general health services is not an objective of this project, there has been discussion and planning to have the general health services take on more responsibility in malaria control. The process was impeded by attempts in the late 1960's to integrate the malaria efforts into the general health services. These earlier attempts at integration were evaluated to be counter-productive as malaria made such a rapid rise during the integrated period that the Ministry of Health re-organized this effort again into a vertical structure to bring the disease back to manageable levels. There are several actions already taken to ensure a more integrated approach to malaria control. For example, most of the surveillance workers are stationed in general health service institutions. A number of AMC Regional and Sub-Regional Offices are located with health service facilities. A large amount of training on malaria is provided to GHS staff by the AMC to increase co-ordination.

Recommendation

The Ministry of Health (MOH) should take the lead in seeing that the Primary Health Care (PHC) system does include malaria control in all concerned areas. However, large scale vector control should still be the responsibility of the AMC. The process of PHC assuming responsibility of surveillance and treatment from the AMC should be determined following dialogues between the Directorate and the AMC. The USAID should encourage the general health service to ensure a cost effective and efficient operation. USAID may wish to offer technical assistance for the review of the present organizational effort to determine if a better system can be developed for malaria control, especially in those areas of low malaria incidence.