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EXTERNAL EVALUATION  
of  
COMBATING OF CHILDHOOD  
COMMUNICABLE DISEASES  
(CCCD)  
in  
SWAZILAND  
by  
WESTINGHOUSE - INSTITUTE FOR RESOURCE DEVELOPMENT  
SEPTEMBER 1986

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## Acronyms

BCG	-	Bacillus Calmet Guerin
CCCD	-	Combatting Childhood Communicable Diseases
CDD	-	Control of Diarrheal Disease
CE	-	Continuing Education
CMS	-	Central Medical Stores
CPR	-	Contraceptive Prevalence Rate
CSO	-	Central Statistics Office
CTA	-	Central Transport Authority
CVS	-	Central Vaccine Store
DMS	-	Director of Medical Services
DMOH	-	District Medical Officer of Health
DPT	-	Diphtheria, Pertussis, Tetanus Vaccine
DT	-	Diphtheria-Tetanus Toxoid
EPD	-	Economic Planning Department
EPI	-	Expanded Programme of Immunizations
FLAS	-	Family Life Association of Swaziland
FP	-	Family Planning
GDP	-	Gross Domestic Product
GNP	-	Gross National Product
GOS	-	Government of Swaziland
HA	-	Health Administrator
HC	-	Health Clinic of Health Center
HE	-	Health Education
HEU	-	Health Education Unit
HIS	-	Health Information System
HPSU	-	Health Planning and Statistics Unit
HSU	-	Health Statistics Unit
IEC	-	Information, Education and Communications
IMR	-	Infant Mortality Rate
MCH	-	Maternal and Child Health
MCH/FP	-	Maternal and Child Health/Family Planning
MCU	-	Malaria Control Unit

## Acronyms

MMPH	-	Mass Media Health Practices Project
MO	-	Medical Officer
MOF	-	Ministry of Finance
MOH	-	Ministry of Health
ODA	-	Overseas Development Administration
ORT	-	Oral Rehydration Therapy
ORS	-	Oral Rehydration Salts
PEM	-	Protein-Energy Malnutrition
PHR	-	Primary Health Care
PHU	-	Primary Health Unit
PRO-AG	-	Project Agreement (Grant Agreement between GOS and USAID)
RHM	-	Rural Health Motivators
RHMT	-	Regional Health Management Team
RFM	-	Raleigh Fitkin Memorial Hospital
RSA	-	Republic of South Africa
SCF	-	Save the Children Fund
SNL	-	Swazi Nation Land
SSS	-	Sugar Salt Solution
TA	-	Technical Assistance
TB	-	Tuberculosis
TFR	-	Total Fertility Rate
TO	-	Technical Officer
TT	-	Tetanus Toxoid
UNDP	-	United Nations' Development Programme
UNFPA	-	United Nations' Fund for Population Activities
UNICEF	-	United Nations' Children Fund
USAID	-	United States Agency for International Development
WHO	-	World Health Organization

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## 1.0 Evaluation Team

The team members on the External Evaluation team were:

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Mr. Peter Matthews, Technical Assistant of the CCCD Project Personnel, served as facilitator and accompanied the team on all of its visits in the field, and made a valuable contribution to the team's comprehension of the CCCD project in Swaziland.

## 2.0 Executive Summary

The CCCD External Evaluation team carried out its evaluation in Swaziland from July 19 to August 8, 1986. During this period, the team had the opportunity to meet with MOH officials, Regional staff and Regional Health Management Team (RHMT) members, Health Center (HC), Clinic personnel, and Rural Health Motivators (RHMs). Its mandate was to:

- Evaluate CCCD activities in Swaziland through the systematic collection and analysis of data on CCCD management and operation at the central, regional and peripheral level;
- To measure the extent to which CCCD activities have been integrated into the existing Primary Health Care (PHC) structure;
- To offer a series of recommendations to improve the expansion and delivery of CCCD services, (including training, health education and health information system development; and
- To accelerate their integration into the present PHC delivery structure given ever present resource constraints.

(Annex I contains the full Scope of Work for the Team.)

The following pages summarize the principal points and recommendations contained in the evaluation report.

## Introduction

The team found that the CCCD program in Swaziland has many strong points, and has moved well since the signing of the Project Grant Agreement on June 28, 1984. The first year was largely organizational -- preparing the work plans, ordering vehicles, equipment and supplies, doing KAP studies, working out training programs, etc. Essentially the operational phase started in June of 1985. Using this timeframe, the progress under the CCCD project has been significant, although much needs to be done to achieve the goals set forth in the project.

### 2.1 Planning, Administration and Management

Five year plans for the core programs of EPI, CDD and Malaria are now being drafted. Once they are completed and approved by the GOS, the annual CCCD plan for 1986 will be prepared. Individual program elements (Expanded Program of Immunization (EPI), Control of Diarrheal Disease, (CDD), and Malaria) have their own internal plans of operations for 1986.

### Recommendations:

- That MOI give high priority to finishing the five year plans which will provide a framework for development of annual workplans, facilitate future budget exercises, and substantiate requests for donor financing, etc.
- That EPI, CDD and Malaria program activities be implemented simultaneously and support services in the Health Education Unit (HEU), Training, and Health Information System (HIS) be mobilized to provide continuing support for all three core programs as appropriate to their respective stages of development.

Fixed medical facilities are operated directly by government, and by religious missions, industrial and private groups distributed among the four regions (Manzini, Hho Hho, Shiselweni, and Lubombo) with 7 general hospitals, 8 health centers, 132 clinics, and 113 outreach sites. The government has recently adopted some very positive organizational measures decentralizing the Swaziland Primary Health Care System which affects directly the CCCD project as a major component of the PHC System.

Regional Health Management Teams (RHMTs) have been set up in all four regions. RHMTs are under the chairmanship of the Regional Health Administrator and membership includes representation from the major health facilities in the region and principal Regional health authorities. Although the RHMTs are having substantial teething problems, especially in defining the role of the Health Administrator vis-a-vis Medical officers, doctors, nurse matrons, nurses, etc., the RHMTs provide an excellent forum for reviewing regional problems and working out solutions with those directly concerned.

The distribution of vaccines has also been decentralized. The Central Vaccines Store in Manzini distributes vaccines to 9 regional depots located in hospitals and health centers on a monthly basis which in turn fill requests from the clinics for their vaccines. Although only operational since July 1, 1986, the decentralization of vaccine distribution is working well.

On the other hand, the team found that supplies ordered from the Central Medical Stores in Mbabane worked less well and distribution was spotty. The result has been that some clinics have been out of drugs from time to time. This has an adverse effect on the curative services provided the population which in turn impacts negatively on the preventive care opportunities.

Recommendations:

- The Minister of Health or his representative should reiterate to the national heads of the major CCD and PHC programs as well as the members of the RHMTs the government's policy and commitment to the decentralization plan, and delineate the respective functions of the central government administrators vis a vis the RHMTs, and the respective duties and responsibilities of the principal members within the RHMTs -- i.e., Health Administrators, Medical Officers (MOs), and Nurse Matrons.
- Steps should be taken as soon as possible to remedy the current shortages and delays in filling orders by the Central Medical Stores. Additional training at all levels should be provided so that, workers, clerks, storekeepers, and managers all have the specialized knowledge required to successfully run a central medical stores operation. (Project Hope and/or the Primary Health Care project can provide valuable resources to assist the MOH in solving this urgent problem.)
- Given the importance of an early successful installation and operation of the GOS' decentralization of Primary Health Care (PHC) to achieving the goals of the CCD program, the GOS and USAID should make support of the decentralization effort a major priority of the GOS/USAID Primary Health Care Project.

Staffing shortages were mentioned at all levels (national/regional/clinic) as a serious constraint. The team observed that at the MOH a number of key senior executive positions affecting PHC/CCD were vacant, which had the effect of slowing down key policy/program/and operational activities of the MOH. In addition, those managers responsible for the core CCD programs -- EPI, CDD, and Malaria -- appeared intensely busy with the operational side of their respective programs with little time left over for planning, monitoring, supervision and evaluation of these programs. Key secretarial support for the Ministry had not been provided and hampered the smooth operation of CCD and PHC activities.

## Recommendations:

- That the MOH fill the senior executive management posts now vacant at the national level with a view to providing more administrative, management time for planning, monitoring, supervising and following up on CCCD/MCH/FP activities.
- That the MOH explore the possibility of filling the vacant posts at HC and Clinic level with a view to increasing the efficiency of the HC/Clinics, increasing outreach, and improving the coverage of EPI, CDD and Malaria, training of Rural Health Motivators (RHMs), etc. (Should the planned staffing for Health Centers and Clinics not be reflected by established posts, steps should be taken by the GOS to remedy this deficiency.)
- That the MOH create posts of deputy for the EPI, CDD, and Malaria programs to alleviate the current work load and provide more time for planning, monitoring, supervising, and evaluating the work.
- That the secretarial support planned for the MOH be provided to overcome this bottleneck to effective operation.

## 2.2 Donor Coordination

CCCD donor coordination is assured informally through individual contacts by interested parties participating in CCCD activities. A work group, or task force on CCCD matters was set up last year composed of donors (principally UNICEF, WHO, Save the Children and USAID), and the MOH staff responsible for CCCD programs and support services. It meets roughly on a quarterly basis, but it has not met within the last six months. Donor cooperation is good, and donors (USAID/CCCD, UNICEF, WHO and Save the Children) are cooperating together to jointly finance specific CCCD subactivities. In addition, the MOH has set up a GOS/Donor committee for Primary Health Care (PHC). Communications between the CCCD and PHC coordinating groups should not be a problem since they are both under the chairmanship of the MOH, and composed of largely the same donors.

## Recommendation:

- The Technical Officer (TO) should consider with the Public Health Unit (PHU) the possibility of reconvening the CCCD work group or task force on a quarterly basis.

## 2.3 Health Information System (HIS)

The Health Information System (HIS), managed at the central level by the Statistical Unit/MOH in Mbabane, is characterized by an impressively high rate of reporting from the health facilities in the country. In 1985, 88% of the units were regularly reporting to the

Statistical Unit/MOH on a monthly basis. One deficiency noted was the failure of the Mbabane Hospital to report through the HIS, representing a loss of information from one of the leading referral centers in the country.

Clinics, Health Centers, and hospitals at the local level are using tally sheets which not only facilitate reporting by allowing personnel to maintain ongoing cumulative counts, but also reduce the possibility of errors when totalling activities at the end of the month.

In addition to monthly report forms, a communicable disease reporting form requests information on selected diseases. Information is collected on the age, geographic residence and date of onset of illness. Data from this system are presently not being analyzed by the central level Statistical Unit/MOH.

Information related to malaria control program activities is reported directly to the Malaria Control Unit in Manzini. The Manzini laboratory sends reports on the number of positive malaria slides identified on a monthly basis to the Statistical Unit/MOH.

Production of reports from the Statistical Unit has been markedly delayed. The most recent national statistical annual report was published in 1982, and the 1985 morbidity statistics have not been officially released. Feedback to the health facilities consists of computer printouts of data they have submitted, and are received several months after submission. There is no country epidemiological bulletin providing morbidity and mortality trend analyses. Some of the problems identified may relate to the absence of a country medical epidemiologist to provide guidance on the types of data necessary.

#### Recommendations:

- Create the position for a medical epidemiologist to provide guidance in the improvements necessary in the HIS. If this is not possible, CCCD should provide TA of a medical epidemiologist to assist in the development of epidemiological analyses. Given the time required to create and staff a new position, the CCCD project should provide a medical epidemiologist to assist the MOH as soon as feasible.
- Develop and publish on a timely basis an epidemiological bulletin for distribution to all health facilities in the country. This bulletin should contain data analyses as well as textual interpretations on the morbidity and mortality patterns in the country.
- Fill the vacancy for a second key punch operator in the computer division of the central level statistical unit/MOH.

## 2.4 Expanded Programme of Immunizations

The Expanded Programme of Immunizations (EPI) is located in the Public Health Unit of the MOH in Mbabane. The Central level is composed of the EPI program coordinator, the Central Vaccine Store director and operations officer (located in Manzini) and two central level cold chain technicians.

A five year EPI Implementation Plan is in preparation at the time of writing of this report. This will be the first five year plan for the program. One of the constraints recognized in previous evaluations was the absence of mid-term and long term planning and a reliance upon six month to one year plans.

The primary strategy for the provision of immunization services to the population of Swaziland is through the use of fixed facilities as permanent providers of services. Plans are for all fixed facilities in the country to be equipped to provide immunization services all hours of operation of the facilities. In order to increase coverages, national norms have been established for health care personnel providing curative services, to screen all children for immunization histories, and administer missing vaccines if indicated prior to the child's release from the health facility. This norm has not been fully implemented as yet. Vaccine vials are to be opened, even when a single dose is needed. This practice has been implemented and has been associated with a marked increase in vaccine wastage due to the norm to discard all vaccines from open vials at the end of each day.

In an attempt to increase coverages, campaigns have been conducted in each of the regions during the preceding year, accompanied by a concerted effort to use the mass media to increase the demand for services.

The present immunization schedule requires five contacts between the health sector and the population in order to fully immunize a child. Given the dispersed nature of the population and the difficulties in transportation (in spite of an excellent road network) this is felt to contribute to the low coverages with measles vaccine, the fifth contact.

The development of the cold chain in Swaziland is impressive. The central vaccine store is equipped with three refrigerators and three freezers, and is connected to an automatic generator with an alarm system in the event of a power failure. At the regional level, there are nine designated regional vaccine depots with responsibility for distribution of vaccines to the clinics in their area of influence. They have all been equipped with ice-lined refrigerators. At the local level, the cold chain is well maintained, with regular temperature monitoring. At present, there is a redesign with updating of equipment planned.

Vaccine ordering is based on the previous month's utilization of vaccines. There is concern that the use of this ordering method does not permit the flexibility for increased demand.

An excellent manual for health care providers containing the national norms for the EPI activities exists. In February 1985, a mid level management course was held on EPI for 25-30 staff nurses with the support of CCCD. Retraining of RHMs in EPI strategies is ongoing.

At present, the only personnel authorized by the MOH to administer vaccines are physicians and staff nurses. The RHMs participate in the health education sessions preceding immunization clinics, but are not actively involved in the follow-up of non-compliant children in their areas of influence.

Vaccination coverages have improved during the five year period 1981-1985. In 1985, 89.7% of children received BCG, 57.0% received a third dose of DPT, 57.8% of children received a third dose of polio vaccine and 42.3% of children received measles vaccine prior to their first birthday. Overall, 38.5% of children were fully immunized before their first birthday. Coverages of pregnant women with TT continue to be low (less than 50%).

Epidemiological data on morbidity and mortality due to the EPI target diseases is limited, but the data available show continued transmission of measles, pertussis and polio. In addition, 11% of hospitalizations for tuberculosis are in the 0-5 year old age group.

#### Recommendations:

- Appoint a deputy coordinator to the EPI unit to assist with the management and supervision of program activities.
- The evaluation team cannot recommend strongly enough the need to develop an epidemic response capability that would permit the early detection and investigation of increased occurrence of vaccine preventable diseases and in turn permit the early implementation of control measures through increased immunization activities in areas identified as a risk.
- In hard to reach areas, consideration should be given to reducing the number of contacts operationally necessary to fully immunize a child before the age of one year, to three contacts. However, children who do attend health centers should be immunized at monthly intervals per the WHO recommended vaccination schedule.
- Consideration should be given to conduct well planned National Immunization Days in order to boost coverages through the establishment of numerous temporary immunization posts in areas presently not covered by immunization services.

- Ensure the reduction in "missed opportunities" for immunization through the screening and immunization of all children who present to the health sector for curative services.
- Change national norms with respect to discarding of unused doses in open vials at the end of the day in order to reduce vaccine wastage. The comparative cost of single dose vials of measles vaccine should be studied in light of the present high wastage of measles vaccine.
- Ensure that a sterile needle and a sterile syringe be used for each child vaccinated.
- The EPI Unit should change the vaccine ordering procedures to be based on the target population to be covered rather than on the previous month's vaccine utilization.
- Strategies for increasing coverages with TT among women in the fertile age group should be reviewed.
- There is the need to reinstitute an EPI target disease surveillance system to carefully monitor the immunization history of reported cases.

## 2.5 Control of Diarrheal Diseases

CDD activities including the promotion of oral rehydration therapy (ORT), safe water and pit latrines have been supported as early as 1976 in Swaziland. Preparations for the development of the National Control of Diarrheal Disease (CDD) program (located in the Central Office of the Public Health Unit in Mbabane) were begun in 1982 and 1983.

CCCD provided major financial support in 1984 for the Mass Media Health Practices (MMHP) project. The emphasis of MMHP was not only the application of social marketing strategies through the use of mass media to teach the appropriate use and mixture of sugar and salt home solutions (SSS), but also the development of educational materials for population and health care personnel. Although the MMHP project was quite successful in increasing knowledge among mothers regarding the use of ORS in the prevention of dehydration, the evaluation survey findings demonstrating that unacceptable levels of sodium concentration in SSS mixtures were being prepared by mothers suggests the need for a change in strategy emphasis to ORS packages. With the termination of the MMHP project, the focus of communication activities was directed towards EPI, with minimal CDD maintenance activities.

During the field visits, the evaluation team identified a serious problem in the supply and distribution of ORS packets from the Central Medical Stores (CMS). Facilities have suffered from the rupture in ORS stocks and a high proportion of packets have been distributed that are no longer usable due to caramelization and decomposition. Due to shortages, RMTS do not distribute ORS packages but rather promote the use of SSS.

At present there is no uniform data collection on the distribution and use of ORS by health facilities. There exists well developed plans for the ORT demonstration unit at the Mbabane General Hospital including the introduction of a new diarrheal disease management form, the regionalization of additional ORT units, and continuing education in appropriate management of diarrheal diseases in Swaziland.

#### Recommendations:

- The CDD strategy begin to emphasize the use of ORS packets and decrease emphasis on SSS solutions prepared in the home.
- Health communication project activities should include "maintenance" stages following initial messages to ensure the continuous awareness and education of the population.
- An assessment of ORT utilization at the community level.
- The use of the RHM as a distribution point for the introduction of ORS packets into the community.
- Develop a data collection system for monitoring the use, distribution, and supply of ORS packets.
- Given the identified problems with distribution of supplies from the central level, consideration should be given to the possible development of a regional distribution system analagous to that in place for vaccine supplies. Consideration to the availability of packets in the commercial sector (chemists, tra'ers and traditional healers) should also be given.
- To recall all of the ORS packets imported in 1983 with a simultaneous distribution of newly imported packets.
- That the MOH consider creating the post of CDD program deputy director to carry out all phases of CDD program activities.

#### 2.6 Malaria Control Program

The malaria control program is a vertical activity based out of the Public Health office in Manzini. The central level reports directly to the Director of Health Services/MOH. The program director is a Health Inspector and is assisted by two laboratory technicians who process the slides for confirmation of cases.

The first National five year Malaria Control program Implementation plan is in preparation.

At the operative level, there are 15 Health assistants who participate in vector control activities and active case finding. During the recognized peak transmission season, 24-30 temporary insecticide sprayers are hired to do residual spraying of homesteads with 75% DDT.

Chloroquine resistance has been identified. A study on children less than five years of age revealed that 34% were still parasitemic seven days after receipt of chloroquine at a 10 mg/kg treatment dose. A follow-up study on the efficacy of a 25 mg/kg treatment dose is scheduled for the coming malaria season.

Chloroquine distribution is irregular and many health facilities have ruptures in stock during the peak malaria periods. Chloroquine is stored in the Central Medical Store and is distributed by the CMS to the Health Assistants and the health facilities. The CCCD project provided 400,000 tablets of chloroquine preceding the 1985/86 season and the Program has recently requested more tablets due to insufficient stock at the central medical store.

Malaria has been re-introduced into the middle veld after an absence of over 20 years. An increase in malaria mortality was observed in 1985/86, felt to be due to the combined problems of delayed seeking treatment and the presence of chloroquine resistance. Non-chloroquine anti-malarials have not been consistently supplied to designated referral centers.

Recommendations:

- There is the need to create a position for a medical epidemiologist assigned to the malaria control program activities. (Given the time required to create and staff a new position, the CCCD project should provide technical assistance of a medical epidemiologist to assist the MOH as soon as feasible.)
- Malaria control program activities should be integrated within the framework of primary health care in Swaziland.
- A vector control expert should be provided by the CCCD project to evaluate the cost efficacy of continuing the vector control activities.
- There is the need for a major health education campaign directed at the population to increase their awareness of malaria as a serious problem within the country and to educate the population to seek immediate treatment upon the appearance of malaria symptoms.
- Consideration should be given to the development of mass media communication messages directed at a reduction in contact between the vector and the population.

- There is the need to improve the passive case detection and confirmation activities in all health facilities in the country in order to document and follow the extent of malaria activity.
- Testing of malaria sensitivity to a chloroquine treatment dose of 25mg/kg should be performed.
- There is the need to carefully review the supply and distribution network of chloroquine throughout the country.
- RHMs should be given chloroquine tablets to serve as a distribution point in the community.
- There is the need for the procurement and distribution of non-chloroquine anti-malarials to all designated referral centers in the country.

## 2.7 Health Education/Communications

During the first year of the CCCD Project in Swaziland a successful mass media educational program was carried out that was devoted predominantly to informing mothers about the prevention of dehydration in infants and children with diarrhea. The health communications program was successful and has left a legacy on which future educational programs can build. Indications of this are: the general awareness of mothers of the importance of ORT; the enthusiasm for the program on the part of MOH persons as well as clinic personnel; the successful training during the MMHP of two persons who continue to be great assets in their posts in the MOH.

Subsequently additional work has taken place. The team heard favorable reports on radio broadcasts as well as on other activities such as calendars, posters, and T-shirts. A number of persons thought that such efforts should be extended.

The role of the Health Education Unit (HEU) and its relationship to the Ministry's health communications requirements needs to be clarified. HEU may require expansion if it is to become the communications center of MOH. If it is not HEU, there will be a need to determine what other GOS/MOH departments can assume responsibilities for coordinating on-going programs and special campaigns for CCCD activities.

Because the team observed that there was a potential for conflict between the traditional sector, especially traditional healers, and modern medicine, educational/communications efforts with regard to this sector were considered to be important. Efforts to work with traditional healers and RHMs have begun and should be continued; efforts to work with chiefs and to establish community health committees should be extended. In addition, efforts to reach the modern sector through schools and industry were considered to be important.

The importance of communications in health development (especially as it cuts across the three CCCD interventions) is stressed by the team. For example, information and education concerning malaria is perceived to be important both because malaria is appearing in the middle veld where it had been rare in the past, and because numbers of persons with malaria are not seeking treatment properly. Education concerning ORT needs continuation, using development communication techniques, to maintain the impetus of the early mass media campaign. In addition, encouragement of the use of ORS packets (without specifically discrediting home made solutions) through an educational/development communications program is recommended.

Recommendations:

- Recognition should be given to the importance of communications in health development especially in view of communication strategies in CCCD intervention areas over the last three years.
- That a multi-faceted information/education program focusing on the several target audiences be undertaken, and directed toward all three CCCD interventions.
- That the forthcoming Health Com Project now under consideration by the GOS be utilized by CCCD as the means to introduce the above mentioned information/education program.\*
- Careful consideration should be given to the unit in the GOS to be responsible for health communications. The HEU may require expansion and significant support if it is to become the communications center of MOH. If not HEU, a determination is needed as to what other GOS/MOH department(s) can assume responsibilities for coordinating on-going programs and special campaigns in CCCD.
- Emphasis should be given to training in health communications along with training in other areas since it is the communication network that disseminates much of the information needed to bring about successful behavioral change.

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\*On August 18, 1986, after the evaluation team returned to the United States, it was informed that the GOS/USAID had postponed indefinitely the Health Com initiative which was proposed for early FY 87 because the government felt it already had a very heavy workload given its present program in the health sector, especially with the USAID/PHC project just getting under way. However, the team continues to feel that it is important for the MOH to have help in this area. Consideration should be given to reinstating the request for technical assistance under Health Com as soon as feasible. In the interim short term TA might be envisaged.

- Since one of two key MOH staff involved in communications has departed from Swaziland for long-term training, CCCD should examine staffing needs in CCCD communications activities, including management/planning capability of present staff and staffing needs for future CCCD communications efforts.

## 2.8 Costs

Costs of the CCCD program were explored in order to: (1) assist in the determination of the sustainability of the program and (2) to suggest a basis for an auto-financing program.

Costs were considered for two time periods: the short run and the long run. The short run was defined as a period immediately following the completion of the CCCD project when many donors will still be involved in primary health care and likely to provide such things as vaccines and cold chain equipment. The long run was defined as the period when virtually all donors will have left the field of primary health care.

For the short run one estimate (the low cost one) was based on the expenditure levels indicated in the fourth year of the Project in the Pro-Ag. These expenditures were reduced by the amount set forth for items it was perceived that other donors might provide. This estimate was E184 thousand (about \$72,000)\*, or 8.7 percent of the recurrent budget for preventive care proposed for 1986/87. A second short run cost estimate (the high cost extremum) was based on the Robertson and Qualls cost study. This estimate was more than four times larger than the low cost estimate.

For the long run, two estimates (analogous to the two for the short run) were estimated. The first one, again based on the Pro-Ag, was that annual costs would be E 612 thousand (about \$239,000). The second estimated, again based on Robertson and Qualls, was that the annual cost would be E1,661 (\$258,000). This estimate is larger than the total preventive care budget proposed for 1986/87.

Some possible reasons for the high cost estimates found by Robertson and Qualls were explored. These included: diseconomies of scale, costly outreach, inefficiencies, the campaign approach, and vaccine wastage. Further exploration of costs is desirable.

Even with high Robertson and Qualls estimates, CCCD interventions are cost effective with the cost of a hospital day ranging from E12 to E17, and EPI, ORT costs at E11 (or perhaps nothing at all for ORT if the mother treats at home), and malaria treatment at E15. Current policy to immunize children daily is supportable even if vaccine wastage is high.

\*1E = \$0.39 as of 8/8/86

All the cost estimates were high when compared with the current budget estimates. This issue is considered further in the discussion of financial sustainability.

### 2.8.1 Financial Sustainability

Sustaining CCCD activities will require the MOH to increase spending for these activities or reduce the cost of the activities. Various possibilities are explored.

In the Eighties, the growth of output in the economy has not kept pace with the population growth. However, there may be some improvement in the very near term. Government revenues have grown over this same period, but expenditures have grown more rapidly so that the government has been deficit financing in recent years. The MOH budget may expand two or three percent a year, but it is not expected to expand sufficiently to cover an 8 percent expansion that would be required to cover the minimum estimate of the cost of sustaining the project activities.

There is an established pattern of self-financing for health services in Swaziland. According to one survey (Gilson) self-financing represents the largest source of health care financing in the country. A uniform fee schedule has been adopted for services provided by government and mission facilities. According to this schedule, patients pay E1 for outpatient services; thus patients are already paying this amount for services for treatment of diarrheal disease and malaria. Until very recently the standard fee for immunization was E 0.50, but in the last two or three months this fee has been waived. It seems appropriate to continue the present policy, at least until it is possible to evaluate its impact. On the other hand, inpatient fees, also E1 a day for the first ten days and nothing thereafter, are low especially when the actual cost of inpatient care is considered.

One possibility of recovering part of the cost of treatment of diarrheal disease and malaria is to sell ORS packets and chloroquine through traders and RHMs. This additional distribution channel could be added with no change in the present policy of treatment (i.e., no charge beyond the E 1.0 for an outpatient visit in which ORS packets and/or chloroquine tablets are provided free of charge). In this way the new policy would reflect an increase in the range of choice for the patients.

#### Recommendations:

- Study the possibility of reducing CCCD costs. Robertson and Qualls' study indicates a wide variation in facility costs that should be further explored. In terms of estimating and controlling costs, it would be useful to extend the HIS to include more cost-related data than are presently there.

- Move quickly toward commercial marketing of both ORS packets and chloroquine. Use the forthcoming Health Com project now under consideration by the GOS as a means of marketing these products.\*
- Encourage policies vis-a-vis other health services that will tend to ease the budget of the MOH. This includes increasing other fees and attempting to reduce other costs. In addition, fees arising from the provision of health services should be directed to the MOH rather than the Treasury.
- Within 12 months reassess the policy of no charge for immunization and consider the possibility of charging for health cards and immunization services.

## 2.9 Training/Continuing Education

Training has gone well in Swaziland to date. Much of it has been carried out under earlier projects. For example, the staff nurses in the Health Centers and Clinics are well trained, but received their basic training outside of the CCCD project.

CCCD training activities have also moved forward. In 1985 out of the 1000 health care personnel expected to be trained, 968 or 96.8% of the target was attained. In addition 40 Swazis were trained at an International CCCD supported training program in 1985. Training is moving forward in 1986, with an emphasis on training Rural Health Motivators in CCCD program interventions -- EPI, CDD, and Malaria. Most of the training is 100% financed by donors, although the Project Agreement calls for GOS participation in the training costs. To assure sustainability of this important aspect of the overall program, MOH should open a budget line item for training even if it is modest at the outset.

Taking into consideration the past history of significant technical assistance and training, and based on the talks with Swazis and expatriates around the country the team has the following recommendations:

### Recommendations:

- MOH should add a line item for training in its next budget so as to assure that training will continue in the future as an essential Ministry activity.
- Given the shortage of general management skills, generic management training should be provided to mid-level managers at national, regional and clinic levels.

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\*Since the evaluation team was in Swaziland, the government has decided not to go ahead with the Health Com Project.

- CCCD should continue its support of training of new RHMs, and encourage continuing education for those RHMs already trained.
- Health staff could benefit from an in-country seminar on the use of HIS information as a management tool.
- A core group of trainers (two in each region) should be established in each region to train nurses and nurse assistants in all CCCD interventions.
- Once the five year plans now being drafted in EPI, CDD and Malaria are completed and approved, continuing education courses about them should be organized to bring the national, regional and clinic level health professionals up to date.

#### 2.9.1 Program Monitoring/Evaluation and Life of Project

Program Monitoring and Evaluation will be facilitated when the five year plans for EPI, CDD and Malaria are completed and approved by the GOS in the next few months. Annual work plans will be revised based on this framework. The CCCD project is well endowed with bilateral funds for both evaluation and operational research, so there is no funding problem in doing more and getting the necessary KAP, implementation and other surveys done. The difficulty lies in the preparation of the scopes of work and execution of the studies.

The Life of Project in the Project Agreement signed on June 24, 1984 calls for the project to end forty-six months after the signing of the ProAg, i.e., on April 30, 1988. However, the start up time required to bring the CCCD project to the point where it was operational was about a year. This additional time requirement does not appear to have been taken into account when setting the project goals and objectives. In the team's judgment it will take a full four operational years to achieve these goals. Therefore, a more realistic Life of Project would be April 30, 1989 providing almost four operational years.

#### Recommendations:

- That the CCCD to meet with MOH and donors to consider ways to utilize funding currently available to accelerate the surveys, evaluations and operational research needed to improve the management of the CCCD program. Training in research and survey techniques is suggested to help develop a number of Swazi professionals who are qualified and able to undertake these kinds of activities.
- That the Life of Project of the CCCD Project Grant Agreement be amended by USAID and the GOS to extend the project by twelve months until April 30, 1989 (with no additional funding) in order to allow almost four full operational years to accomplish the project objectives.

Note: A full listing of recommendations contained in the report by subject and page number can be found in Annex V).

### 3.0 Evaluation Process

The evaluation team consisted of an epidemiologist, a health economist and a health management specialist. The team worked in Swaziland from July 20, 1986 to August 9, 1986. Orientation for the mission took place at the Centers for Disease Control (CDC) headquarters in Atlanta Georgia, June 25 and 26. The team had the opportunity to meet with the key CDC staff working on the CCCD project, as well as Dr. Joe Davis and Wendy Roseberry (Project manager and assistant Project manager) who came from AID/Washington and participated in the briefing.\* Substantial documentation was made available for the team to study and review both in Atlanta and Mbabane. (A list of principal documents used in the evaluation are noted in Annex II.)

During the first week in Swaziland the team met with the USAID Director and members of his staff, as well as the CDC/CCCD technical coordinator and technical officer designate. Meetings were held with the Principal Secretary of the Ministry of Health, and the MOH officers and supervisors at the national level responsible for carrying out the CCCD project. Discussions were held with WHO, UNICEF and Save the Children concerning donor coordination and Chiefs of Party (COPs) of the AID financed Primary Health Care, Development Communications, and Traditional Sector Development teams. The second week concentrated on field visits to hospitals, health centers, clinics, and vaccine depots. Meetings were held with doctors, matrons, health care administrators, and nurses directly engaged in implementing the CCCD project activities. Activities of some of the rural health motivators were also observed. (A list of persons contacted is contained in Annex III.)

The third week was spent drafting the report, verifying data and developing a team consensus. Wendy Roseberry joined the team in Mbabane during the third week as a resource person. The draft report was circulated to selected members of the MOH, and the USAID. A summary of the draft document was also presented at a debriefing session at USAID on Friday the 8th of August.

The period, three weeks, was a minimum amount of time for the team to review in depth the multifaceted CCCD project and its integration into the Primary Health Care program of the Swaziland government. However, the wisdom, frank open discussions, and suggestions by those in policy, program, supervisory, and operating positions made it possible for the team to analyze the project and make recommendations concerning it.

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\*Annex I contains the Scope of Work for the External Evaluation Team

It should be emphasized that the team is acutely aware that its mandate is to evaluate the CCCD project. For the most part it has resisted the temptation to make recommendations in the general primary health care field although CCCD and PHC are closely related and become more so as the CCCD project proceeds in its integration into the government's primary health care system. However, on occasion it has been necessary to comment on the broader PHC program of the GOS which includes USAID and other donor activities in order to set the CCCD activities in proper perspective.

#### 4.0 Observations and Findings

By way of introduction of Section 4.0, it should be noted that the CCCD program in Swaziland has many strong points, and has moved well since the signing of the Project Grant Agreement on June 28, 1984. The first year was largely organizational -- preparing work plans, ordering vehicles, equipment and supplies, doing KAP studies, working out training programs, etc. Essentially the operational phase started in June of 1985. Using this timeframe, the progress under the CCCD project has been significant, although much needs to be done to achieve the goals as set forth in the project agreement, and subsequently modified (see Annex IV). All major components of the CCCD project are operational and are evaluated in the following subsections:

- Support for the Expanded Program on Immunization (EPI);
- Assistance in implementing diarrheal control activities;
- Assistance in implementing malaria control activities;
- Support for health education activities, and
- Assistance in the development of a health information and surveillance system.

The EPI program is well integrated into the government's Primary Health Care program. Plans to increase coverage over the next three years to 65% fully immunized, while intensely challenging, appear feasible. Increasing the coverage in a widely dispersed population, 88% of whom live in rural areas, will be difficult. Overall the improvements in Measles, DPT, and Polio coverage in 1985 and the decline in dropout rates are encouraging; however, the continued decline in BCG performance and low levels of Tetanus toxoid coverage are disappointing.

The program to combat Diarrheal Diseases (CDD) has gone well. The use of development communications techniques for the Health Education campaign encouraging the use of Oral Rehydration Therapy using Salt/Sugar/Solution (SSS) and Oral Rehydration Salts (ORS) by the GOS was very successful. This HE program, plus the ability of Hospitals/Health Centers/and Clinics to use ORT effectively and educate the mothers, contributed heavily to increased use of ORT.

The malaria program has been effective in the past. While the malaria problem is confined mainly to the lowveld region of Swaziland, in the last year or two there have been increasing reports that malaria has spread to parts of the middleveld where the population is less sensitized to the dangers of malaria and how to treat it. Resistance to chloroquine has been increasing, although very few government clinics are equipped with alternate drugs which are effective.

Another strong point of the CCCD project is training. Nurses in charge of clinics appeared well trained. Cold chain repair and record keeping was well done indicating the presence of good training and a properly designed system. Training of Rural Health Motivators (RHMs) is well under way but not completed as yet.

The health information system (HIS) functions well in the collection of data; less well in the dissemination of the information to users at the central and operative levels. In addition, there is a substantial need to educate those receiving the HIS reports on how to use this information as a practical management tool.

Swaziland appears further along with its capacity to carry out Health Education (HE) programs than many of the African countries. As indicated above, use of development communications techniques for the ORT program was excellent. However, continued work is needed on the EPI program, and a major information/education campaign is needed for malaria in the lower and middleveld areas.

The Government decision to decentralize Primary Health Care (which includes CCCD activities) and training are admirable. The decentralization of primary health care management to the regions augers well for an improved CCCD project, but the changeover started in early 1986 appears to be encountering substantial teething problems. Lack of general management skills and transportation, plus a shortage of staff were cited by MOH officials and field supervisors as major problems.

Regarding the finances of the CCCD project, the rate of obligations and especially expenditures which were significantly behind at the end of the first year are beginning to catch up. As of August 1986, funds committed were 44% of total LOP Project Agreement (ProAg) funding of \$703,000, and expenditures were 35%.

Swaziland already collects fees for clinical services of various kinds and community support charges. Therefore the outlook for self-help and revenue generation appears promising assuming continued donor support through 1990. In the longer term however the government will be hard pressed to continue on its own should donor support for primary health care be suddenly discontinued. (The project cost and finance are reviewed in Sections 5.0 and 6.0 below.)

In the past the CCCD project in Swaziland only had one third of the time of the Technical Officer based in Lesotho. There is a plan to assign a full time Technical Officer to Swaziland. When the plan is put into operation, it is expected that progress on a number of fronts will be accelerated.

An important last point to be noted is that the team's mandate is to evaluate the CCCD project and not the GOS Primary Health Care/ Maternal Health programs, even though CCCD is part of PHC/MCH. For example, apart from a discussion of the integration of CCCD activities into the PHC/MCH program, the report will not deal with problems of sanitation, nutrition, family planning, water supply, and other related PHC/MCH matters. However, questions of priority, the capacity of the government to handle all of these programs simultaneously, and the impact on government priorities are reviewed below.

This brief overview is intended to set the stage for the specific observations, analysis and recommendations given below. The team felt it important to assure that, in indicating areas of weakness or concern, (or in making suggestions for improvement), the excellent and devoted work in combatting childhood communicable diseases in the first two years of the project not be overlooked.

#### 4.1 Project Planning and Strategy

The primary document which led to the acceptance of the CCCD project and served as the basis for drafting of the Project grant agreement between USAID and the Kingdom of Swaziland was the Country Assessment for Swaziland prepared in May 1983. The team found the main line of the assessment document and the strategy proposed well conceived, and applicable to the conditions found in Swaziland. It has served as a blueprint for launching the program. In addition to the assessment document, an annual plan for 1985 was drafted and adopted. However, no plan has been prepared as yet for 1986. Five year plans for the core programs of EPI, CDD and Malaria, are now being drafted. Once they are completed and approved by the GOS, the annual CCCD plan for 1986 will be prepared. Individual program elements (EPI, CDD, and Malaria) have their own internal plans of operations for 1986.

##### 4.1.1 Status of Current Planning

GOS/MOH working groups have been set up and are currently working on five year plans for EPI, CDD, and Malaria. It is expected that this work will be completed by early Fall. The TO and the UNICEF representative are playing a very active role in working with the Ministry of Health in drafting the five year plans. The presence of a full time TO to work on a daily basis with the relevant government offices has given a new impetus to the planning activity of the Ministry. The team has reviewed the preliminary outlines and drafts for the five year plans and finds them well thought out, and believes that, when completed and approved by the GOS, they will provide policy, program and operational guidance which will contribute significantly to meeting CCCD project goals.

## Recommendation:

- That MOH give high priority to finishing these five year plans which will provide a framework for development of annual workplans, facilitate future budget exercises, and substantiate requests for donor financing, etc.

### 4.1.2 Project Strategy

During the first two years of the project, the strategy has been to deal with individual programs consecutively. Oral rehydration therapy was emphasized initially, followed by EPI, and with Malaria planned for the future. While this was an effective strategy initially, and it served to launch the ORT program, in the future it will be preferable to bring the major programs (EPI, CDD, and Malaria) along simultaneously. At the HC/Clinic level from the recipients standpoint, the Primary Health Care/CCCD services are interrelated, and increased child survival requires that all three programs operate effectively.

## Recommendation:

- That EPI, CDD and Malaria programs be brought about simultaneously and support services in HEU, Training, and HIS be mobilized to provide continuing support for all three core programs as appropriate to their respective stages of development.

### 4.2 Administration and Management

The administration section will address such items as delivery system structure, geographical coverage, and staffing. The management section will look at organizational and operational aspects affecting the implementation of the CCCD project at national, regional, and Health Center/Clinic levels.

#### 4.2.1 Delivery System Structure and Coverage

Fixed medical facilities are operated directly by government, and by religious missions, industrial and private groups distributed among the four regions (Manzini, Hhohho, Shiselweni, and Lubombo) with 7 general Hospitals, 8 health centers, 132 clinics, and 113 outreach sites. Table 1 shows the number of these facilities by category and region. In addition, the government has recently adopted some very positive organizational measures decentralizing the Swaziland Primary Health Care System which affects directly the CCCD project as a major component of the PHC system.

**Table 1: Distribution of Hospitals, Health Centers, Clinics and Outreach Facilities in Swaziland**

<u>Region</u>	<u>General Hospitals</u>	<u>Health Centers</u>	<u>Clinics</u>	<u>Outreach Sites</u>
Manzini	2	1	53	50
Hhohho	3	3	30	27
Shiselweni	1	1	19	12
Lubombo	1	3	30	24
TOTALS	7	8	132	113

Source: Wernette, Monica M. CCCD Briefing Paper prepared for the Second-Year External Evaluation Team, July 21 - August 8, 1986, Mbabane, July 1986.

Figure 1, Organogram of the Ministry of Health (MOH), which follows, shows the location of the government units involved in the CCCD related interventions and the district support service areas.

Regional Health Management Teams (RHMTs) have been set up in all four regions (two regions, Hhohho and Shiselweni, have sub-regional RHMTs, making the total number of teams six). The RHMTs are under the chairmanship of the Regional Health Administrator and membership includes representatives from the major health facilities in the region (or sub-region), and principal regional health authorities. The post of Health Administrator (who is also the Hospital Administrator at the hospital at which he is based), represents a relatively new activity which takes over some of the work formerly conducted by MOs and Nurse Matrons. The new post does not appear to be fully accepted in the field. As a result, the RHMTs are having substantial teething problems, especially in defining the role of the Health Administrator vis-a-vis Medical officers, doctors, nurse matrons, nurses, etc.. However, in spite of the difficulties, RHMTs provide an excellent forum for reviewing regional problems and working out solutions with those directly concerned. The written documentation laying out the duties and responsibilities of the different team members is reasonably clear. However, there is a need for senior management (e.g., the Minister of Health) at the national level to reaffirm vigorously the government's policy and commitment to seeing the decentralization move forward, and to delineate clearly the responsibilities of those responsible for the operating programs at the Central level and those on the RHMTs (i.e., the Health Administrators, the Medical Officers, doctors, nurse matrons and nurses.)



The distribution of vaccines has also been decentralized. The Central Vaccines Stores in Manzini distributes vaccines on a monthly basis to 9 regional depots located in hospitals and health centers which in turn fill requests for their vaccines from the clinics. The team found the decentralization of vaccine distribution working well even though it only started July 1, 1986.

On the other hand, it found that supplies ordered from the Central Medical Stores in Mbabane worked less well and distribution was spotty. HCs and Clinics noted that their orders were often only partially filled or not at all, and as a consequence they ran out of drugs including chloroquine tablets, and ORS packets from time to time. In some cases, the HCs and Clinics had been able to borrow from neighboring clinics when they were about to run out of necessary drugs and other medical supplies. To the extent there are no drugs available on the curative side, less mothers will use the clinics, and this in turn inputs negatively on preventive care activities such as immunization, malaria treatment, etc. (Figure 2 shows the location of the RHMTs and the regional vaccine depots.)

## Recommendations:

- The Minister of Health or his representative should reiterate to the national heads of the major CCCD and PHC programs as well as the members of the RHMTs the government's policy and commitment to the decentralization plan, and delineate the respective functions of the central government administrators vis a vis the RHMTs, and the respective duties and responsibilities of the principal members within the RHMTs - i.e., Health Administrators, Medical Officers (MOs), and Nurse Matrons.
- Given the importance of an early successful installation and operation of the GOS' decentralization of Primary Health Care to achieving the goals of the CCCD program, the GOS and USAID should make support of the decentralization effort a major priority of the GOS/USAID Primary Health Care Project.
- Procedures for ordering medicines and other supplies from the Central Medical Stores (CMS), and the method of distribution to the HCs and Clinics should be reviewed. Steps should be taken as soon as possible to remedy the current shortages and delays in filling orders which impact directly on the ability of the HCs and Clinics to operate effectively their Maternal Child Health/Family Planning/CCCD (MCH/FP/CCCD) programs. (Project HOPE and/or the Primary Health Care project could provide valuable resources to assist the MOH in solving this urgent problem.) Additional training at all levels should be provided so that workers, clerks, storekeepers and managers all have the specialized knowledge required to successfully run a central medical stores operation.

One of the great difficulties in achieving the coverage goals is the broad geographical dispersion of the target population. However, assuming that 20% of the total population of Swaziland resides within an urban area, Testerink-Maas in February 1986 estimated that 84% of Swaziland's rural population reside within a Clinic catchment area (i.e. within a radius of 8 kilometers). The team recognizes that 8 km is a long distance for a mother to walk with a sick baby. However, the international definitions for "access" is a radius of 5 km, or a walk of one hour, whichever is less. Because of the dispersed population clinics are small, handling a small volume of patients. Any substantial extension of fixed facilities would be costly, add to administrative difficulties, and would not be cost effective. This problem might be alleviated somewhat by campaigns for EPI through the creation of temporary immunization posts, thereby increasing the percentage of population with access.

#### 4.2.2 Staffing

Staffing was mentioned at all levels (national/regional/clinic) as a serious constraint. The team observed that at the MOH a number of key senior executive positions affecting PHC/CCCD were vacant. Current MOH staff appeared to be carrying very heavy administrative/management loads. If the senior positions currently vacant at the Center could be filled with experienced professional and administrative staff, it would accelerate the policy/program/operational activities of the MOH. More specifically, in line with CCCD activities, current program coordinators for EPI, CDD and Malaria are faced with intensive and exceptional operational work loads leaving little time for planning, supervision, evaluation, and revisions. The creation of a deputy position for each of the programs (EPI, CDD, and Malaria) would increase the effectiveness of supervision, planning and execution of these basic CCCD activities. Secretarial support is lacking in most of the CCCD/PHC operational departments, thus hampering a smooth flow of work of the MOH.

At the Health Center/Clinic level, almost every center visited had unfilled positions for nurses and nursing assistants and support staff. Shortage of staff was cited as a severe constraint to outreach activities to follow-up those children who started the immunization series, but never completed them and to efforts to provide additional training to Rural Health Motivators (RHMs). If the personnel for the existing approved staffing patterns could be provided, it would have a substantial positive impact on PHC and CCCD activities.

#### Recommendations:

- That the MOH fill the senior executive management posts now vacant at the national level with a view to providing more administrative/management time for planning/monitoring/supervising and following up on CCCD/MCH/FH activities.
- That the MOH explore the possibility of filling the vacant posts at HC and Clinic level with a view to increasing the effectiveness of the HC/Clinics, increasing outreach, and improving the coverage of EPI, CDD and Malaria, training of Rural Health Motivators (RHMs), etc. (Should the planned staffing for Health Centers and Clinics not be reflected by established posts, steps should be taken by the GOS to remedy this deficiency.)
- That the MOH obtain permission to create three deputy posts to provide additional support to CCCD programs in EPI, CDD and Malaria.
- That secretarial support planned for the MOH be provided to overcome this bottleneck to effective operations.

#### 4.2.3 Management (National/Regional/Local or Operational Level)

One of the serious concerns expressed by those administering or managing specific national programs, Health Centers, or clinics dealt with management skills of a generic nature -- planning, budget preparation, accountability, establishing priorities, time planning, reporting, maintenance, etc. Present training on technical subjects, (which include some elements of management) is good, e.g. ORT, immunizations, cold chain, HIS reporting, etc. However, the team agreed that those engaged in the management of these programs could benefit from some additional training and/or continuing education in generic management skills specifically oriented to the conditions in Swaziland. (This point is discussed further in section 5.8 Training.)

Staff limitations, transport shortages for supervisory visits, and inadequate financing were also highlighted as major constraints. Lack of transportation for existing staff to make supervisory and training visits was especially highlighted as a chronic problem limiting effective performance.

##### 4.2.3.1 National

As mentioned under staffing in section 4.2.2 above, vacancies in staffing of approved senior positions at headquarters have delayed decision making, preparation of five year and annual work plans, supervisory visits, and training. Staff shortages have created heavy workloads on a limited number of experienced professional staff causing operational delays when they were away from the capital on field trips, or attending international conferences, workshops, training sessions, etc.

Implementation of central policy and procedural directives have been hampered by lack of transport. In addition, absence of financing for per diem (hotel, meals, etc.) has tended to shorten or deter visits to the field. Supervision has been constrained by a combination of these factors. The recent decentralization mentioned above will require continuous dialogue between those at the central /regional level (RHMTs), HCs and clinic levels, thus increasing the need for adequate transport, and per diem.

The project agreement calls for the CCCD Technical Officer (TO) to be located in the Public Health Unit (PHU). However, at present the TO is housed separately in the MOH building. This separation restricts the day to day intimate cooperation so necessary and desirable in carrying out the CCCD project activities. The team understands informally that space is being renovated at PHU which will permit the TO office to be moved to PHU in the coming months. The team thoroughly endorses this initiative.

The Malaria Control Unit (MCU) is located in Manzini (30 minutes to one hour away from the MOH), and is operated as a vertical program not integrated into PHC as yet. However, the Malaria Unit is geographically closer to the lowveld where most of the malaria cases are found all year round. This geographical separation appears aggravated by the lack of MOH guidance and supervision from Mbabane. The MCU reports directly to the Director of Medical Services who has no deputy at the present time and has many other pressing duties. Answers to correspondence from MCU Manzini are often delayed, and sometimes not replied to. While the malaria program has worked effectively in the past, a reduction in staff from 30 to 15, serious transportation difficulties for the malaria Health Assistants, vacancies in staff required to process blood slides, and lack of personnel in the middleveld where malaria cases are increasing, have heightened the team's concerns about the management of this important field program.

The team examined the prospects for integrating MCU into PHU, or simply moving MCU to Mbabane. The team felt that it would not be timely to integrate the Malaria Control Unit into the PHU given the space limitations in Mbabane. However, there is an urgent need to increase the level of guidance and dialogue from MOH Mbabane to MCU Manzini.

#### 4.2.3.2 Regional Health Management Teams (RHMTs)

As indicated under the discussion of structure (4.2.1), the team agrees fully with the recent decision on the part of the GOS to move ahead with decentralization of Primary Health Care to the four regions, and the designation of RHMTs in the four regions -- plus two subregional RHMTs in Hhohho and Shiselweni regions. To help facilitate the installation of these RHMTs in the regions, and their smooth operation, guidance from the Central Level should be intensified. For example, supervisory visits of a national team composed of the Senior Health Administrator, the Senior Medical Officer and the Senior Matron to the regional RHMTs are needed to help sort out and resolve practical operational problems emphasizing the team approach. If carried out, this example should help accelerate the practical acceptance and installation of the RHMTs in the regions and enhance their working relationships with the central level.

#### 4.2.3.3 Local or Operational Level

As mentioned earlier, the clinics are well run by the staff Nurses who have been well trained. The more recent changes in recommended practices (for example, an integrated approach to immunization and immunization of sick babies) are well understood -- although in the case of the latter instructions are not always followed.

Outreach was constrained in a number of clinics visited by the team, because of lack of staff and transport. There was an additional serious problem of intermittent lack of drugs and medical supplies. Additional training of RHMs by the Nurses was limited due to staffing

vacancies, and lack of transport to visit RHMs in their assigned areas. The supply system for vaccines had been decentralized recently into nine subregional depots at hospitals and health centers, and is working well. However, lack of PHC medical supplies for the curative side continues to be a concern, since absence of medical supplies at the clinic level could affect overall attendance at the clinic and subsequent coverages by EPI, CDD, and malaria program activities.

Recommendations:

- Office space for the CCCD TO in the PHU as provided in the Project Agreement should be completed as soon as possible.
- Management training in generic management skills should be provided for program and activity managers (see section 4.8 Training).
- Supervisory visits to the field should be encouraged and increased. Transport and per diem should be provided for overnight and visits involving midday and evening meals in the field.
- Tripartite senior management/supervisory teams from the Central Level composed of the Senior Health Administrator, the Senior Medical Officer, and the Senior Matron should be organized to visit the Regional Health Management Teams (RHMTs) over the coming months to assure the effective integration of the RHMTs at the regional level as key components in the government's program of decentralization.
- While the clinics are generally well managed, resolution by the Central and regional offices of: staffing vacancies, supply shortages, transport limitations, and inadequate supervisory assistance, would make the operation and management of clinics more effective.

4.2.4 Donor Coordination

CCCD donor coordination is assured informally through individual contacts by interested parties participating in CCCD activities. A working group or task force on CCCD matters was set up last year composed of donors (principally UNICEF, WHO, Save the Children and USAID), and the MOH staff responsible for CCCD programs and support services. It meets roughly on a quarterly basis, but it has not met within the last 6 months. The various donors cooperate on joint CCCD activities frequently (e.g. WHO and the USAID CCCD project jointly financed a workshop for doctors and nurses on oral rehydration therapy and other preventive medicine topics.) UNICEF and USAID/CCCD and the MOH work closely together in planning financial support for the project (e.g. on budgets, manuals, planning documents, financing of vaccines, refrigerators, vehicles, medical supplies, etc.).

In addition, the MOH has recently established a GOS/Donor Committee for Primary Health Care. Representatives of the donors working in Health Care meet with the MOH to discuss programmatic subjects concerning primary health care development. Each donor representative is expected to speak to the totality of his agency's participation in PHC (e.g. in USAID's case: CCCD, Primary Health Care, Health Com, Development Communications, Traditional Sector Development, etc.). Individual projects (e.g. CCCD) are not taken up individually by the new PHC committee but rather by working parties or sub committees convened especially for that purpose. Communications between the CCCD and PHC coordinating groups should not be a problem since they are both under the chairmanship of the MOH, and are composed of largely the same donors.

#### Recommendation:

- The team felt that the existing arrangements for donor coordination for the CCCD project were adequately covered by the formal and informal arrangements. The TO might wish to consider reconvening the CCCD working group or task force on a quarterly basis.

#### 4.3 Health Information System (HIS)

##### 4.3.1 Structure of Health Information System

At the central level, the HIS is managed by the Statistical Unit of the MOH located in Mbabane. At present, this office is staffed by the Chief of the Unit (who received training at a U.S. institution during 1984) and one keypunch operator in charge of data entry. During the two year period 1984 through May 1986, there was an expatriate consultant working within the Health Statistics Unit at the MOH in Mbabane, assisted by two keypunch operators.

The regional level (under the new decentralization plan) at present has no designated direct participation within the HIS. Thus, all reports to the MOH Statistical Unit go directly from the local level reporting unit to the central level without passing through the regional level for analysis and interpretation of data related to activities within the region.

The HIS in Swaziland was redesigned in 1982 to collect disease specific morbidity data.

At the local level all clinics, health centers, and hospitals are required to send monthly reports directly to the Health Statistical Unit. Types of data reported include outpatient visits by diagnostic category, inpatient hospital discharge data, by admission diagnosis, discharge status and age distribution, and performance indicators such as number of vaccinations administered by age group and vaccine

given, number of children monitored for nutritional status, and number of antenatal screening visits. To facilitate the reporting process, all health facilities have been issued tally sheets. These tally sheets permit health care personnel to maintain ongoing cumulative counts on the number of the various data collection categories throughout the month, thereby requiring a simple total at the end of the month. The use of these tally sheets reduces the possibility of errors often seen through monthly reconstruction of activities based on clinic registries.

In addition to the above mentioned monthly report forms, there is a separate communicable disease reporting form. This form requests information on selected diseases of interest subdivided into categories Group A\* and Group B\*\*. Group A diseases should be notified immediately to the "nearest medical officer" for immediate investigation. Copies of this form are to be sent to the Regional Medical Officer and the Director of Health Services/MOH. This form has undergone modifications during the preceding year to include more of the CCCD target diseases. A review of the forms received by the central level statistical unit for 1986 reveals that while the new forms have been distributed, over half of the forms submitted to date in 1986 are the older versions (pre-revision).

Reporting through the HIS is mandatory from all types of health facilities in the country, including government, mission, private industry and private practice. The traditional health system does not report through the HIS. Rural health motivators (RHMs) do not report through the HIS on the occurrence of specific diseases encountered within their area of influence or on the number of interventions provided (such as use of ORT). Information related to malaria control program activities (control and treatment) is not reported through the MOH/HIS, but rather is reported directly to the Malaria Control Unit in Manzini. The Malaria Control Unit sends monthly reports on the number of positive malaria slides identified by the laboratory in Manzini directly to the Statistical Unit in Mbabane. It is noteworthy that malaria is not included on the communicable disease reporting form.

In 1981, 51% of all expected reports were received from government and private institutions providing information on 29,147 hospital admissions and 748 in-hospital deaths. During 1981, 100% of expected reports of outpatient visits were received from government clinics and 80% from private (mission) clinics providing information on 1,431,847 outpatient visits. In 1985, 88% of reporting units in the country were regularly reporting to the statistical unit on a monthly basis.

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\*Group A diseases: cholera, diptheria, plague, polio, rabies, typhus and yellow fever.

\*\*Group B diseases: anthrax, enteric fever, food poisoning, infectious hepatitis, leprosy, measles, meningococcal meningitis, relapsing fever, neonatal tetanus, tetanus, trachoma and tuberculosis.

In 1985, information was received by the central statistical unit on 784,583 outpatient visits, 29,625 hospital admissions, and 519 in-hospital deaths. A notable exception is the Mbabane General Hospital (located in the capital). The Mbabane General Hospital does not at present report on either inpatient or outpatient activities to the MOH Statistical Unit.

Outpatient diagnoses monthly summaries are also reported for activities conducted at outreach posts. Improvements in reporting completeness have been seen since 1983 when a monthly average of 129 summaries was received as compared with 153 summaries in 1985.

#### 4.3.2 Data Analyses and Feedback

According to the Central Level Statistical Unit, 80% of reporting units submit their monthly reports within two weeks following the closure of the month. In contrast, the timeliness of production of reports has been markedly delayed. At the time of the writing of this report, official 1985 morbidity statistics from the Health Statistics Unit have not been released. The last national statistical annual report published and distributed by the Statistical Unit was in 1982. It is unknown as to when the next annual report will be ready.

The Health Statistics Unit is equipped with two Sirius computers (one of which is presently not functioning) and two IBMs provided through the CCCD project. With these computers, the Central Statistical Unit has the capabilities to produce monthly, quarterly and annual summaries of the data reported by the operative units. Because of staffing deficiencies (the loss of one keypunch operator), there has been a backlog in data entry at the central level.

During the first half of 1985, there were data collected on the immunizable diseases through the use of a special reporting form which requested information on the age of cases and their immunization status. Analyses of data collected during the first half of 1985 have been performed. Following these analyses, this reporting system was discontinued resulting in an absence of current epidemiological data on the EPI target diseases.

As mentioned previously, there is the special communicable disease reporting form which collects information on the geographic location, age, and date of onset of specific diseases of interest including polio, tuberculosis, tetanus, measles, pertussis and diphtheria, all diseases of interest to the CCCD project. At present, these report forms are kept in a file folder in the Central Statistical Unit and data from them have not been analyzed.

Feedback to the reporting units is limited and markedly delayed. Health facilities receive a computer printout of the data they have reported to the Central Statistical Unit several months following report submission, but do not regularly receive information on other health facilities. Many of the health facilities visited during the

course of this evaluation stated that in previous years they had received information on other health facilities' activities, and that the staff found this information to be useful.

At present, there is no country epidemiological bulletin to provide feedback on morbidity and mortality trends in the country, nor to provide textual interpretations of data analyses which would update health facility staff on the disease patterns in the country. The only reports sent to the health facilities are computer printouts of the tallies they had sent to the central level unit. In addition, population estimates of areas of influence of health facilities are not available so that neither population based morbidity rates nor service utilization rates are routinely analyzed.

While national data are available at the central level, they are not widely distributed but rather, if a health facility requests information, it will be made available to them. At present only one regional health management team receives information on morbidity and mortality patterns within their region, as they regularly request the information from the central level. The remainder of the regions do not receive this information. Information related to the vaccine preventable diseases are sent to the EPI unit upon request, as are data on morbidity and mortality due to diarrheal diseases sent to the CDD unit upon request. Of note, there is a newsletter containing selected health statistics called the Immunization Update. To date, three issues have been prepared, the most recent in June 1986. This newsletter contains information on EPI coverages, results of EPI related surveys, epidemiological data on specific EPI diseases, and interpretations of evaluations with recommendations for improvements. During the field visits, the evaluation team encountered only two health facilities that had received copies of this newsletter, suggesting that its distribution is limited.

There is a strongly identified need for improvements in the HIS in terms of data processing, the timeliness of data analyses and the distribution of this information to health care professionals throughout the country.

It is the feeling of the evaluation team that some of the problems identified in the HIS can be attributed to the absence of a medical epidemiologist at the central level of the MOH. In the absence of a medical epidemiologist, it is difficult to provide direction to the Health Statistics Unit for the types of analyses that are necessary to monitor the impact of project interventions. Create the position for a medical epidemiologist in the MOH. If this position cannot be created, an alternative recommendation is for the CCCD project to provide short term technical assistance of a medical epidemiologist to assist in the development of epidemiological data analyses through the MOH HIS. In addition, there are difficulties in the retrieval of data from earlier years due to misplaced forms and diskettes suggesting the need for improved unit management.

## Recommendations:

- Given the time required to establish a new position of medical epidemiologist, CCCD should provide a short-term medical epidemiologist as soon as possible.
- Develop and publish on a timely basis an epidemiological bulletin for distribution to all health facilities in the country. This bulletin should contain data analyses as well as textual interpretations on the morbidity and mortality patterns in the country.
- Fill the vacancy for a second key punch operator in the computer division of the central level statistical unit/MOH.
- The statistical unit should improve the organization of data storage, so that data are easily obtainable upon request.

### 4.4 Expanded Programme of Immunizations (EPI)

#### 4.4.1 Organization, Administration and Policies

The EPI began as a formal program activity of the MOH in November 1980 following the identification of three cases of poliomyelitis among fully immunized children. This program was initially supported and assisted by the Save the Children Fund (SCF) in Swaziland. Additional assistance from UNICEF began in 1983 and CCCD in 1984.

The EPI Unit is located in the PHU in Mbabane. The central level consists of a program coordinator (a nursing sister) who was appointed to the position in late 1985 following a twelve month period when there had been no country coordinator. This absence of a country coordinator is felt to have been responsible for a relative stalling of the immunization activities in the country. In addition to the program coordinator, there are the Central Vaccine Store (CVS) director and operations officer located in Manzini, and two central level cold chain technicians (supported by SCF) based in the central vaccine store. At the regional level, EPI staff include the personnel working at the public health units/clinics in the nine designated regional vaccine depots (to be discussed in further detail in section 4.4.3).

With respect to provision of immunization services, at present the only health care personnel officially recognized by the MOH to vaccinate are physicians and staff nurses. Government policy does not authorize the nursing assistant to administer vaccines. RHMs are to provide health education messages related to EPI activities and to motivate the population residing in their area of influence to seek immunizations. In practice, the RHMs do participate in health education sessions at their "mother clinics" but do not regularly assist in the follow-up of noncompliant children (defaulters) in their communities.

One of the major constraints recognized in previous evaluations of EPI activities in Swaziland was the absence of a five year Plan of Operations for EPI. Prior to the arrival of the in-country CCCD Technical Officer, planning of immunization activities was done on a six month to one year advance basis. At the time of writing of this evaluation team's report, a first draft of a country five year EPI implementation plan was in preparation by a committee composed of the EPI Coordinator/PHU/MOH, CCCD, UNICEF, SCF, Statistics Unit/MOH, HEU/MOH, WHO and PHU participants.

Under the present organizational structure, there is one individual in charge of all EPI program activities at the central level with responsibilities for planning, administration and management of all aspects of the EPI. Due to the multiplicity of demands on this individual, there has been an inability to spend time in the field for supervision of regional and local level EPI activities.

Recommendation:

- There is the need to appoint an EPI program deputy coordinator to assist in the managerial and supervisory needs for efficient program implementation.

4.4.2 Strategies

Program activities have continued since 1980, beginning with an "attack phase" that lasted two years. During this time, there were two centrally run mobile vaccination teams to provide rural dispersed areas with immunization services. Following the attack phase, there was a shift to the "maintenance phase" in late 1982. Under the maintenance phase, the emphasis is to have immunization services available in all fixed facilities in the country and to phase out the reliance upon the costly mobile immunization teams.

Beginning in late 1985/early 1986, there was an MOH policy change for the integration of immunization activities. The definition of "integration of activities" is the availability of immunization services on all days of operation of fixed facilities. Prior to the integration of services, many of the fixed facilities had designated immunization days during the month. In some areas, immunizations were conducted once a week; in others twice a month; and in others once a month. Under the new policy, immunizations are to be provided at all opportunities. As part of this initiative, there is a strong emphasis being placed on the need to immunize all children who present to the health facility whether it be for curative or preventive services. A part of this policy change includes the mandate to open a vial of vaccine to immunize any child presenting to the health sector, and discard the remaining doses if not used .

Field visits by the evaluation team revealed that the integrated approach has been implemented in the majority of health facilities visited, but there are doubts on the implementation of the policy for immunization of children presenting for curative services. All but two of the health facilities visited claimed to be immunizing children when ill. The two which were not doing so stated that they reschedule children to return for immunization services once the illness is over. There is suggestive evidence that this is not consistently occurring. For example, in one clinic visited, there are approximately 800 patients seen per month for combined curative and preventive services. In October 1985, prior to the implementation of integrated immunization services, 209 DPT immunizations were given. In the same health facility, in June 1985, without a change in the number of outpatient visits, but after "integration" of immunization activities, there were 202 doses of DPT administered. This strongly suggests that children were not being captured for immunizations when presenting for curative services.

It is the feeling of the evaluation team that at present those children who present for immunization services and incidentally are found to be ill are being immunized, but the reverse, that is children presenting for curative services, are not being screened for immunization history and thereby are not being immunized. Further evidence supporting this is that in 1985 there were 784,583 outpatient visits to health facilities reported through the national HIS, representing an average of approximately 1.2 visits per person living in Swaziland, with 63,863 visits for diarrheal episodes in the less than 5 year old population. This suggests that many more children are presenting to the health facilities for curative services than are being captured for immunization services. Thus, there are missed opportunities (potential capture by the health sector for immunization services that are lost by nonscreening of children who present for curative services).

Following the completion of the MMHP project (see Section 4.5 Diarrheal Disease Control), the results of the evaluation of the use of mass media for health education messages combined with a campaign approach were impressive, and the MOH/PHU took the decision to apply these methodologies to EPI activities. Thus, in late 1985 formative research projects to define health education needs of the population and the health sector on EPI were begun. This led to the preparation of communication messages combined with outreach campaign activities conducted region by region. This strategy has been named the "accelerated EPI" phase. In several of the areas visited by the evaluation team, there was concern expressed by the health facility staff on the disruption of immunization activities caused by these campaigns. The campaigns have been designed to select geographic areas for mobile immunization teams. Anecdotal reports were received by the evaluation team that related to children being immunized first by the campaign team followed one week later by the clinic as it was the scheduled time for the child to return. Thus, there is a strong concern that many doses administered are invalid due to the short

intervals between doses. In addition, preliminary results of the campaigns in Mbabane reveal that only 19% of the doses administered were administered to the target population (less than one year olds). These findings suggest that the campaigns have been conducted in areas already covered by fixed facilities and are directed at children out of the target population. Nevertheless, these campaigns are continuing region by region and are scheduled for completion by the end of 1986.

It is important to mention that Swaziland is an unusual country, with an estimated 80-88% of the population living in rural dispersed areas. A maximum of 20% of the population live in what would be considered areas of population concentration (small towns and communities). The remaining population live in homesteads consisting of small groupings of houses for extended families. In addition, while the road network within Swaziland is extensive and excellent, in actuality transport is a serious problem. Transportation problems include a relative paucity of public transportation combined with a relatively high cost. Given this, an economic and time burden is incurred by the caretaker (mother or other designated caretaker) to bring a child in for preventive services. The recommended vaccination schedule for complete immunization of a child under one year of age requires five contacts between the health sector and the population and might contribute to the failure to meet coverage targets. Therefore, in areas where the population is highly dispersed, transportation is minimal and where other constraints or limitation to attending a health facility on a regular (i.e., monthly basis) exist, a modification to the WHO recommended 5 contact schedule may be considered. In general, where these constraints exist, vaccinators should be told to give DPT and OPV at any time during the first year of life after age six weeks, as long as there is at least four weeks between doses, and to administer measles vaccine at any time after age nine months. It should be noted though, a major risk of departing from a WHO recommended schedule (i.e., BCG, Polio at birth, DPT, polio at six weeks, 10 weeks, 14 weeks, measles at 9 months) is that infants may be left susceptible to pertussis for much of their first year of life.

The high proportion of the population living in widely dispersed areas within the country may seriously impede the possibility of achieving the goal of 80% coverage by the end of the CCCD project (1988). A strategy of National Immunization Days has been used by many countries to overcome similar obstacles of reduced access to fixed health facilities. This strategy has combined health communication techniques with the establishment of numerous temporary vaccination posts in areas defined as difficult access throughout the country resulting in an increased demand for services along with an increased access to these services.

## Recommendations:

- In hard to reach areas, consideration should be given to reducing the number of contacts operationally necessary to fully immunize a child before the age of one year. A suggested immunization schedule is for three contacts. However, children who do attend health clinics should be immunized at monthly intervals, following the WHO recommended immunization schedule.
- Consideration should be given to the inclusion of well planned National Immunization Days in order to boost coverages through the creation of numerous temporary immunization posts.

### 4.4.3 Cold Chain and Vaccine Distribution

In November 1980, the SCF assisted in the construction and development of a central vaccine store (CVS) located in Manzini. The location of the CVS was selected for its close proximity to the airport in order to facilitate rapid refrigeration of imported vaccines. The evaluation team was very impressed with the CVS both in terms of the equipment available and its careful monitoring and routine maintenance. A WHO consultant assisted in a country wide evaluation of the cold chain in February/March 1986. At this time it was recommended that the CVS should have an automatic generator plus an alarm system in the event of power failures. By the time of the CCCD evaluation (late July 1986), the CVS had been equipped with both an automatic generator and a back-up alarm system.

In addition to the vaccine storage facilities (three refrigerators and three freezers), the CVS also houses the workshop facilities for the cold chain repair technicians. Recognizing that the workspace available for cold chain equipment repairs was insufficient, a recommendation for the construction of an additional wing to the CVS for a workshop for cold chain repairs was made following the WHO evaluation. At the time of this report preparation, work had not begun on the planned addition.

At the regional level, there are nine designated regional vaccine depots. Three of the regional vaccine depots were visited by the CCCD evaluation team. All were equipped with ice-lined refrigerators. This refrigerator has a relatively low maintenance requirement, adequate storage space, and with six hours of electricity (at an ambient temperature of 37°C) can guarantee 24 hours of temperatures between 4°C and 8°C. Given the stated power interruptions during summer storms, these refrigerators are highly appropriate for the vaccine depots. Plans also include equipping all vaccine depots with back-up generators for the event of power failure. At the time of the CCCD evaluation there were five generators in the CVS awaiting distribution to vaccine depots.

As follow-up to the WHO assisted cold chain evaluation, the EPI unit is in the process of reevaluating the cold chain equipment distribution in the country. This process is being assisted by CCCD, UNICEF and the SCF. The present plans are to effect a redistribution of existing equipment, ensuring that appropriate equipment are available at all levels of attention, taking into account needed storage capacity and available energy source in the health facilities. There are plans to have electrically powered refrigerators in all health facilities with 24 hours of electricity and for those with irregular or less than 24 hours of telectricity, to use combined gas/electric powered refrigerators. The cold chain evaluation identified the existence of old refrigerators which were originally paraffin powered and had been converted to gas power with recognized difficulties in temperature regulation. Plans are to discontinue the use of these refrigerators for vaccine storage (but keep them for non-vaccine supplies) and replace them with small capacity gas powered refrigerators.

The CCCD evaluation team was very impressed with the cold chain observed at the regional and local levels during the field visits. All health facilities visited had: functional equipment that was very well maintained, no products other than vaccines and vaccine-related supplies kept in the refrigerators, all refrigerators were functioning well, none required defrosting or cleaning and all refrigerators had thermometers for temperature monitoring. In addition, all health facilities visited were complying with the national norms for temperature monitoring of vaccine storage refrigerators twice daily. All health facilities were using the EPI Unit recommended temperature monitoring chart. In addition, the evaluation team was impressed by the obvious understanding of the health facility staff as to why temperatures were being monitored. Thus, when abnormal temperatures were recorded, it was rare to find these temperatures registered more than once, suggesting that immediately upon the discovery of an abnormal temperature, the refrigerator settings were adjusted to return the temperature to the recommended range.

WHO recommendations for vaccine storage at the local level are to store all vaccines at temperature between  $+0^{\circ}$  and  $+8^{\circ}\text{C}$  in the refrigerator compartment. The EPI Unit recommends to store polio and measles vaccine in the freezer compartment between  $-15^{\circ}$  and  $-25^{\circ}$ , and to store the remaining vaccines in the refrigerator compartment between  $0^{\circ}$  and  $8^{\circ}\text{C}$ . Concerns about these recommendations are two-fold. The first is the complexity introduced by the need to monitor both freezer and refrigerator temperatures when the monitoring of only one would be sufficient. The second concern is the lower limit of  $0^{\circ}$  presently recommended for the refrigerator compartment. If frozen, DPT, DT, and TT vaccines are rendered inactive due to the precipitation of the antigens with an inability to reconstitute vaccines once this has occurred. Since the majority of alternative energy refrigerators in the country are gas powered and these sources are somewhat more difficult to regulate at lower ambient temperatures, it is advisable to ensure that the range of temperatures recorded never

falls below 0°C or above 8°C. If there is a problem in maintaining a temperature that never falls below 0°C, (as was observed in a visit to one health center), then consideration should be given to having health workers keep their refrigerators regulated at some degree above 0 but below 8°C. Additionally to ensure that the temperature readings recorded on the graph are easily read and danger levels are readily recognized. The graphs should be modified to use intervals of 2°C with the 0° and 8° lines marked heavily. These bold markings should help attract the attention of the health facility staff to the need for immediate adjustment of the refrigerator settings.

All health facilities visited had at least one King-Seeley vaccine carrier, but few of the facilities were using them to store the vials for use during the day. Instead, most clinics kept the active vials on top of ice packs, a practice that exposes vaccines to temperatures above the recommended 8°C maximum (especially during the summer months). In 1985 the CCCD project provided 50 freezer packs and 25 vaccine carriers.

At present, SCF is providing all polio vaccine and UNICEF is providing all other EPI vaccines. Prior to their assistance, vaccines were purchased by the MOH. There is concern over the ability of the MOH to reestablish these budget line items once donor assistance ends.

Prior to the cold chain evaluation (February/March 1986), vaccine ordering and distribution was done directly between the clinics and the CVS on an "as needed" basis. Thus, when a clinic noticed that vaccine supplies were dwindling or had run out, they would find transport to go to the CVS to obtain their needed vaccine supplies. Under this system it was not unusual for clinics and the CVS to run out of vaccines. The team learned that the CVS and clinics had run out of both DPT and polio vaccines during the twelve months preceding the CCCD evaluation.

Following the recommendations of the WHO cold chain evaluation, a regionalized system of vaccine distribution was designed, with nine regional vaccine depots designated. Under the new system, clinics must place orders with their vaccine depot approximately two weeks prior to receipt of vaccines. The vaccine depots must place advance orders to the CVS, again two weeks preceding the actual receipt of the shipment. Vaccines are delivered to the regional vaccine depots once a month by a nursing supervisor and a cold chain technician from the CVS. Thus, at the time of delivery, there is an evaluation of the vaccine depot cold chain equipment. In addition, if there are problems with cold chain equipment in any of the clinics under the jurisdiction of the vaccine depot, repairs are conducted. This new system was implemented in July 1986. Field visits by the CCCD evaluation team revealed that the system is well accepted and appears to be running smoothly. One concern on the part of the evaluation team is the present policy of basing vaccine orders on previous month's utilization. This policy does not allow for a response to a major increase in demand for vaccination services should it occur.

Importation of vaccines had previously occurred on an "as needed" or at times an annual basis. This has been changed to quarterly in order to guarantee a regular supply of vaccines and avoid earlier observed problems of overstocking with resultant supplies of vaccines past their expiration date. It is noteworthy to mention that in none of the health facilities visited were expired vials of vaccines encountered.

The evaluation team was very impressed with the excellent inventory and stock distribution records that were kept at all levels of attention (CVS, regional vaccine depots and health facilities). Reviews of the vaccine inventory ledgers in the health facilities visited confirmed that health care personnel were opening vaccine vials to administer single doses and were discarding the remaining doses at the end of the day. While exact figures are not available, estimates are that this practice is resulting in a vaccine wastage of approximately 600-700%. The national policy is that all unused vaccine in an open vial should be discarded at the end of the day. Measles and BCG vaccines once reconstituted must be discarded within eight hours, but the other vaccines can be stored for up to one week once opened.

None of the health facilities visited claimed shortages of needles or syringes used for immunization activities. All but one of the health facilities were using disposable needles and syringes for immunization activities. All vaccinations were administered using a single needle for a single child. In contrast, syringes were used for vaccinating between five and ten children. All but one of the health facilities claimed not to be resterilizing disposable needles and syringes. A sterilization practices survey conducted in July 1986 (with CCCD support) revealed that 95% of immunization injections were given with a sterile needle and 10% were given with a sterile syringe. In 1985 the CCCD project provided 1500 2 CC syringes and 1000 1 CC syringes, and 10,000 disposable 22 GA needles, and 4,000 26GA disposable needles.

With the existing international concerns about the possibility of immunization program activities contributing to the transmission of both hepatitis B and AIDs virus through immunization activities, there is increased pressure to ensure that a sterile needle and a sterile syringe be used for each child vaccinated. There are new low cost plastic syringes that can be resterilized 200-250 times, permitting the purchase and distribution of sufficient supplies so that clinics providing immunization services will not have the need to resterilize equipment during an immunization session, a recognized deterrent to the policy of one child per needle and syringe. In 1985 25 sterilizers were provided under the CCCD project.

#### Recommendations:

- The EPI Unit should change the vaccine ordering procedures to be based on the target population to be covered rather than on the previous month's vaccine utilization.

- National norms related to the discarding of unused, opened vials of polio, DPT, DT and TT vaccines should be reevaluated in order to decrease the observed costly increase in vaccine wastage. In addition, a study on the comparative cost of the use of single dose vials of measles vaccine versus the cost of 600-700% wastage through the use of 10 dose vials should be conducted.
- All health facilities should store their daily active vaccine vials in the King-Seeley vaccine carriers to ensure that temperatures above +8° are not surpassed, thereby permitting unused vials to be used in subsequent vaccination sessions.
- The temperature monitoring graph should be modified to use intervals of 2°C with the 0° and 8° lines marked heavily so that temperature recordings outside the recommended range will be readily recognized and alert the health facility staff to adjust the refrigerator settings immediately.
- All children should be immunized with a sterile needle and a sterile syringe. "One child per needle and syringe".
- Given the cost implications for ordering increased quantities of disposable syringes, consideration should be given to change to reusable syringes and needles.

#### 4.4.4 Training of Health Care Personnel in EPI Activities

An excellent manual for health care providers containing the national norms for the EPI activities exists. With the exception of the topic of contraindications for immunizations, all health facility staff interviewed were aware of the national norms and were following them. A review of this manual reveals that the section dealing with contraindications is not clear and leaves too much room for interpretation.

In February 1985, a midlevel management course on EPI was conducted with CCCD support, at which time 25-30 staff nurses at the supervisory level were trained. In addition, during September and October 1985, ten three-day workshops were held throughout the country for updating staff nurses and nursing auxiliaries on immunization practices (CCCD supported). Areas of information gaps in health sector personnel were identified through a KAP survey conducted in 1985. A simultaneous population based KAP revealed that side effects were a major deterrent to completion of the series. Thus, there was an emphasis in the training on the need to explain side effects to the caretakers at the time of immunization. Rural health motivators are continually retrained in EPI strategies with an orientation towards the health education of the population under their jurisdiction.

## RECOMMENDATION:

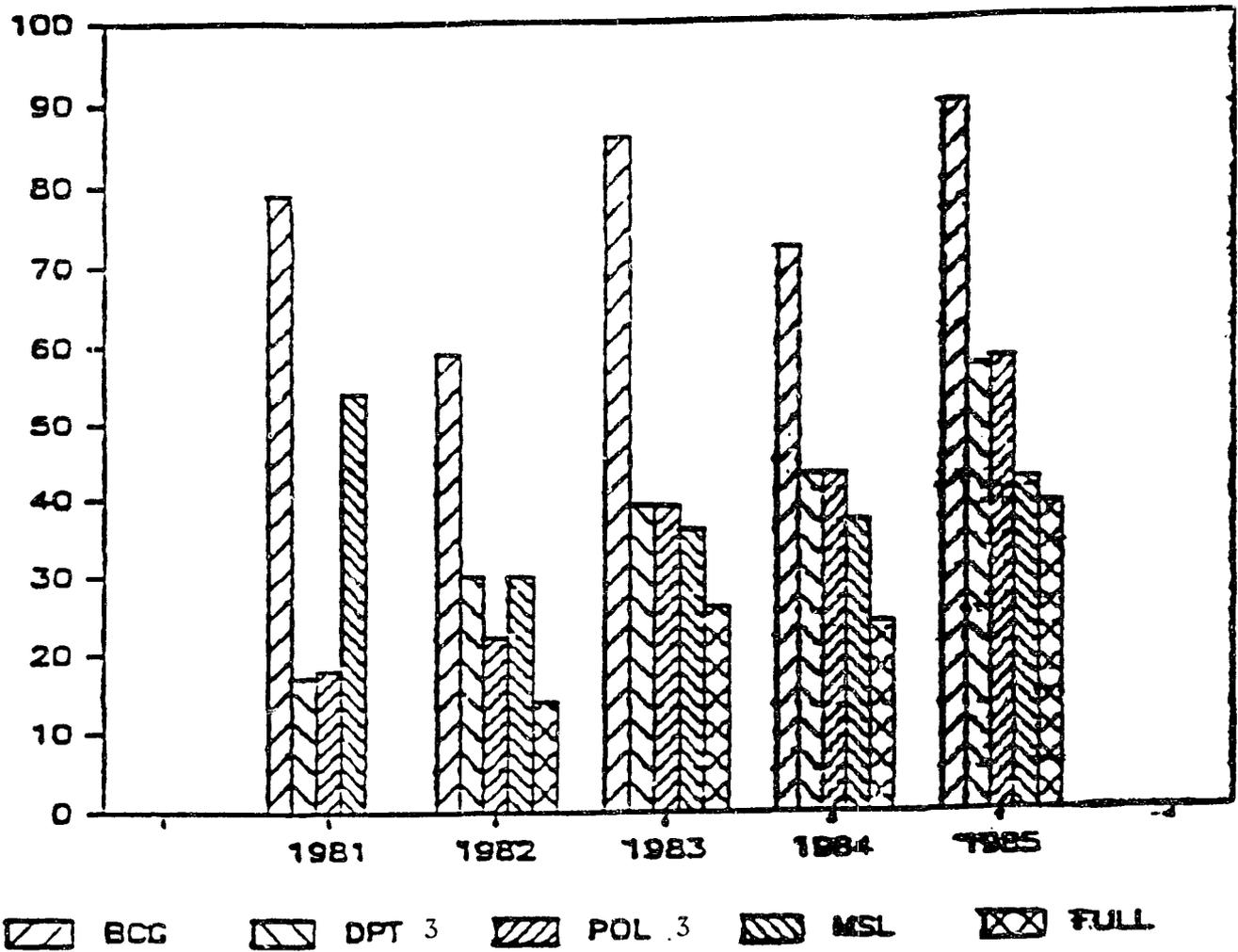
- Training of health care providers should heavily emphasize the avoidance of "missed opportunities".
- All health care personnel, especially those involved in provision of curative services, must be aware of the necessity to review all children's immunization status prior to provision of curative services and not miss the opportunity to immunize an unprotected child.
- The EPI manual for health care providers should be modified to clarify the section on contraindications for vaccination.

### 4.4.5 Vaccination Coverage

Figure 3 shows the vaccination coverages in Swaziland among the 12 to 23 month age group during the period 1981 through 1985. There is a gradual but steady increase in coverages with all EPI vaccines during the five year period presented.

Figure 3:

Annual Vaccination Coverages of the 12-23  
Month Old Population by Vaccination  
Swaziland 1981-85



Source: CCCD 1985 Swaziland Country Report

Cluster sampling surveys to ascertain vaccination coverages have been conducted annually since 1982. Table 2 shows the vaccination coverages of the 12-23 month age group (representing the preceding years performance in the less than one year old population) from the surveys conducted during the period 1982-1985.

Table 2: Vaccination Coverages of Children 12-23 months  
Obtained Through Annual Cluster Sampling Surveys  
by Year of Survey and Vaccine Type  
 Swaziland 1982-1985

	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>
	( % Coverage )			
BCG	59	86.0	72.2	89.7
DPT 1	55.2	68.2	66.8	74.2
DPT 2	48.1	49.5	59.2	67.1
DPT 3	30.5	39.3	43.0	57.0
Polio 1	56.2	68.7	66.6	74.4
Polio 2	45.2	50.0	58.7	66.3
Polio 3	22.4	39.3	42.8	57.8
Measles	30.5	36.4	37.0	42.3
Fully Immunized	14.3	26.2	24.3	38.5

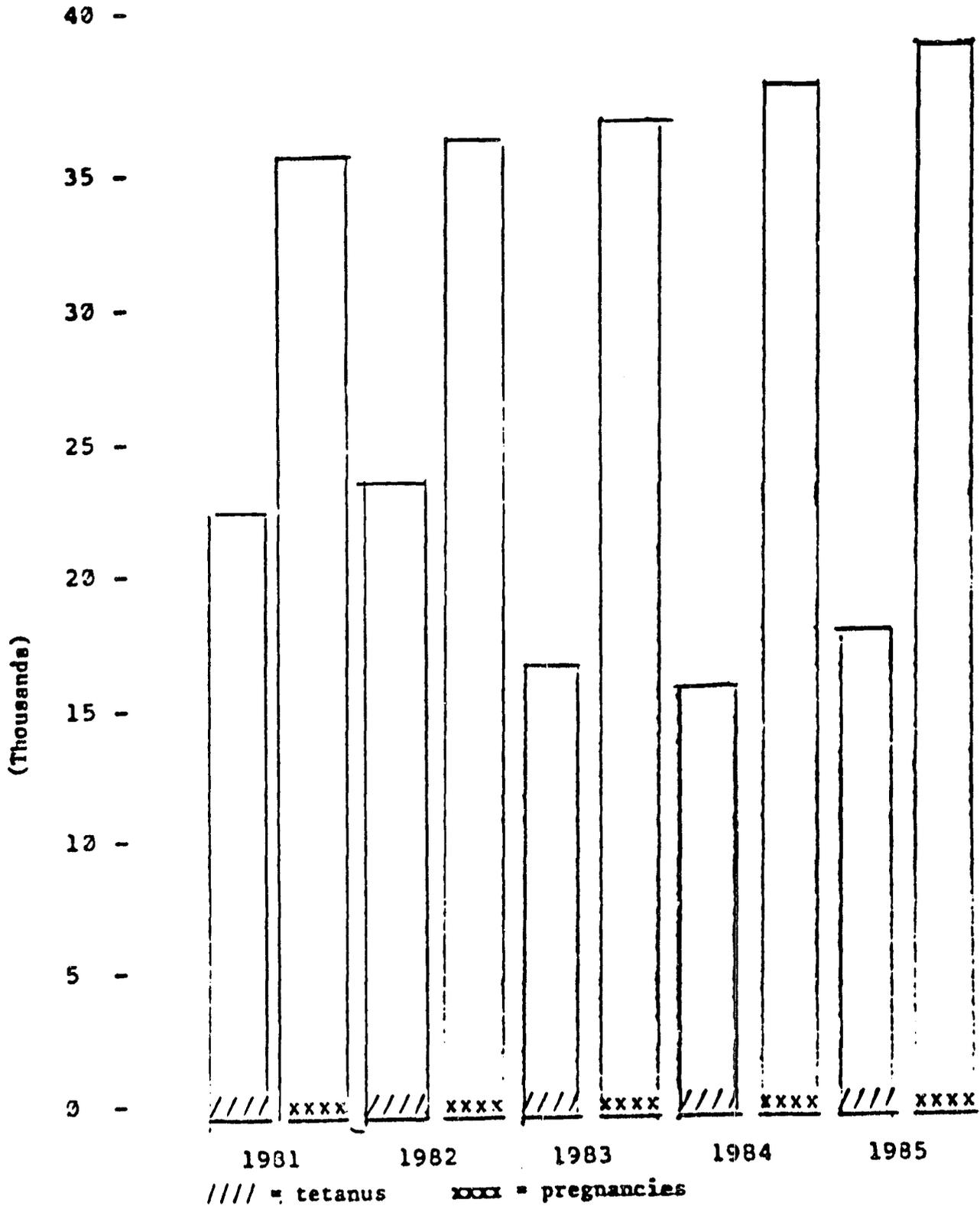
Source: Statistical Unit, Ministry of Health.

Since 1982, there has been a steady increase in vaccination coverages with all vaccines and a 2.7 fold increase in the proportion of children fully immunized by their first birthday. In 1985, the proportion of children fully immunized is 38.5% as compared to 14.3% in 1982. It is important to mention that results of the 1985 survey are presently under review to ascertain if doses were checked for validity (in terms of age at administration of dose and interval between doses). An impressive finding is the 23% drop-out rate between third and first doses of DPT administered and the 22% drop-out rate between third and first doses of polio vaccine administered; almost 80% of children who start their series go on to finish their series. Of concern is the relative slow increase in improvement in coverages with measles vaccine from 30.5% in 1982 to 42.3% in 1985, representing an increase of only 12% in contrast with a doubling coverage with DPT and polio vaccines during the same period. As mentioned earlier, one sees a gradual decrease in coverage for each successive contact required, starting with almost 90% coverage at the first contact and ending with 39% at the fifth contact.

Figure 4 presents the coverages of pregnant women with first doses of tetanus toxoid when compared with the number of estimated pregnancies per year during the period 1981-1985. The failure to increase coverages to greater than 50% of estimated pregnancies during this period is clearly illustrated. Information on the proportion of women in the fertile age group with a history of TT vaccination (first dose, second dose and booster doses) is not available.

**Figure 4:**

**Number of First Doses of Tetanus Toxoid  
Administered to Pregnant Women and  
Estimated Number of Pregnancies by Year  
Swaziland, 1981-1985**



Source: CCCD 1985 Swaziland Country Summary

For all years in which immunization coverage surveys were performed, the variance in coverages between those reported through the routine HIS and those ascertained through the coverage surveys has been on an order of magnitude of 2-4%. While this appears to suggest an excellent HIS, it must be reminded that data reported through the HIS do not represent information collected from 100% of reporting units. This suggests there may be an overreporting of immunization activities through the routine system, or serious problems with population estimates used.

Population estimates are based on projections from the 1976 census and therefore are subject to question. At the time of writing of this evaluation report, a national census is underway. Results of this census are expected by the end of this calendar year and should greatly improve some of the data analyses presently performed.

While progress in coverages has been clearly demonstrated, the stated goals of the CCCD project to increase coverages of the target population to 60% with third doses of DPT and polio vaccines and 50% with measles vaccines, will require increased efforts with strategy modifications during the next 12-24 months.

Recommendations:

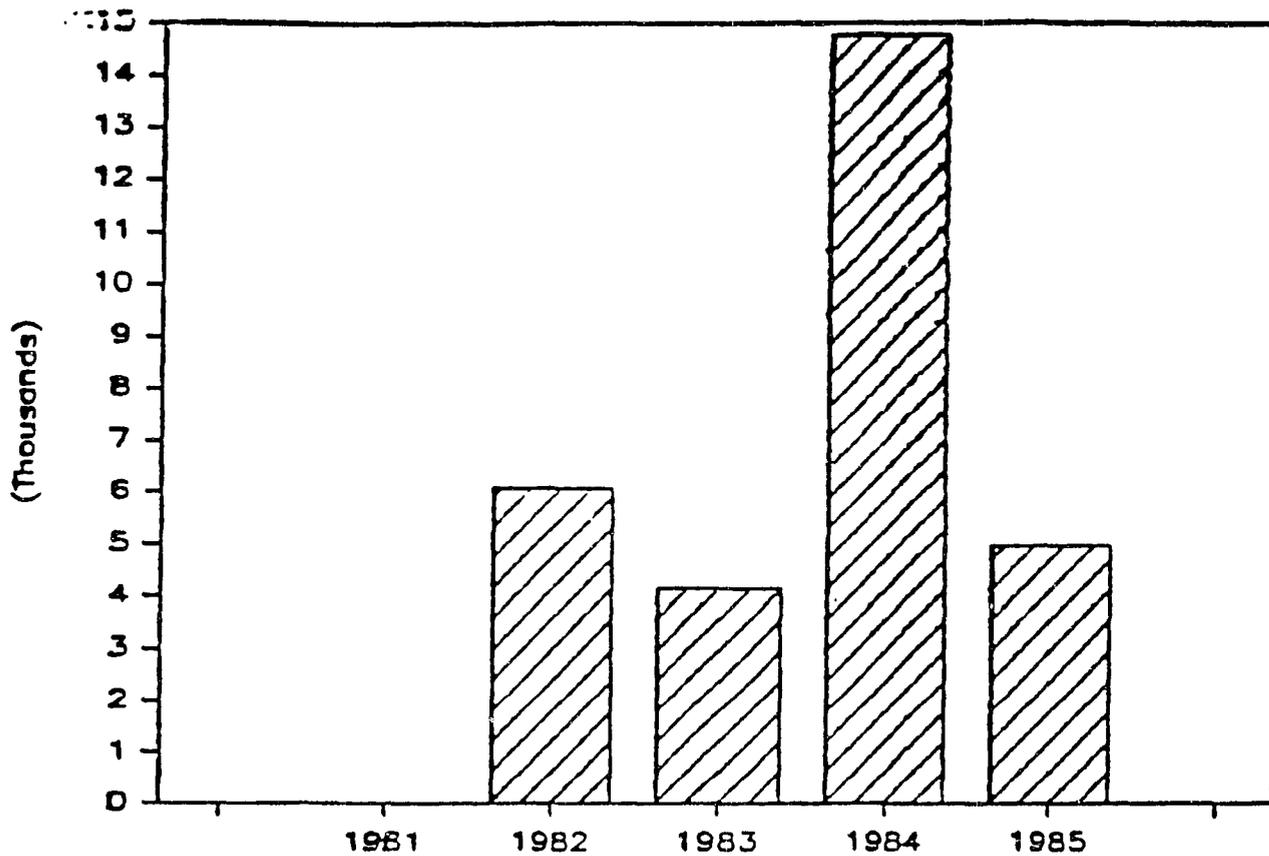
- Strategies for increasing coverages among the less than one year old population should be reviewed.
- Strategies for increasing coverages with TT among women in the fertile age group should be reviewed.
- Vaccination coverage surveys should include information on coverages of women in the fertile age group with TT.

4.4.6 Morbidity and Mortality Due to Vaccine Preventable Diseases

Figure 5 shows the number of cases of measles reported annually during the period 1982-1985.

**Figure 5:**

**Annual Reports on the Numbers of Cases  
of Measles Presenting to Outpatient Facilities,  
Swaziland, 1982-1985**



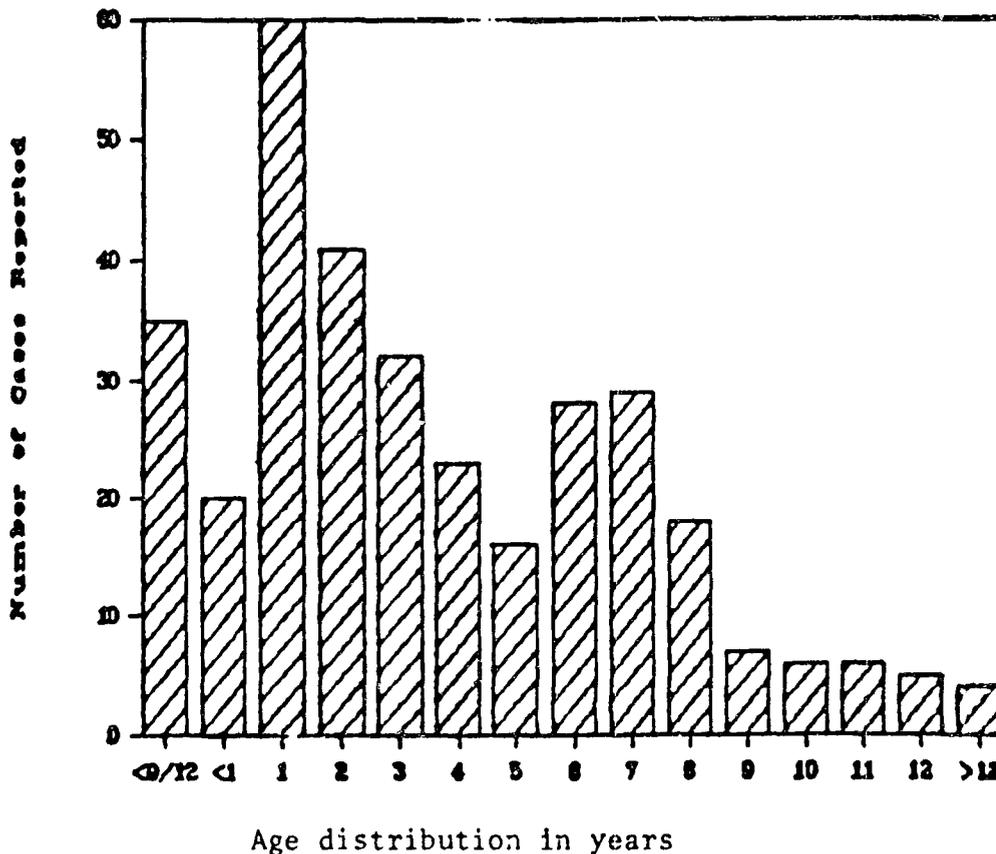
Source: Statistical Unit/MOH Outpatient Discharge Diagnoses

There was major epidemic activity of measles in 1984. In response to the measles epidemic, many of the health facilities decreased the age for immunization with measles vaccine to 6 months of age. This creates the concern that those children who had been immunized prior to 9 months of age may represent a pool of susceptibles with a history of immunization.

Figure 6 shows the age distribution of 330 measles cases reported during the first half of 1985, the only time period for which data of this kind are available. Of interest, 34.8% of cases occurred in the less than 2 year old population, with 10.6% of cases occurring in the less than 9 month old age group. Those cases occurring in the less than 9 month old population are cases that are considered to be nonpreventable, as these are children who are not eligible for immunization. In contrast, almost 90% of cases were preventable.

Figure 6:

Age Distribution of Reported Measles Cases  
During the First Half of 1985  
Swaziland



Source: Immunization Update, June 1985 EPI Unit/PCU/MOH

Recommendations:

- The earlier recommendation to create the post for a medical epidemiologist to work closely with the statistical unit to design and implement an active epidemiologically based surveillance system for the EPI target diseases is restated.
- There is the need to reinstitute an EPI target disease surveillance system to carefully monitor the immunization history of reported cases.
- The evaluation team cannot recommend strongly enough the need to develop an epidemic response capability that would permit the early detection and investigation of increased occurrence of vaccine preventable diseases and in turn permit the early implementation of control measures through increased immunization activities in areas identified as at risk.
- The EPI coverage surveys should be reanalyzed to ascertain the proportion of children vaccinated against measles earlier than nine months of age. If the proportion is found to be high, consideration must be given to revaccination of these children.
- With the observed occurrence of tuberculosis in children of 0-5 years old, there is the need to assess the efficacy of BCG vaccine. Given the availability of operations research funding through the CCCD project, the evaluation team recommends that such a study be funded.

Table 3 shows the vaccination histories of 367 measles cases reported during the first half of 1985 (the only period for which these data are available).

Table 3: Vaccination Histories of Measles Cases Occurring  
in the First Half of 1985, by Age of Case  
and Age At Receipt of Measles Vaccine  
Swaziland

Age of Case in Years	Age at Time of Immunisation in Years							Total Immunised	Not Immunised	TOTAL CASES
	< 9/12	< 1	1	2	3	4	Unknown			
< 9/12								0	35	35
< 1		3						3	17	20
1	2	5					4	11	49	60
2		1					3	4	37	41
3	1	1		1			2	5	27	32
4		2					1	3	20	23
5	1	1					3	5	11	16
6		1					3	4	24	28
7		1				1		2	27	29
8							3	3	15	18
9							1	1	6	7
> 9							3	3	18	21
Unknown							1	1	36	37
<b>Total</b>	<b>4</b>	<b>15</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>24</b>	<b>45</b>	<b>322</b>	<b>367</b>

Source: Immunization Update, June 1985, EPI Unit/PHU/MOH

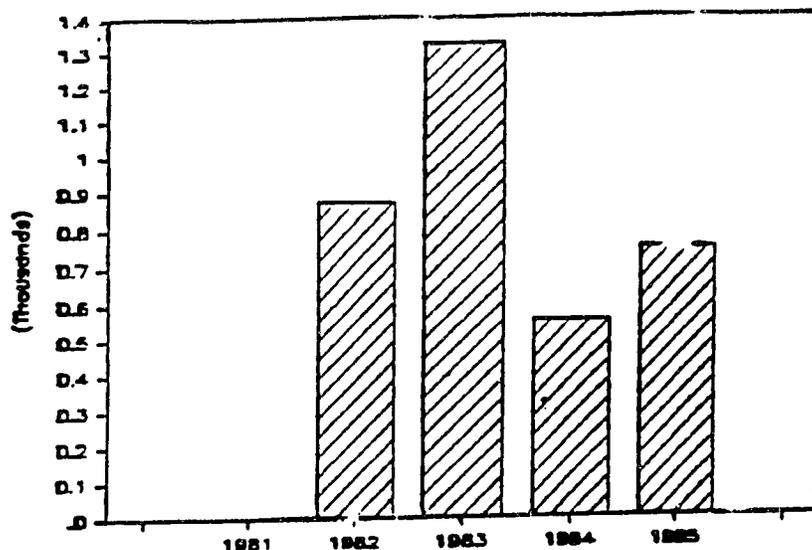
Of the reported measles cases, 13.6% had a history of immunization. Four of these had been immunized prior to the age of 9 months. Thus, 12.4% of reported measles cases had been immunized correctly. Over half of the cases reporting a history of vaccination did not have exact dates of vaccination available for review. Thus, it was difficult to determine if children had been immunized at the proper age. Those where vaccination histories were documented, represented 5.2% of the total cases. This low proportion of total cases with prior vaccination history is consistent with the observed low coverages with measles vaccine.

Preliminary information from hospital discharge records for 1985 revealed a 2% hospital-based case fatality rate for measles. For the less than 1 year old age group, there was an 11% case fatality rate followed by a 2.1% case fatality rate in the 1-4 year old age group. This high case fatality rate seen in the less than 1 year old population further emphasizes the need for immunization against measles prior to the first birthday. The earlier observed shift to an older age distribution of cases (65% of cases are greater than two years of age) may explain why the overall case fatality rate is lower than that seen in other African countries).

Figure 7 shows the number of reported cases of pertussis annually during the period 1982-1985. While health care personnel state that pertussis is not a major problem, in 1985, the population based rate was 105 cases per 100,000 population.

Figure 7:

Annual Reports on the Numbers of Cases of Pertussis  
Presenting to Outpatient Facilities  
Swaziland, 1982-1985

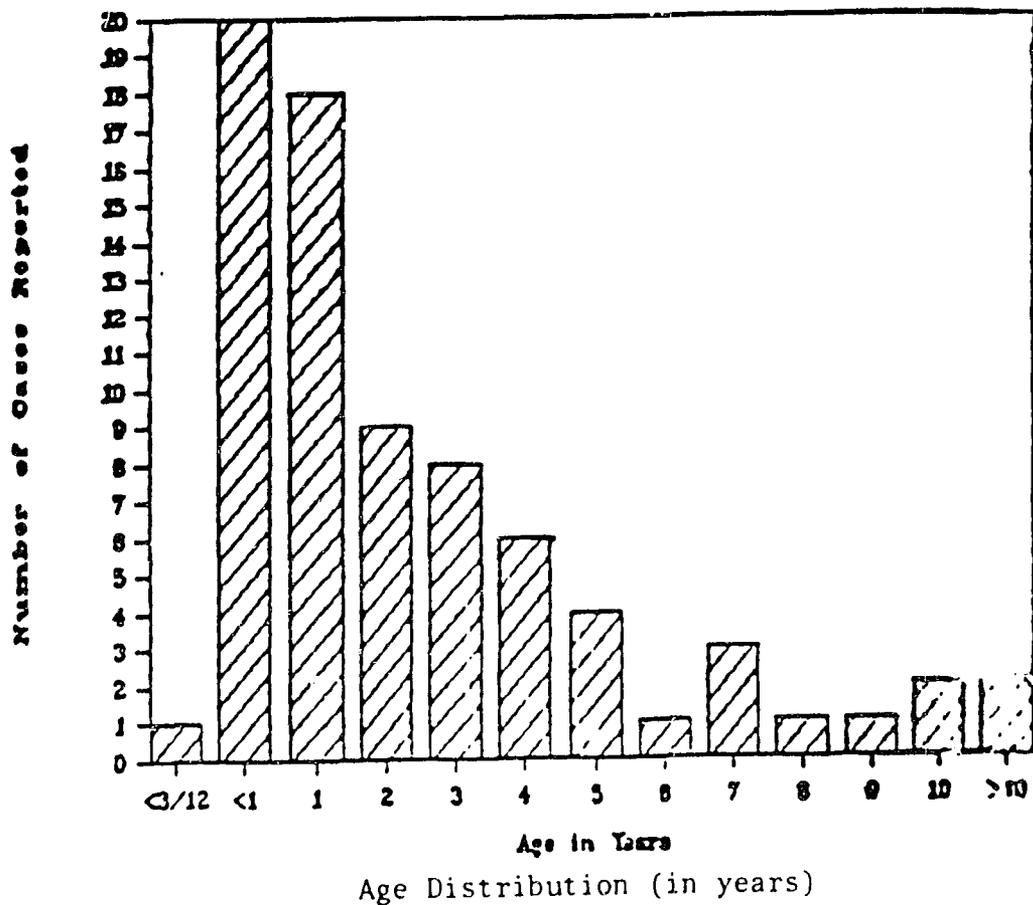


Source: Statistical Unit/MOH Outpatient Discharge Diagnoses

Figure 8 shows the age distribution of pertussis cases during the first half of 1985.

Figure 8:

Age Distribution of Reported Cases of Pertussis During  
the First Half of 1985, Swaziland



Source: Statistical Unit/MOH Outpatient Discharge Diagnoses

Of interest, there was only one case that occurred in a child less than 3 months of age. Children under 1 year of age accounted for 27.6% of the reported pertussis cases, while over 50% of the cases were under 2 years of age. Analyses of the vaccination histories of the pertussis cases revealed that 27.6% had received at least 1 dose of DPT, 17.1% had received a second dose, and 13.2% had received a third dose.

During the period 1982-1985, the annual number of cases of poliomyelitis presenting to outpatient facilities varied from a low of 13 cases in 1985, to a high of 39 cases in 1983. The 1985 population based rate was 2.0 cases per 100,000 population. Reporting of poliomyelitis cases is generally accepted to represent 10% of actual cases occurring. A reported rate of 2.0/100,000 population is high and suggests coverages as yet have not interrupted transmission of poliovirus. Information on age distribution and vaccination histories of poliomyelitis cases were not available for review.

Information on the number of cases of neonatal tetanus is available for 1984 and 1985, when there were 252 and 133 cases reported respectively. The 133 cases in 1985 represents an incidence of 3.9 cases per 1000 live births that year and suggests the need for an increased effort to vaccinate women in the fertile age group to prevent neonatal tetanus.

In 1985, of 566 patients admitted to hospitals in Swaziland with the diagnosis of tuberculosis, 62 (11%) occurred in children 0-5 years old. This is disconcerting given the observed trend for decreasing coverages with BCG over the recent few years.

The paucity of epidemiological data available to follow age distributions and immunization status of cases of the EPI target diseases represents a serious constraint to adequate evaluation and monitoring of the impact of CCCD activities. The evaluation team feels strongly that collection of epidemiological data on the EPI target diseases be reinstated as soon as possible.

At present, there are no epidemic response capabilities in the MOH. While theoretically all diseases notified through the communicable disease reporting system are to be immediately investigated by the physician at the regional health level, in practice this is not occurring. During the field visits, the evaluation team noted that all health facilities visited had begun seeing increases in measles cases during the few weeks preceding the visit, yet at the central level, increased measles activity had not been officially recognized.

#### Recommendations:

- The earlier recommendation to create the post for a medical epidemiologist to work closely with the statistical unit to design and implement an epidemiologically based surveillance system for the EPI target diseases is restated.

- There is the need to reinstitute an EPI target disease surveillance system to carefully monitor the immunization history of reported cases.
- The evaluation team cannot recommend strongly enough the need to develop an epidemic response capability that would permit the early detection and investigation of increased occurrence of vaccine preventable diseases and in turn permit the early implementation of control measures through increased immunization activities in areas identified as at risk.
- The EPI coverage surveys should be reanalyzed to ascertain the proportion of children vaccinated against measles earlier than nine months of age. If the proportion is found to be high, consideration must be given to the revaccination of these children.

#### 4.5 Control of Diarrheal Diseases (CDD)

##### 4.5.1 Organization, Administration and History of Country Program

In Swaziland, diarrheal diseases are recognized as an important cause of morbidity and mortality among the childhood population by all health care personnel. Preparations for the development of the National Control of Diarrheal Diseases (CDD) program were begun in 1982 and 1983. Prior to the implementation of this program, the use of oral rehydration therapy (ORT) as a primary intervention for diarrheal diseases in the country was limited to certain hospitals where physicians had been convinced of its value. Following a major epidemic of cholera in 1981/82, two senior staff nurses were sent to the International Center for Diarrheal Disease Research in Bangladesh (ICDDR-B) to receive training in the use of oral rehydration salts (ORS) for the management of diarrheal diseases. Following the return of these two staff nurses, one was appointed national coordinator of CDD activities and the other returned as the nursing matron to one of the two major nursing schools in the country.

The CDD program activities are located in the central office of the Public Health Unit (PHU) in Mbabane. In addition to the National CDD program coordinator, at the central level there are two health educators (one nurse and one health inspector by training) who were seconded from the Health Education Unit (HEU) to the PHU to participate in the development of communication technology for use in program activities.

In addition to the responsibility for overseeing all activities under the CDD program, the CDD program coordinator is also the designated CCCD coordinator. This has created the situation where the individual in charge of the program has so many responsibilities, that supervision and field visits are a virtual impossibility due to severe time constraints.

At the regional level there are no designated CDD program personnel. At the operative level the staff nurses, nursing assistants, and rural health motivators in addition to the physicians all participate in CDD activities.

As was observed with the EPI program, the CDD program activities planning have been based on a 6 to 12 month plans. At the time of the CCCD evaluation, a first draft of a 5 year CDD implementation plan was in preparation. The committee identified for participation in the 5 year CDD implementation plan has representation from the PHU, ORT Training Unit, CCCD, UNICEF, The Institute for Health Sciences, Statistics Unit/MOH, WHO, Matron/Mbabane Government Hospital and Nutritionist/MOH.

Recommendation:

- There is the need to create the post of CDD program deputy director to assist in the carrying out of all phases of CDD program activities.

4.5.2 Oral Rehydration Therapy (ORT)

CDD activities began in 1976 with radio messages that recommended the use of oral rehydration fluids made of 2 teaspoons of salt and a pinch of sugar to a pint of water. Beginning in 1976, oral rehydration salts (ORS) packets were distributed to health centers and new directions were provided for mixing the homemade Sugar Salt Solution (SSS). In response to a major epid mic of cholera in 1981 and 1982, the MOH adopted a position for a concerted effort in the control of diarrheal diseases, with a major emphasis placed on the use of ORT. In addition to the emphasis on the use of ORT, there was a renewed emphasis for the promotion of safe water and pit latrines as part of a USAID funded rural water borne disease control project.

In late 1983, the Mass Media Health Practices (MMHP) project was designed to increase public awareness on the need for the use of ORT early in the course of a diarrheal episode. Major financial support for the implementation of the MMHP project came through the CCCD project. The emphasis of this project was the application of social marketing strategies with the use of mass media to teach the population to use an appropriate SSS at home solution (based on a sugar and salt mixture) for the treatment of diarrheal episodes.

Preliminary research conducted in the early part of 1984 resulted in the promotion of a home based SSS using a one liter Coca Cola bottle to measure water and half a capful of salt with eight capfuls of sugar. The MMHP project had a very heavy emphasis on the raising of community awareness for the need of prevention of dehydration in children with diarrheal episodes. The decision to go with a home based solution was taken to reduce the reliance upon clinic based services given the difficulties in access of the population to the services. The

communication messages directed caretakers to prepare the SSS at home and if the diarrheal episode persisted, to administer it to the child while en route to the health center to obtain ORS packets. KAP surveys preceding the development of the messages revealed that traditional methods for the treatment of diarrhea included purges. Messages discouraging this practice were developed. The MMHP project also included the development and production of fliers and posters, and was oriented towards training of health care providers as well as the population.

An evaluation of the impact of the MMHP project revealed that 54% of mothers were preparing a mixture of SSS with a sodium concentration above the WHO maximum of 100 millimoles per liter, and 12% of mothers were preparing a mixture with a sodium concentration above 142 millimoles per liter. In the face of this finding, the issue which must be addressed is whether or not the MOH should continue the promotion of home prepared SSS or if a switch in emphasis should be made for a more widespread use of ORS packages.

One of the constraints to the use of ORS packets at the community level, has been the availability of a one liter measure in the household. The evaluation of the MMHP project revealed that this hurdle (one liter measurement) has been overcome in Swaziland. All mothers tested were correctly using one liter of water for the preparation of the SSS. Given the history of repeated changes in recommended formulas for SSS preparation, one must be careful not to alter the recommendations in a manner that produces a credibility gap on the part of the population for MOH recommendations.

Anecdotal reports from all health facilities visited during the course of this evaluation revealed that since the implementation of the mass media campaign directed at ORT, health facilities are seeing fewer cases of severe dehydration in children with diarrhea. Unfortunately, data has not been collected that would permit a statistical verification of these anecdotal reports. It is impressive that the majority of health facilities visited related that the most mothers arrive at health facilities with their one liter Coca Cola bottle containing the home prepared SSS that the mother had been administering en route to the clinic.

While the MOH policy is to use ORT as a primary preventive intervention for diarrheal episodes (mortality prevention) there is still some observed resistance to this on the part of senior medical staff, especially physicians. An example of this was clearly seen during the field visits. In one health facility with inpatient beds, a child was observed with an intravenous line for "rehydration," when the child was actively crying and could have been receiving ORT.

In 1985, there was a CCCD supported conference of physicians to reemphasize the need for the use of ORT. Concurrent with the CCCD evaluation (July 1986), there was a senior level staff conference (supported through the CCCD project) again addressing the issues of CCCD interventions, especially the use of ORT. Reports of this conference revealed continued resistance of some physicians to the use of ORT for the management of dehydration.

While the national norms specify that ORS packets are to be distributed by fixed health facilities and the rural health motivators (RHMs), in practice, RHMs provide community education in the preparation of SSS. As part of the MMHP project activities, there was the use of a color coded flag showing a healthy baby to identify households where information on the proper formula for the preparation of SSS could be obtained. Individuals received these flags after they had successfully completed training courses in the proper mixture of the SSS. During the course of the project, there was a concentration on the training of RHMs and traditional healers. The emphasis on training of traditional healers was brought to a standstill when it was discovered that many of the trained traditional healers who had received flags were using them to attract patients who would then be administered traditional treatments of diarrheal episodes (purgatives).

The CDD program also has activities promoting the continuation of breast feeding and improved nutrition during diarrheal episodes, in addition to the promotion of safe water and better hygienic practices. One of the criticisms of the MMHP project is that the messages were heavily oriented towards the treatment of diarrhea with ORT, and less attention was paid to messages on the need for continuation of breast feeding and improved nutritional practices during diarrheal episodes.

One of the concerns expressed following the completion of the MMHP project activities, was the dropping of communication messages directed towards ORT and the switch over to an almost completely EPI oriented communication strategy. A concern was raised that there would be a drop off in the retention of the messages on diarrheal disease management.

It is important to mention that an excellent manual for health care providers on the management of diarrheal episodes has been produced by the CDD Unit/PHU.

#### Recommendations:

- The CDD program should decrease the emphasis on a home based solution and increase the emphasis on the need to obtain ORS packets. Because of the findings of potentially dangerous SSS prepared at home by over half of the mothers tested, the change to ORS packets should be implemented.

- There is still the clearly defined need for continued education of the senior medical staff to promote the utilization of CRT for diarrheal episodes.
- There is a strong need to assess ORT utilization at the community level. Consideration should be given to the addition of questions related to the management of diarrheal episodes in the next annual vaccination coverage survey.\*
- All health communication project activities should have "maintenance" stages following initial messages to ensure continuous awareness and education of the population.

#### 4.5.3 ORS Supplies and Distribution

At the central level, ORS packets are stored in the central medical stores (CMS) in Mbabane. Distribution of these packets is through the normal drug supply distribution network within the country. During the course of the evaluation, a serious problem in supply and distribution from the CMS was identified. Field visits revealed that most facilities visited had suffered from ruptures in stocks of ORS packets during the preceding year. Health facilities submit monthly orders to the CMS. Due to transportation difficulties at the CMS, in order to guarantee receipt of requested orders, the health facility staff must go to Mbabane with their own transport to pick up their orders. With limitations in transport available to health facilities, it is not unusual for the facilities to run out of supplies. In one of the health facilities visited, the health facility had been out of ORS packets for more than a month and had reverted to the use of old ORS tablets which contain sodium, potassium, and chloride and have instructions to add glucose or sucrose when using in children under five. The health facility staff were using the tablets but were not adding glucose or sucrose to the solution prepared.

In response to cyclone Domoina in 1982, the MOH received a donation of 300,000 packets of ORS produced in Lesotho. At the time of this evaluation, packets from this original donation were still in circulation. Some ORS tablets were also received in 1983 as an emergency response to the cyclone disaster. While the remaining in-country stock of ORS tablets is minimal, the team found a few on clinic shelves. Clinics should be advised to destroy any remaining ORS tablets on hand. If one applies the WHO estimate of two diarrheal episodes per child per year, the use of two packets per episode (or four packets per child per year), over 400,000 packets should have been used in the first year following receipt of this shipment.

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\*(One manner in which to approach this would be the inclusion of questions identifying recent episodes of diarrheal disease in the less than 5 year old population and then identifying treatment modalities caretakers used for these diarrheal episodes).

In addition to the problem of ruptures of stocks at the operative level, the existence of ORS packets produced in 1983 (having been stored in the CMS for three years) has resulted in a high proportion of packets distributed that are no longer usable due to caramelization and decomposition of the salts. (In 1984 UNICEF purchased 545,600 ORS sachets or packets and in 1986 54,000 ORS packets. Of this amount as of August 1986, 155,000 ORS packets remained in stock of which 105 were spoiled, beyond their shelf life, and not recommended for use.)

The problem of the spoiled packets is multifactorial. After these packets were produced it was recognized that there had been a problem of defective sealing of the packets at the production facility in Lesotho. In addition, the packets are made with a relatively clear plastic packaging, reducing the cost of the final product. It is well recognized that clear packaging material has the disadvantage of a shorter shelf life (between one and two years maximum). Thus, the combined situation of a known problem in the sealing of the packaging along with the existence of stocks long past their viable shelf life

has resulted in the situation that many of the packets presently available in health facilities cannot be used because they are defective. Of greater concern is that in addition to the existence of packets that have obviously caramelized, there are packets which have hardened (an early sign of decomposition of the salts) but have not as yet discolored and therefore may erroneously be used by the health facility staff.

Because of deficiencies in supplies at the level of the health facility, the majority of RHMs have not been given ORS packets in spite of the national norms specifying the RHMs as distribution points for the packets in the communities.

ORS packets are purchased for the MOH by UNICEF. To avoid a recurrence of the oversupply that occurred in 1983, a new quarterly importation schedule has been implemented in July 1986.

Inventories of ORS packet flows are not kept by health facilities. Information on the number of packets received by health facilities and in turn the number of packets actually administered by health facilities per month is not available. In addition, information on the distribution of ORS packets from the central level to the clinics was not available to the evaluation team.

#### Recommendations:

- The CDD unit should recall the 1984 shipment of ORS packets with a simultaneous distribution of fresh packets.
- Given the concerns about the continued use of a potentially dangerous SSS by mothers, combined with the need to increase the availability of the ORS packets at the community level, the RHM should be used as a distribution point for the introduction of ORS packets into the community.
- The distribution of ORS packets to the RHMs should be accompanied with education of the RHMs to ensure that children who are not responding well while receiving ORT are immediately taken to the nearest health facility for further treatment.
- Given the identified problems with distribution of supplies from the central level, consideration should be given to the possible development of a regional distribution system analagous to that in place for vaccine supplies. Consideration to the availability of packets in the commercial sector (chemists, traders and traditional healers) should also be given.
- There is the identified need to develop a data collection system for monitoring the use of ORS packets.

#### 4.5.4 Hospital ORT Units

At the time of this evaluation, plans to open an ORT demonstration unit at the Mbabane General Hospital were underway (with the support of CCCD). The scheduled date for opening of the unit was for August 1st. The two staff nurses who have been designated to run the unit have not returned from training in Lesotho and therefore the opening of the unit has been postponed. Concomittant with the opening of this ORT demonstration unit, are plans to introduce a diarrheal disease management reporting form for use in the unit. In addition to monitoring all diarrheal episodes for hydration state upon arrival to the health facility, there will be nutritional assessments of all children treated.

The ORT demonstration unit will serve as a training unit for health care personnel on the appropriate management of diarrheal episodes following an assessment of the hydration status. The ORT demonstration unit is planned to serve as a direct care facility for all diarrheal cases presenting to Mbabane General Hospital to facilitate the immediate treatment of diarrheal episodes and avoid the delays experienced in the outpatient department. In addition, all children presenting to the ORT demonstration unit with a history of diarrheal diseases will be screened for their immunization status and vaccines will be administered prior to the child's leaving the unit.

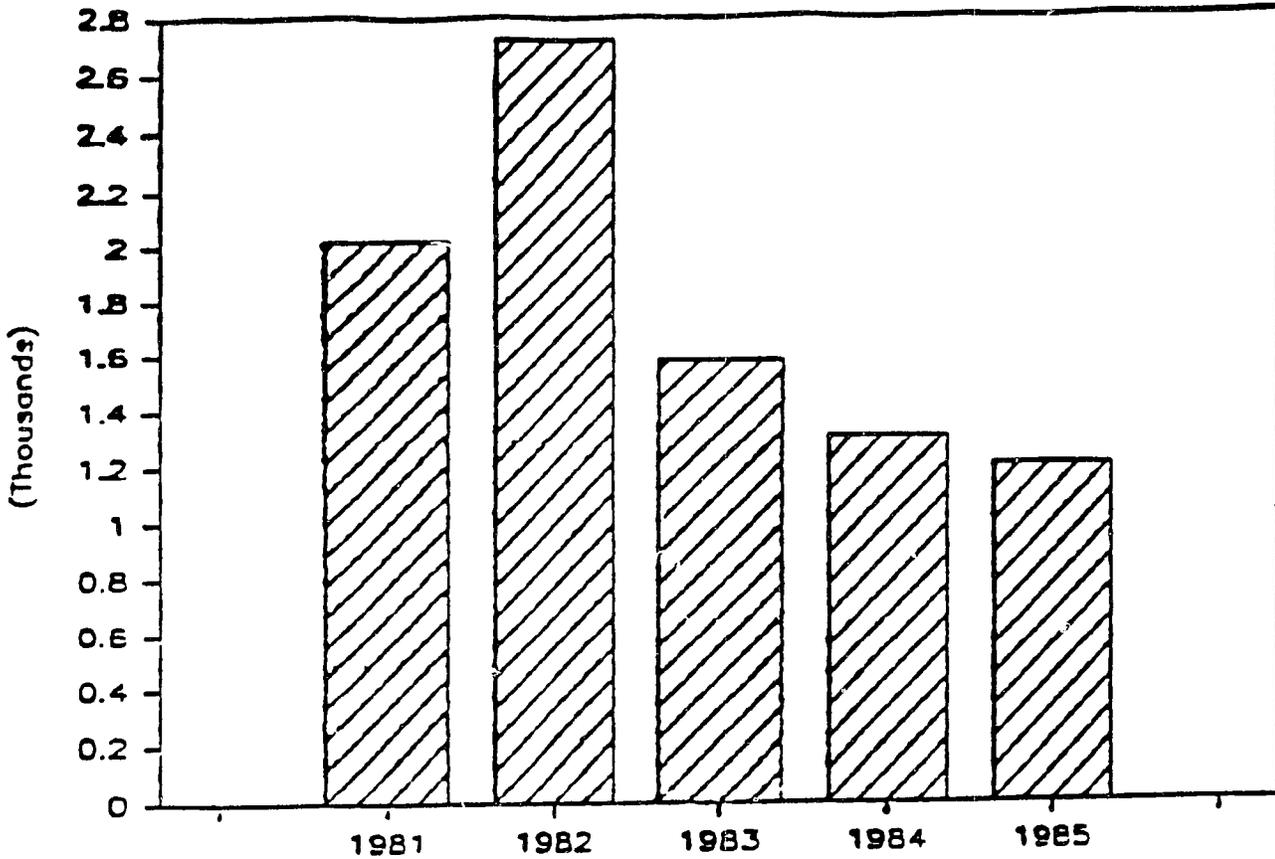
After the opening of this unit, plans are to train two staff nurses from each of the regions (under the new decentralization plan) so that ORT treatment units will be opened in each of the regions. With the establishment of ORT units at the regional level, they will be used for the training of health care personnel in clinics under the jurisdiction of each of the regions. Thus, there are very well developed plans for continuing education in appropriate management of diarrheal diseases in Swaziland.

#### 4.5.5 Morbidity and Mortality Due to Diarrheal Diseases

Prior to 1982, information on diarrheal diseases collected on outpatient visits was reported for all age groups. Starting in 1982, diarrheal disease case reporting from the outpatient department visits were subdivided into episodes occurring in the less than 5 year old population and those occurring in the greater than 5 year old population. Figure 9 shows the number of cases of diarrheal disease episodes by year presenting to Raleigh Fitkin Memorial Hospital during the period 1982-1985.

**Figure 9:**

**Annual Reported Cases of Diarrheal Diseases  
in Children Less Than 5 Years of Age  
Presenting to Raleigh Fitkin Memorial Hospital  
Swaziland, 1981-1985**



Source: CCCD 1985 Swaziland Country Program Update

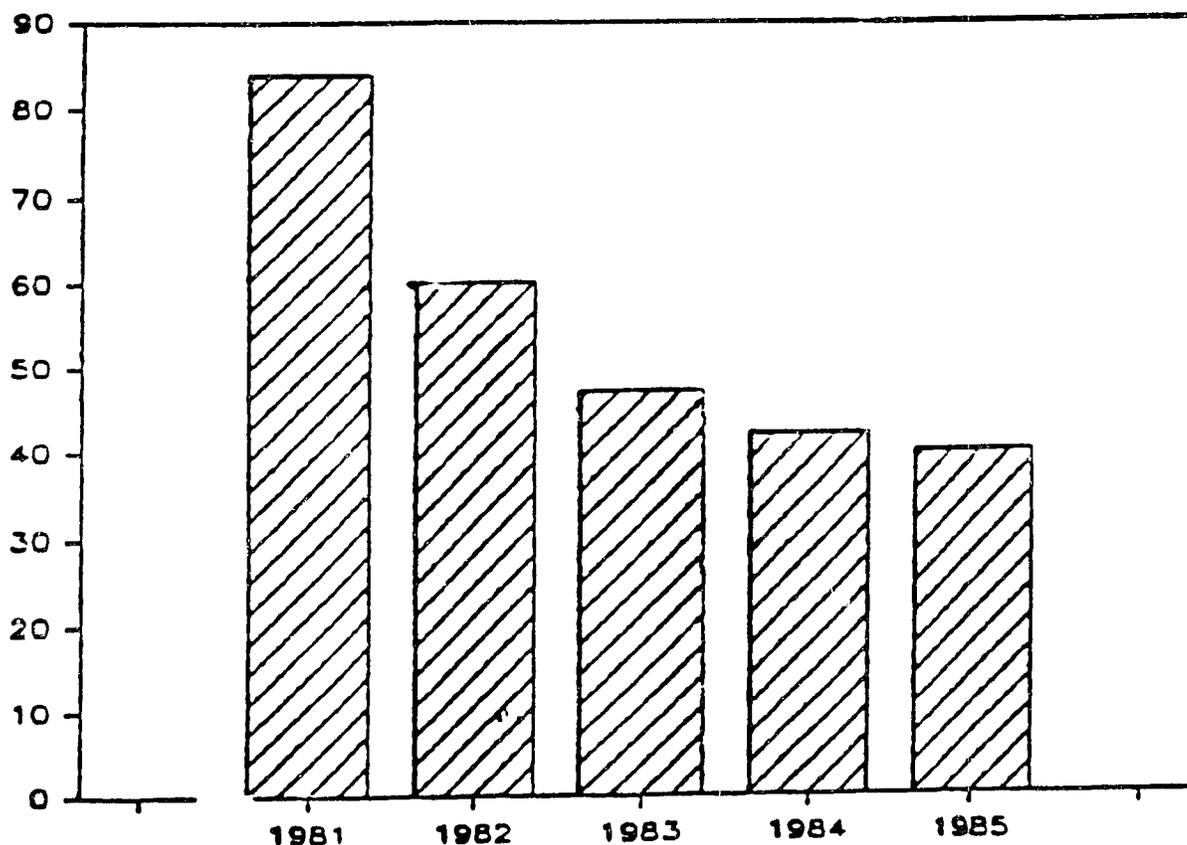
There is a gradual decreasing trend for the number of cases of diarrhea reported during this period. In contrast, the data reported through the HIS on outpatient discharge diagnoses show 59,474 cases in 1984 and 63,863 cases in 1985, not demonstrating a decreasing trend. Diarrheal diseases in children less than 5 years of age accounted for 8.1% of total outpatient visits (for all ages).

In 1985, Intestinal Infectious Diseases accounted for 57.7% of hospital admissions in the less than one year old population, and 20.0% of hospital admissions in the 1-4 year old population.

Figure 10 presents the annual number of deaths due to diarrhea in children under 5 years of age presenting to Raleigh Fitkin Memorial Hospital during the period 1981-1985.

Figure 10:

Annual Reported Deaths Due to Diarrheal Diseases  
In Children Less Than 5 Years of Age  
Attending Raleigh Fitkin Memorial Hospital



Source: CCCD 1985 Swaziland Country Program Update

There has been a 50% reduction in the number of deaths reported due to diarrhea since 1981. In contrast, if one uses the MOH/HIS hospital discharge data in 1985, there were 0 deaths reported from hospitals in the 0-4 year old age group.

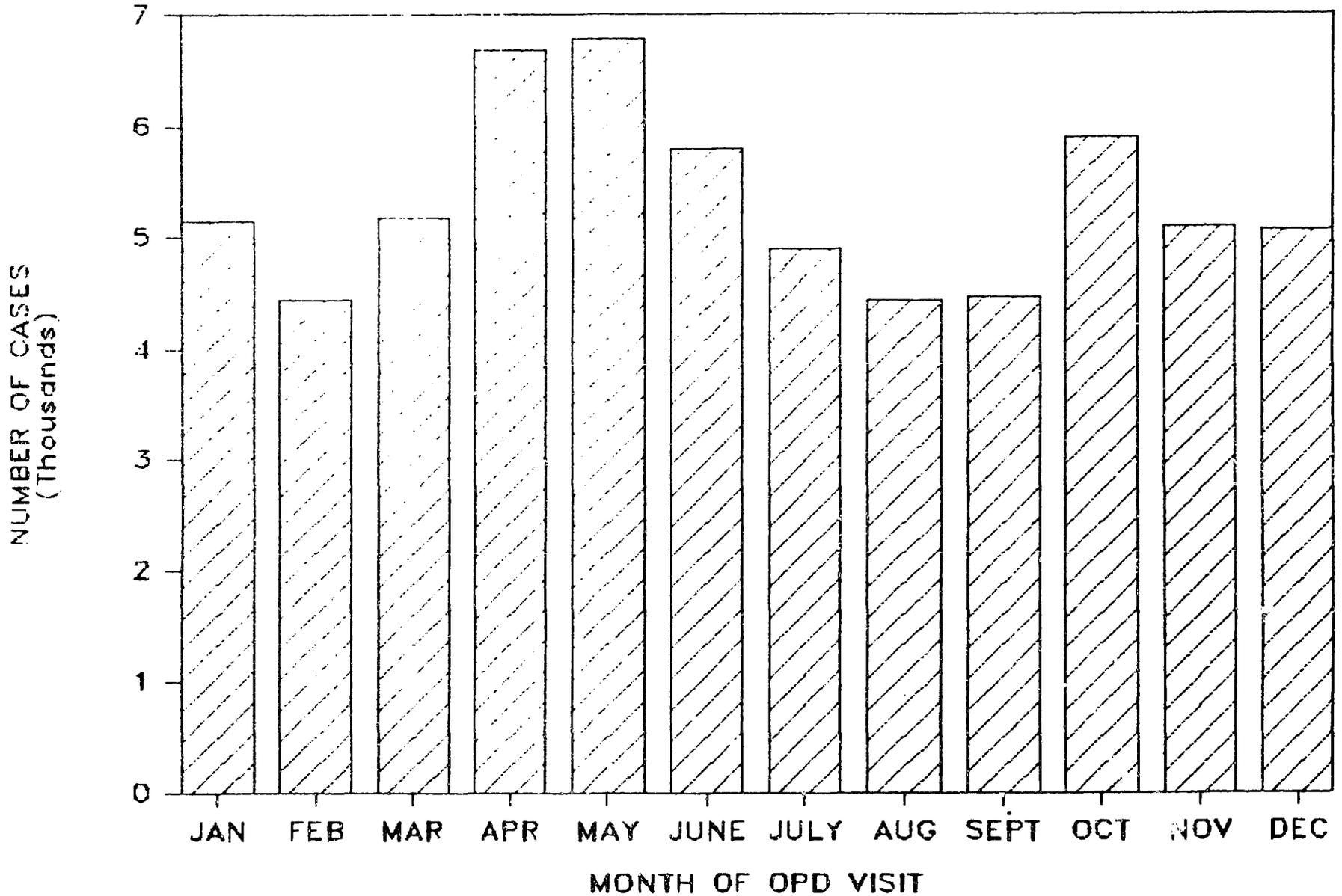
In 1986 a study on children hospitalized due to dehydration in Mbabane Government Hospital was conducted. During the period of the study, a total of 173 patients were admitted to the pediatric ward, of which 73 (42%) were admitted with dehydration. These data strongly support the need for increased efforts in the CCCD program activity for early treatment of diarrheal episodes with ORT.

Figure 11 shows the seasonal distribution of diarrheal cases presenting to outpatient facilities during the year 1985. The existence of two peaks in year supports the need for increased health communication messages in the periods immediately preceding the recognized peaks in diarrheal disease incidence.

Figure 11:

# DIARRRHEAL DISEASES EPISODES <5 YR OLD

BY MONTH OF VISIT TO OPD, 1985



Source: Outpatient Discharge Diagnosis, Statistical Unit, 1985

## Recommendation:

- There is the clearly identified need to improve upon existing reporting networks to increase the information available on diarrheal disease morbidity and mortality.

### 4.6 Malarial Control Program

#### 4.6.1 Organization, Administration and Plans for the Malaria Control Program

In 1945, a national malaria control program was begun, functioning out of the Manzini Public Health Office. In the MOH organogram structure, the malaria control program director reports directly to the Director of Medical Services in the MOH. Up through the time of the evaluation, activities of the malaria control program has been run as a vertical program. There is no official coordination between malaria control program activities and the other two program activities of the CCCD project which are located in the Public Health Unit in Mbabane.

At the central level, the malaria control program is run by a director who is a health inspector having attended a WHO sponsored training course on Malaria in Togo and a three day workshop in the Republic of South Africa. In addition to the director of the program, there are two laboratory technicians trained in the processing and reading of thick smear slides for identification of malaria parasites. At present there is no malaria epidemiologist assigned to work with malaria control activities. At the operative level, there are presently fifteen health assistants assigned to catchment areas in the lowveld, the geographic area recognized as the malaria infected region of the country.

During the recognized peak seasons of malaria activity in the lowveld, each health assistant is responsible for the identification and training of insecticide sprayers to participate in vector control activities.

Historically, the primary emphasis of the malaria control program has been vector control activities with residual spraying of homesteads in recognized endemic areas combined with active case finding by health assistants visiting homesteads to collect slides on presumptive malaria cases. At present, malaria control activities have not been integrated into the primary health care framework of the MOH.

At the time of the preparation of the CCCD evaluation report, the first meeting of a committee identified to draft a 5 year National Malaria Control Program implementation plan was held on July 24, 1986. The committee was chaired by the Director of Medical Services/MOH, and had participation from the malaria unit/MOH, CCCD/PHU, WHO, MCH/PHU, UNICEF, HEU/MOH, pathology/MGH, and statistics/MOH. It was the first attempt to prepare a designated 5 year implementation plan for malarial

control activities. The CCCD project has requested technical assistance from a malaria epidemiologist to review the draft of the 5 year Implementation Plan.

Recommendation:

The vertical nature of malaria control activities combined with the absence of direct health care professional input into malarial activities has led the evaluation team to recommend the creation of a position for a medical epidemiologist assigned to the malaria control program, and to stress the need for integration of malaria program activities within the framework of primary health care in Swaziland.

4.6.2 MOH Policies

At the time of this CCCD evaluation, the MOH policy towards malaria control had not been modified significantly since the initiation of the program in 1945. One of the primary activities under the control program is vector control with residual spraying of households with DDT and larvacidal treatment of vector breeding sites with Abate in recognized endemic areas of the country (lowveld). In addition, there has been an emphasis on active case detection and treatment of presumptive cases with chloroquine at a dosage of 10 milligrams/kilogram body weight. The third focus of the malaria control policy program has been chemoprophylaxis of the work force population, childhood population and pregnant women residing in recognized areas of malaria risk.

4.6.3 Active Case Detection and Treatment of Presumptive Cases

The fifteen health assistants are to conduct regular monthly visits to all homesteads and communities in the lowveld to identify individuals with fever and other signs and symptoms of malaria. All cases identified as presumptive malaria are to be given treatment (using a 10 milligram/kilogram dose) and at the same time, a thick smear is collected for laboratory confirmation. All health assistants forward slides to the Manzini Public Health Unit for processing on a weekly basis. A review of the slide positivity rate from active case detection during the period 1973-1985 reveals an average slide positivity rate of 3.2%. This finding is highly suggestive of problems within the active case finding system. One of the problems that may be occurring is an inappropriate collection of specimens whereby in the absence of supervision, health assistants are sending the required 50 slides per week without discriminating for presence of malaria symptomatology. A second possibility is that the quality of slides collected is less than optimal so that false negative readings are made on the slides. A third possible explanation for the observed low slide positivity rate is that there are only two microscopists working at the central level so that during peak seasons, an average of 200 slides are read by each microscopist daily, an average that is four fold higher than the WHO recommended standard. This high level of processing by the microscopists may result in a higher than usual false negativity rate due to fatigue.

A very thorough assessment of the malaria control program was conducted by a team of consultants from WHO in late 1984. This team of consultants highlighted the problems inherent in the active case finding strategy and strongly questioned the cost efficacy of continuing the active case finding component of the program.

#### 4.6.4 Vector Control Activities

As part of vector control activities approximately 24-30 sprayers are hired annually to work during the period September through January. Each sprayer is assigned to a group of homesteads and has the responsibility of spraying each homestead once with DDT 75% water dispersion powder prior to the peak malarial transmission season. DDT has historically been provided by WHO annually. Up until the 1985-86 malarial season, 10 metric tons/year were provided. The WHO provision for DDT has been dropped to 2 metric tons for the oncoming year. Noteworthy to mention is that other African countries have discontinued widespread residual spraying activities having found it to be not cost-effective.

Another side of vector control activity has been larvacidal treatment of vector breeding sites. Obvious breeding mosquito sites that are reported to the malaria field workers are drained where possible and where not possible are treated with Abate.

Vector control activities have been exclusively oriented towards the reduction of vectors around the homesteads with minimal activity directed towards a reduction in contact between the population and the vector. Efforts such as health education messages to inform the public on the use of mosquito nets, window screens, and insect repellents to reduce their risk of contact with the vector have at present not been conducted.

#### Recommendations:

- There is a need for an evaluation of the cost efficiency of vector control activities. The CCCD project should provide the technical assistance necessary for this study.
- There should be continued support for vector breeding site reduction and larvacidal treatment activities.
- Consideration be given to development of mass media messages directed at reduction in contact between the vector and the population.
- Prior to the development of messages, preliminary KAP investigations to ascertain population perception of the malaria problem and their practices in response to malaria should be conducted.

#### 4.6.5 Chemoprophylaxis

As mentioned previously, the existing government policy has been for the weekly chemoprophylaxis of the work force, children, and pregnant women residing in malaria endemic zones during the peak season of transmission. The evaluation conducted by the WHO consultant team in 1984 strongly questioned the practice of chemoprophylaxis, especially among the childhood population. It did support the policy of chemoprophylaxis of the work force and of pregnant women. Given the presence of chloroquine resistance, it is now imprudent to consider chemoprophylaxis of the work force as it has been well demonstrated to hasten the selection of highly chloroquine resistant organisms. It is important to note that while chemoprophylaxis was the stated policy of the malaria control program, during the field visits of the CCCD evaluation team, only one health facility claimed to be administering chloroquine chemoprophylaxis to populations living in malaria areas. This health facility was an industry run health facility (sugar industry) where chloroquine tablets were administered to the employees every Monday morning at the start of the work week.

#### Recommendation:

- The policy of chemoprophylaxis of the work force should be reassessed in light of the emergency of chloroquine resistance.

#### 4.6.6 Passive Case Detection and Treatment of Presumptive Cases

In addition to active case detection conducted by the health assistants, presumptive cases of malaria identified in health facilities are to be given radical treatment doses of chloroquine while simultaneously obtaining slides for malaria confirmation by the Manzini Public Health Unit. The health assistants are required to pass by each of the health facilities in their area of influence once a week to collect all slides and to bring results of the previous week's exams. These activities are conducted on a regular basis in the lowveld. It is important to mention that since the 1960's, malaria activity has been confined to the lowveld region of the country. During field visits, the evaluation team discovered that presumptive and documented malaria cases have been occurring in the middleveld region. In one of the health facilities visited in the middleveld, there was no health assistant to transport slides for processing, so no cases were confirmed. Thus, malaria does not officially exist in this region due to the absence of slide confirmation of presumptive cases. At present the RHMs are not participating in active case detection or in the presumptive treatment of malaria cases.

The recommended schedule for presumptive treatment with chloroquine by age group in Swaziland is presented in Table 4. During the field visits, it was discovered that in a number of the health facilities, the first dose of chloroquine was provided for presumptive treatment and the patient was revisited for radical treatment once slide confirmation was received.

Table 4 Recommended Chloroquine Dosages, by Age Group, for Presumptive Treatment, Swaziland

<u>Periodicity of Dosage</u>	<u>Number of 150 mg Tables</u>				
	<u>Under 1 Year</u>	<u>1-4 Years</u>	<u>5-8 Years</u>	<u>9-12 Years</u>	<u>13 years and Older</u>
1st Day	0.5	1.0	2.0	3.0	4.0
1st Day (6 hours later)	0.5	0.5	1.0	1.5	2.0
2nd Day	0.5	0.5	1.0	1.5	2.0
3rd Day	0.5	0.5	1.0	1.5	2.0
	(300mg)	(315mg)	(750mg)	(1125mg)	(1500mg)

Recommendations:

- There is a need to improve the passive case detection activities and confirmation activities occurring in all health facilities in the country in order to document and follow the geographic extent of malaria activity.
- MOH policy should ensure radical treatment of all presumptive malaria cases immediately upon diagnosis and should discourage the practice of partial treatment awaiting slide confirmation.
- RHMs should be included in malaria control activities as a means of bringing chloroquine closer to the community for more rapid identification and treatment of presumptive malaria cases.

4.6.7 Chloroquine Resistance

When chloroquine resistance was first identified in Swaziland, it was felt to be due to the presence of refugees from Mozambique, where chloroquine resistance had been documented for several years. Field visits and discussions with the personnel working in the malaria control program revealed that chloroquine resistance is not isolated to refugees from Mozambique but is now seen in the general population residing in the malaria endemic regions.

During the 1985-1986 malaria season, there was an increase in mortality due to malaria with 15 deaths occurring in individuals living in the lowveld. This was in contrast to the two reported deaths in the preceding season. An investigation of these deaths revealed that all 15 patients had slide confirmed plasmodium falciparum infections. In

one of the clinics in the lowveld area, there was a case fatality rate of 11% noted during the malaria season. A thorough evaluation of the malaria deaths revealed that there were several cases that had not responded clinically to chloroquine treatment.

A study to examine the extent of chloroquine resistance in the lowveld of Swaziland was conducted during the 1984-1985 malaria season. The results of this study revealed that 34% of children with documented malaria parasitemia had significant parasitemia seven days following receipt of a treatment dose of 10 milligrams/kilogram body weight. A second stage study of the efficacy of a 25 mg/kg treatment dose was planned for the 1985-1986 season, but was not conducted.

Recommendation:

- All efforts should be made to ensure that the second stage of testing of the chloroquine treatment regimen is performed during the upcoming malarial season.

4.6.8 Chloroquine and Non-Chloroquine Antimalarials Distribution

Chloroquine procurement is under the responsibility of the Malaria Control Program. Procurement orders have generally been placed upon notification that supplies are dwindling rather than on estimates of the population to be covered during the malaria season. Upon receipt of chloroquine supplies, the Malaria Control Unit gives the shipment to the Central Medical Stores (CMS) for distribution. The CMS is responsible for the distribution of the chloroquine tablets to the health assistants and to the health facilities in the country. As with ORS packet distribution, chloroquine distribution is not decentralized and all requests must go directly to the CMS. An inventory of current chloroquine stocks is not kept by the malarial control unit.

During field visits, the CCCD evaluation team consistently encountered stated difficulties by the health facilities in obtaining adequate chloroquine supplies. Most health facilities visited claimed to have experienced shortages of chloroquine tablets during the preceding twelve months and had insufficient supplies for the treatment of presumptive malaria cases.

In 1985 the CCCD project provided 400,000 chloroquine tablets, which over the last twelve months were distributed through the Central Medical Stores to health facilities. As of July 1986, the entire chloroquine tablet stock had been distributed, and there was brisk demand from the health facilities for new supplies. The evaluation team learned that the central level malaria control program had recently requested additional chloroquine tablets from CCCD, as there are insufficient central level supplies for distribution for the upcoming malaria season. In 1986 4000 100ml bottles of chloroquine syrup were purchased and arrived in June 1986. They have not been distributed as of August 1986.

RHMs are not presently included in the chloroquine distribution system. Identification of presumptive cases of malaria by RHMs must be referred to the nearest health facility or health assistant for treatment.

Taking into account the results of the chloroquine sensitivity tests in 1984-85 and the increased number of malarial deaths in the 1985-86 season, recommendations to have non-chloroquine antimalarials available at referral centers throughout the malaria region were made. Field visits revealed that the only non-chloroquine antimalarial agent available in the country is Fansidar and it was not consistently available at the identified referral centers. One health center visited (located in the endemic area where chloroquine resistance had been documented), was staffed with a physician and had inpatient facilities but had no Fansidar tablets. Thus, this health facility, upon identification of chloroquine resistance must evacuate the patient to a higher level of attention for treatment.

Recommendation:

- There is a critical need to carefully review the chloroquine throughout the country.
- There is the need for procurement and distribution of non-chloroquine antimalarials to all designated referral centers.

4.6.9 Morbidity and Mortality Due to Malaria

As mentioned previously, the malaria control program has a separate reporting system. The cases of malaria officially reported each year through this system are those cases on whom plasmodium parasites have been identified. Table 5 shows the annual number of slide confirmed cases and slide positivity rate for the period 1973-1985.

Table 5

Annual Malaria Control Program Activities  
by Number of Slides Processed and Slide Positivity Rate  
Swaziland, 1973-1985

YEARS	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>
NO OF SLIDES	21100	25394	17661	25394	30012	29600	25617	18913	30700	23148	26250	21569	19395
NO OF POS. SLIDES	61	70	169	212	902	1473	363	594	337	155	743	3373	1776
SLIDE POS. RATE	0.3	0.3	1.0	0.8	2.9	5.1	1.2	3.1	1.1	0.7	2.8	15.6	9.2

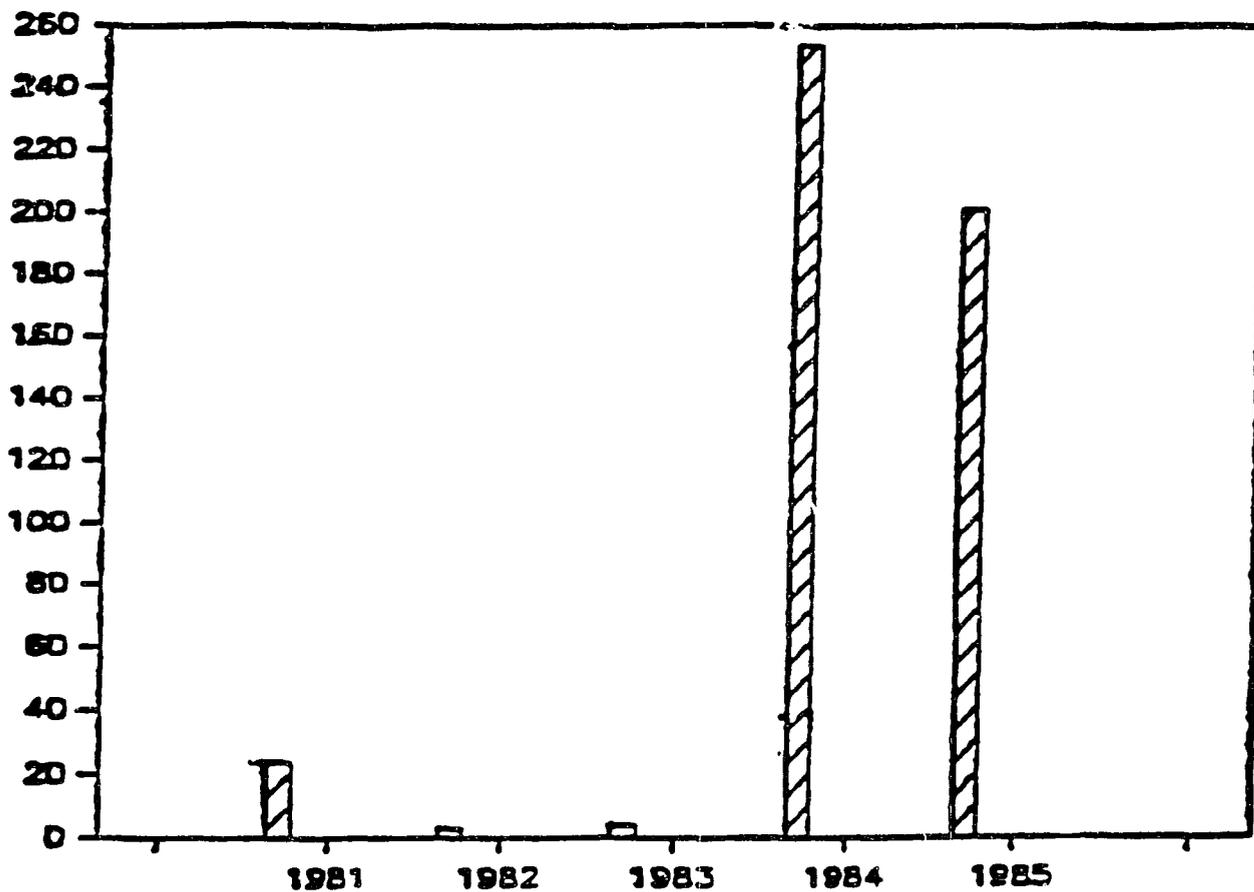
Source: Malaria Control Programme, Public Health Unit, Manzini, Swaziland

The marked increase in both the number of confirmed cases and slide positivity rate following cyclone Domoina in 1982 is clearly seen.

It is noteworthy to mention that information on malaria cases collected by the central malaria control program includes age distribution of cases. Figure 12 presents the number of malaria cases confirmed in children under 5 years of age during the period 1981-1985.

Figure 12:

The Annual Number of Confirmed Malaria Cases  
in Children Less Than 5 Years Old  
Swaziland, 1981-1985



Source: CCCD 1985 Annual Report

What can be observed is a marked increase in reporting of malaria cases in the childhood population beginning in 1984. In 1984, there were two deaths among children under 5 years of age documented due to malaria, and in 1985 there were three deaths. Previous analyses of malaria data conducted by the WHO evaluation team remarked on the relative paucity of reporting of malaria cases in the childhood population, a finding somewhat inconsistent with other malaria endemic regions in Africa. The marked increase in reporting of malaria cases among the childhood population in 1984 and 1985 strongly suggests an improved renewed recognition of malaria among this population.

Malaria is considered to be seasonal in Swaziland, with interruption of transmission during the winter months. Reviews of laboratory results reveal that this is no longer true as cases are confirmed in all months of the year. Field visits revealed that clinics in the lowveld were averaging treatment of 4-5 presumptive cases per day at the time of the evaluation, the peak winter season.

The investigation of the increase in malaria mortality during the 1985/1986 malaria season, revealed that the majority of cases had delayed their presentation to the health sector long after the onset of the initial illness. This finding strongly suggests the need for a major health education campaign to increase the population's awareness of malaria as a serious problem in the country and to educate the population on the need to seek treatment immediately upon the appearance of malaria symptoms.

In addition because of the small size of the country and an extensive road network, it is important to remind both the population residing in the highveld and the health sector working in the highveld to consider malaria as a possible diagnosis in the presence of a febrile illness.

#### Recommendation:

- There is the need for health education activities countrywide now that there has been re-introduction of malaria into the middleveld region.

#### 4.7 Health Education/Communications

##### 4.7.1 Current Activities

Health education/communications and training and have been closely tied together in several ways. (1) The MOH Health Education Unit handles both education/communications, and training functions. (2) Many training sessions include modules and materials to assist the persons being trained to carry out information/educational activities at clinics, health centers, outpatient units of hospitals, and in the community.

The importance of communications and education to health development and more specifically to the Swaziland CCCD program is evident from the bilateral budget set forth in the Pro-Ag. Included is \$20,000 for health education and \$40,000 for a mass media campaign. The total becomes considerably larger when some portion of training costs, as well as the cost of vehicles, gasoline, and maintenance, are allocated to HE and communications.

The CCCD project in cooperation with the AID-financed Mass Media for Health Practices Project (MMHP) has successfully carried out a number of health communications activities. The MMHP, active during the first year of the project, produced a number of positive results: (1) There was a wide awareness of the need for ORT in the community. (2) Health workers at the clinic and Ministry level developed and continue to have a positive attitude toward the project and, therefore, to future attempts to conduct a coordinated educational/communications approach. (3) Two members of the Ministry staff were well trained during the earlier project. Unfortunately, only one remains in place to assist in future efforts.

Radio messages, dealing with both EPI and ORT, developed with the assistance of the Development Communications project have been broadcast. In addition, T-shirts, flags, pins, calendars, and posters with various EPI and ORT messages have been produced. When in the field, the CCCD evaluation team questioned the clinic nurses about the education activities. Without exception these persons thought the activities were helpful, that the message reached mothers, and the message encouraged mothers to come to the centers. A number of persons thought additional materials and messages should be made available. With regard to the radio messages it appeared that while not all homes had radios, enough of them did to make the approach worthwhile. It was also apparent to the team that the clinic nurses took their role as educator very seriously.

#### 4.7.2 Future Needs

It is almost impossible to over-state the importance of communications techniques and education in health development, i.e., information, education, training and outreach for CCCD. An excellent start has been made with ORT, but it is essential to sustain this type of communications/education. In addition, it is essential to mount and maintain information/educational programs for the other two components of CCCD, namely EPI and malaria. The three components must be dealt with simultaneously and continuously if the goals of the project are to be met. To deal with the components consecutively not only would require a time period longer than the life of the CCCD project, but would result in a loss among the population of awareness of the problems of those CCCD components not currently being considered. Further, there is expected to be a synergistic impact from dealing with all three components at the same time, since the clinic or health center is seen as a community resource with multiple purposes. An increased understanding of the multi-faceted services should strengthen the rationale for embarking on the long walk to the Health Center or Clinic by the mother and her child.

In addition, the capacity to continue the information/educational program and the use of communication technologies in health development after the end of the project must be developed if the project is to be sustainable. The evaluation team has uncovered a number of indicators of the importance of developing health communications/information and education in all three areas. Further, some possibilities for the use of development communications techniques have been suggested to or developed by the team. Some of these are suggested for future consideration.

At present the role of the Health Education Unit (HEU) and its relationship to the Ministry's health communications requirements needs to be clarified. HED may require expansion if it is to become the communications center of MOH. If it is not HEU, there will be a need to determine what other GOS/MOH departments can assume responsibilities for coordinating on-going programs and special campaigns for CCCD activities.

#### 4.7.2.1 EPI

Extending immunization coverage has proved difficult in Swaziland. Among the possible explanations for this, two stand out: (1) a possible conflict between the traditional beliefs and the need for immunization and (2) the large proportion of the population that lives great distances from the clinics. As a result of these, communications in promoting health education assumes great importance.

Because of a possible conflict between traditional rites to protect a newborn and immunization, it is important for CCCD to reduce the potential for conflict with information/education in the traditional sector. In this sector, apart from the rural population at large, there are three interrelated target audiences possible: chiefs, traditional healers, and rural health motivators. CCCD has made a start with the latter two, conducting community-based workshops for rural health motivators and traditional healers (a combined total of 638 received training in 1986). Edward Green\* has suggested that chiefs have a considerable understanding of modern health concepts. He recommends that community health committees be extended to include women and that charging a small community fee for clinic services be considered as a means motivating the local committees. In addition to reducing potential conflict between traditional and modern approaches, education at the community level will result in face-to-face outreach, felt by most providers to be a necessary adjunct to mass media approaches.

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\*Green, Edward C., Traditional Leadership, Community Participation, and Development Education: Results and Implications of Two Surveys in Swaziland. Mbabane April 27, 1984

There are also possibilities in the modern sector. The possibility of working through school age children to get messages to parents about EPI is currently being tested. Another likely focus is employers, particularly large employers. It was suggested to the team that the reason Hhohho region had a higher immunization than other regions was that one large employer, (Havelock Mines) required employees to present proof periodically that their children were fully immunized.

A suggestion frequently heard, or enthusiastically responded to, was that, as an adjunct to the development communications efforts to motivate the mothers, some incentives be provided to mothers to continue through the full series of immunizations. There was, however, little agreement as to what would constitute a successful incentive. In only one case did we learn of an incentive scheme that had been tried. The Holiness Union Mission in Emkhuzweni had awarded a fruit tree to mothers who attended the clinic for a full series of ten visits for education and immunizations. Mothers who made it only nine times were awarded a packet of seeds. Another clinic was in the process of planning a baby show that would award prizes to healthy babies, with the winners selected by an external team of nurses. Other suggestions for incentives included: soap, food, a picture, certificate, diploma, etc.

#### 4.7.2.2 ORT

Educator, using development communications techniques, concerning ORT, needs continuation in order to maintain the impetus generated by earlier mass media campaigns. ORT, like immunizations, is not readily supported by the traditional sector; traditional healers often engage in purging a child or giving enemas. Thus again, it appears important to enlist the assistance of traditional healers, chiefs, and village health motivators through HE communications techniques.

#### 4.7.2.3 Malaria

Previous evaluation of CCCD, as well as many comments made to the team, indicate that little education and mass communications activities have been carried out with regard to the malaria program. There are two indicators that education is highly important: (1) Malaria is appearing in some new areas of the country where people are unfamiliar with its symptoms. An example was cited of a school master in the middle veld who only tardily recognized that ten or so of his students had malaria. As a result treatment was delayed. (2) Even in areas long infected, treatment is often postponed.

There appears to be less conflict with the traditional sector with regard to malaria treatment than with regard to EPI or ORT. However, the physician in an industrial clinic requiring prophylactic doses for workers observed that workers were fearful that chloroquine would cause impotence.

Chloroquine could be made available at the community level if community health workers and traditional healers were able to provide it. Health education would, of course, need to accompany the introduction of chloroquine outside the clinic.

The other aspect of reduction of malaria involves control of the vector. It does not appear that there is at present a clear picture of the most appropriate or cost effective means to reduce the vector. The proposed use of a consultant to clarify this issue is highly appropriate.

#### 4.7.3 Technical Assistance

There was a plan under discussion with the MOK, to begin later this year to utilize an AID centrally funded Health Com project which would use communication technologies for health education. Specifically it was proposed that Health Com (1) produce a series of mass media programs as well as graphic and training materials and (2) provide in-service training of MOH health educators in health communications.

It appeared to be a highly appropriate time for CCCD to utilize Health Com. In order to obtain the maximum benefit from the presence of the Health Com project or other services of TA in health communications it was imperative that a clear policy be reached by the MOH on several issues prior to the arrival of the TA. These issues included: the role of ORS packets versus homemade SSS solution, the possibility of local distribution, including sale, of both packets and chloroquine. The presence of a Health Com advisor would provide an excellent opportunity to begin a new venture, namely to introduce commercial ORS packets and chloroquine. Health Com could also help plan a campaign to inform mothers, not only of the technique of ORT, but of the availability commercially of inexpensive packets that are convenient and precisely measured, as well as the availability of chloroquine.

#### Recommendations:

- Recognition should be given to the importance of communications in health development especially in view of communications strategies in CCCD intervention areas over the last three years.
- That a multi-faceted information/education program focusing on the several target audiences be undertaken, and directed toward all three CCCD interventions.

- That the forthcoming Health Com Project now under consideration by the GOS be utilized by CCCD as the means to introduce the information/educational program.\*
- Careful consideration should be given to the unit in the GOS to be responsible for health communications. The HEU may require expansion and significant support if it is to become the communications center of MOH. If not HEU, a determination is needed as to what other GOS/MOH department(s) can assume responsibilities for coordinating on-going programs and special campaigns in CCCD.
- Emphasis should be given to training in health communications along with training in other areas since it is the communication network that disseminates much of the information needed to bring about successful behavior change.
- Since one of two key MOH staff involved in communications has departed from Swaziland for long-term training, CCCD should examine staffing needs in CCCD communications activities, including management/planning capability of present staff and staffing needs for future CCCD communications efforts.
- Efforts to strengthen regionalization (decentralization) should be made and encouraged since regional management appears to be essential to a successful health education/communications endeavor.

#### 4.8 Training/Continuing Education

Training has gone well in Swaziland to date. Much of it has been carried out under other projects in earlier years. For example, the staff nurses in Health Centers and Clinics are well trained. So there is a good base and tradition of training in Swaziland.

CCCD training activities have also moved forward. In 1985 out of 1000 health care personnel expected to be trained, 968 or 96.8% of target was attained. In addition 40 Swazis were trained at an International CCCD supported training program in 1985.

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\*On August 18, 1986, after the evaluation team returned to the United States, it was informed that the GOS/USAID had postponed indefinitely the Health Com initiative which was proposed for early FY 87 because the government felt it already had a very heavy workload given its present program in the health sector, especially with the USAID/PHC project just getting under way. However, the team continues to feel that it is important for the MOH to have help in this area. Consideration should be given to reinstating the request for technical assistance under Health Com as soon as feasible. In the interim short term TA might be envisaged.

In CY 1985 over 600 rural health motivators and traditional healers attended EPI courses. Ten three-day EPI workshops for nurses and nursing assistants were held for nurses and nursing assistants; 80 health workers were trained in two five-day malaria control refresher courses; CCCD sponsored 26 Swazis for training in CCCD international workshops. With the assistance of the MMHP project, CCCD conducted a symposium on diarrheal diseases.

So far almost all of the training activities have been financed by donors, although the Project Agreement calls for GOS participation in the training costs. To assure sustainability of the important aspect of the PHC/CCCD program, a budget line item should be opened up for training activities even if it is modest at the outset.

While it was not possible to do a representative sample, the team, based on its field visits and talks with many Swazis who participated in CCCD training activities, believes that the training has been of good quality and effective in meeting training needs.

With the above background in mind and based on extensive talks with MOH staff, tried workers and donors, PVOs etc., the following training areas were examined:

- MANAGEMENT TRAINING

While past CCCD training has emphasized the technical aspects of the program, it has not dealt with generic management skills needed for upper and top level management. Many of those interviewed felt that management training was a critical need in Swaziland, and more specifically in connection with the CCCD project. Upper level management at the national, regional and clinic level in most cases has had little or no training in time management, setting priorities, working out schedules, accounting/budgeting, personnel, etc. (The MLM (mid-level management) EPI course in 1985 tended to focus on technical aspects of EPI, and specific operational problems.)

- RHM TRAINING

One of the successful and interesting training programs, is the Rural Health Motivator (RHM) program to which UNICEF is the principal donor. This program has as its purpose the promoting of healthy living through: nutrition, mother and child care, environmental sanitation, personal hygiene, mental health, vaccination, first aid, adult literacy and home economics. A three-month training program is provided for each RHM. The goal is to have one RHM for each 40-50 homesteads. Training plans call for 50 RHMs to be trained for each of the 40 Tinkhundla (traditional sector counties), or a total of 2000. So far about 1000 RHMs or 50% have been trained. The balance is expected to complete training between now and 1989. As indicated above, the

CCCD project has participated financially with UNICEF in some of the training segments dealing with EPI, and ORT. While the preparatory training now underway is adequately financed, there is a need to provide financing for continuing education of the RHMs already trained. Well trained (motivated) RHMs are essential to increasing EPI coverage rates, promoting the use of ORT, malaria prevention, and other communicable diseases such as TB.

- HIS UTILIZATION

Information gathered by the HIS in Swaziland has the potential to become a valuable management tool for those in the MOH, RHMTs, and Clinics. However, training will be needed in the use of this information as a management tool.

- ORT TRAINING

As part of the decentralization, a core training group of two trainers per region is being established for ORT which would assist the HCs and Clinics in carrying out their ORT training of RHMs. Training of trainers will be carried out at the government hospital in Mbabane where a demonstration ORT unit is being established.

- FIVE YEAR PLAN ORIENTATIONS

Once the five year plans for EPI, CDD and Malaria are drafted and approved by the MOH, refresher/continuing education courses should be developed for the nursing/nursing assistant staff bringing them up to date on the changes and improvements proposed.

In the light of the above, the following training recommendations are made:

- Generic management training should be provided to upper-level managers at national, regional, clinic levels.
- CCCD should continue its support of training of RHMs and encourage continuing education for those RHMs already trained.
- A course should be given in the use of HIS information as a management tool at the national, regional and clinic level.
- A core group of trainers (two in each region) should be established in each region to train nurses and nurses assistants in all CCCD interventions.
- Once the five year plans now being drafted in EPI, CDD, and Malaria are completed and approved, continuing education courses about them should be organized on program norms and technologies to bring the national, regional and clinic level health professionals up to date.

- The MOH should add a line item for training in its next budget so as to assure that training will continue in the future as an essential Ministry activity.

## 5.0 Program Costs

### 5.1 Purpose of Cost Estimates

Cost studies must necessarily be carried out in terms of the use to which they will be put. Presumably, in the present instance, the major purposes of cost information are (1) to assist in the determination of the sustainability of a project, and (2) to suggest a basis for an auto-financing program.

### 5.2 CCCD Costs

We assume any effort to examine sustainability of the CCCD project must consider two time periods. The first, which we call the short run, presumes the completion of the CCCD while many donors remain involved in the field of primary health care. Such donors include UNICEF and Save the Children, as providers of vaccines, as well as WHO and others. The USAID Primary Health Care project, scheduled to continue past the end of CCCD, is also a factor in the short run. The second time period, termed the long run, presumes the withdrawal of virtually all donors from the field of primary health care. The short and the long run are limiting cases with the short run representing a minimum cost for the GOS to sustain while the long run represents a total cost of sustaining CCCD activities.

#### 5.2.1 Short Run CCCD Costs

For the two major purposes suggested above, the goal is to define costs necessary to sustain EPI, CDD, and malarial control that would have to be borne by the GOS in the short run. The appropriate cost to consider in the short run is the marginal cost or the additional cost of providing the services, given that many costs, such as that of nurses in health centers, would be borne in the absence of a CCCD program. One possible way of estimating the cost of sustaining CCCD activities in the short run is to sum the fourth year expenditures by both CCCD and GOS that are set forth in the Project Agreement, eliminating costs that are likely to be picked up by another donor.

The Project Agreement (see Table 6) indicates a fourth year bilateral obligation of \$46.7 thousand.

Table 6: Summary of USAID Bilateral Inputs in CCD Project  
(Thousands of U.S. Dollars)

	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>LOP</u>
Local Training	50.0	50.0	50.0	--	150.0
Vaccination Supplies	15.5	5.0	4.5	5.0	29.0
Cold-Chain Equipment	18.0	16.0	--	--	34.0
Chloroquine	10.0	--	--	--	10.0
Vehicles	147.0	--	--	--	132.0
Gasoline/Maintenance	18.0	--	--	--	16.0
Other Equipment	15.0	--	--	--	15.0
Health Education	10.0	10.0	--	--	20.0
AED Mass Media	40.0	--	--	--	40.0
Health Information System	20.0	--	--	20.0	40.0
Operational Research	20.0	20.0	5.0	5.0	50.0
Other	15.5	6.5	7.5	9.5	39.0
Contingency	49.7	32.1	22.0	7.2	111.0
TOTAL	428.7	138.6	89.0	46.7	703.0

Source: Project Agreement, 06/28/84.

If it is assumed that donors would be likely in the short run to pay for vaccination supplies and operational research, the amount is reduced to \$36.7 thousand. The GOS obligation for the same year is \$111.9 thousand (see Table 7).

Table 7: GOS Inputs to CCCD Program Specified in the Project Agreement (\$000's)

	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>LOP</u>
Vaccine Supplies	11.3	14.0	16.0	18.0	59.3
Gasoline, Repairs, Maintenance	--	17.0	19.0	20.0	56.0
Oral Rehydration Salts	--	--	39.0	44.0	83.0
Chloroquine	--	11.0	12.0	13.0	36.0
Others and Miscellaneous	8.0	10.0	12.0	14.9	44.9
TOTAL	19.3	52.0	98.0	109.9	279.2

Source: Project Agreement, 6/28/84.

Reducing this by the allocations for vaccination supplies, oral rehydration salts, and chloroquine (again assuming that donors would pay for these items) results in a figure of \$34.9 thousand. The sum of the two is then \$71.6 thousand or E184 thousand or 8.7 percent of the recurrent budget for preventive care proposed for the 1986/87 MOH budget. This is a minimal figure and includes neither salaries for administrators in the MOH and providers in the local clinics and health centers nor any amount for training and education. Thus, this cost figure is posited on the understanding that government positions of people involved in CCCD activities would continue intact. If, as seems realistic, the \$50 thousand for local training shown in the bilateral budget for the previous three years is added to the above figure, the amount becomes \$131.6 thousand or E309 thousand, 14.6 percent of the recurrent budget for preventive care. This estimate should be understood as a minimum cost of sustaining CCCD activities.

An alternative cost estimate is available from Robertson and Qualls study of the cost of the CCCD project in Swaziland in 1984-85. They estimated an average cost figure for total and individual CCCD activities based on expenditures by CCCD, MMHP, UNICEF, and the Government of Swaziland for EPI, ORT and malaria (see Table 8).

Table 8: Summary of Costs for CCCD and its Components,  
during Study Period, July 1984 to March 1985

	<u>EPI</u>	<u>ORT</u>	<u>Malaria</u>	<u>Full CCCD</u>
<u>Central Level</u>				
CCCD National Office	31.5	28.0	24.3	83.8
MMHP National Project	--	191.7	--	191.7
UNICEF National	42.8	--	--	42.8
National Malaria Unit (includes Chloroquine)	--	--	90.1	90.1
Central Stores (includes ORS)	--	17.8	--	17.8
Central Vaccine Store (includes vaccines)	84.5	--	--	84.5
SUBTOTAL	158.8	237.5	114.5	510.8
<u>Site-Specific Costs</u>				
Unique Hospitals and Centers	120.6	82.4	10.3	213.4
Other Hospitals and Associated Centers	52.8	24.8	15.1	92.7
Hospitals/Centers	132.1	105.5	46.2	283.7
Clinics	257.7	205.2	97.8	560.6
SUBTOTAL Site-Specific Costs	563.2	417.9	169.4	1,150.4
TOTAL	721.9	655.4	283.9	1,661.2
(in Dollars)*	412.5	374.5	162.2	949.3

\* Exchange Rate US\$0.41 = E1.75

Source: Robertson and Qualls, Cost of Combatting Communicable Disease  
(CCCD) Project in Swaziland 1984-85, September 1985..

Since they considered all spending including wages and salaries and an allocation of capital spending, their result is not only considerably larger than the above marginal cost estimate, but it is more appropriate for use in looking at long run sustainability. Nevertheless, it is possible to adjust their data in order to obtain an approximation of short run costs. When these adjustments are made, the nine month cost is E979.800 (about \$392,000) or the annual cost E1306,000 (\$522,000) (see Table 9). This estimate, an upper extreme, is more than five times the marginal estimate. Possible explanations for the high costs found by Robertson and Qualls are explored in the following section.

Table 9: Adjustments to the Robertson and Qualls  
Estimates in the Short Run

	Total Cost (000's E)	Adjusted Total Cost
Personnel	283.1	283.1
Supplies and Miscellaneous	43.8	43.8
Vaccines	41.7	--
Other Medicaments	20.0	--
Equipment	3.9	--
Building	17.6	--
Transportation: Capital and Operating	46.0	23.0*
Subsistence	3.0	3.0
Training	51.5	51.5
Local Costs	1,150.4	575.2*
TOTAL COST	1,661.2	979.6

\*Adjusted to be 50 percent of original figure. This is an arbitrary adjustment in the case of vehicles: in the case of local costs, Robertson and Qualls suggested that personnel costs were about 50 percent of total costs.

SOURCE: Robertson and Qualls, Swaziland, September, 1985

### 5.2.2 Long Run CCCD Costs

Total costs are even more difficult to estimate in the long run than in the short run. Two estimates, one from the Project Agreement and one based on Robertson and Qualls, are again suggested.

The total Project Agreement budget, bilateral and GOS, indicates a total cost of \$982 or an average annual cost of \$245 thousand. This, in turn, is E612 thousand. This figure, however, overstates costs on two grounds. (1) Capital equipment lasts longer than four years, and (2) some costs, particularly in the first year, represent start-up costs. However, other capital costs of facilities and wages and salaries in the MOH are not included. Thus, this estimate is a low estimate of long run costs.

The Robertson and Qualls estimate of a total nine-month cost of E1,661.2 (about \$664,000) when adjusted for a twelve month period makes an annual cost of E2,214.9 (about \$886,000). This very large figure is more than the total preventive care budget proposed by the MOH for 1986/87.

Since the employment of the Robertson and Qualls data produce such large estimates of the cost of sustainability, it is useful to explore them further. For this purpose, it is useful to consider average costs per intervention. For Swaziland, Robertson and Qualls determined the average cost for single immunizations, for a fully immunized child, and for each reported case of malaria. They found the average cost per immunization to be E4.52 (\$2.58) while that per fully immunized child was E88.59 (\$50.57). The cost per outpatient treatment of diarrheal disease was E10.98 (\$6.27) and per tested case of malaria was E15.44 (\$8.82) (see Table 10). (IE=\$0.57)

Table 10: National Average Costs in Swaziland, 1984-85,  
by Component of CCCD Project

	<u>Total Cost</u>	<u>Quantity*</u>	<u>Average Cost</u>
EPI	E 721,948	159,826	E 4.52
ORT	436,906	39,774	10.98
Malaria	283,884	18,386	15.44

\*Services Performed (7/84-3/85)

Source: Robertson and Qualls, Swaziland, September 1985

These estimates are higher than expected. They are, indeed, higher than those in Malawi for EPI(37)\*. Using the same methodology, Robertson found the average cost per immunization in Malawi to be K1.52 (\$0.99), less than 40 percent of the Swaziland cost.

If it is assumed that there is no statistical artifact explaining the EPI cost differential between Swaziland and Malawi, then other explanations need to be considered, such as:

(1) Costs may be high because of diseconomies of scale resulting from small clinics.

(2) There may be sizeable and costly outreach needed to get mothers to clinic because of the high time cost of travel. Swaziland has not only a high percentage of the population in rural areas (80%), but homesteads are widely dispersed.

(3) There may be some inefficiencies of distribution. Robertson and Qualls found sizeable differences in costs across facilities that warrant further investigation.

(4) There is the possibility that Swaziland is on the high, but declining, range of the average cost curve with respect to proportion of population covered. For example, it is unlikely that the average cost of immunization is identical in the following three cases: (a) 25 percent of the eligible population is immunized; (b) 50 percent is immunized; and (c) 75 percent is immunized. Fixed costs would be the same in all three cases; therefore average fixed costs would decline as the coverage increased. However, average variable costs are likely to be lower at 50 percent than at 25 percent because of economics of scale. Yet, when 75 percent of the population has been immunized, the remaining share of the population is more difficult, and thereby more costly, to reach.

(5) Costs may be high because of the potentially high costs of the campaign approach to EPI in Swaziland. Not only is it inherently expensive to transport a provider team and vaccines to a totally new location, but wastage due to immunization of over-age children is likely to be high. In addition, the mother has not learned where, on a regular basis, she may seek aid for herself and her child.

(6) Wastage of vaccine was higher in Swaziland than in Malawi. Defining the wastage factor as the quantity of vaccine divided by the number of immunizations, Robertson found the wastage factor for BCG in Malawi to be 1.84 in contrast to 2.68 for Swaziland (see Table 11).

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\*Number 37 is the reference number of the document listed in Annex II, Documents Consulted

Table 11: Vaccine Wastage Factor\* in Malawi and Swaziland

	<u>Malawi</u>	<u>Swaziland</u>
BCG	1.84	2.68
DPT	1.66	2.24
Polio	1.45	2.45
Measles	1.22	2.75
TT	n.a.	3.32

\* Wastage Factor defined as (quantity of vaccine)/(number of immunizations).

Source: Malawi: Robertson, and Swaziland: Robertson and Qualls.

(7) Finally, the Robertson and Qualls study was carried out during the first nine months of the CCCD project, a time when start-up costs were high.

Recommendation:

- Costs of CCCD services warrant further investigation. It may be that some costs have already fallen, and it may be that steps can be taken to reduce other costs.

5.3 Cost-Benefit Analysis

One should not conclude from the above discussion that preventive care in Swaziland is more expensive than curative services. It has long been established that immunizations are a cost effective means of providing health care. The cost of an immunization is small relative to the cost of caring for a sick child. Similarly, it is considerably less expensive to treat a child with ORS than to deal with a severely dehydrated child in the hospital. ORT has the additional advantage that even outpatient visits will be reduced when mothers are training in its use. The costs of immunization cited above compare favorably with costs that are associated with sick children. For example, the cost of visits to a hospital outpatient department at government clinics in 1982 ranged from E4.1 to E17.8, while it was E8.4 and E9.1 at Good Shepherd and RFM respectively (Stevens). The cost of a single day of hospital care in 1982 ranged from E12.0 to E17.

It is likely that the wastage factor in Swaziland has increased since the time of the cost study (July 1984 to March 1985). Policy changes subsequent to that time period have encouraged daily immunization resulting in the opening of a vial for a single patient. While reducing wastage is always desirable, certain types of wastage, i.e. opening a vial for a patient unlikely to return to the clinic, may well be cost-effective. Current policy in Swaziland is to immunize a child whenever that child appears at the clinic when an immunization is appropriate. Thus, a child brought to the clinic for curative care should be vaccinated in the absence of a high fever or other contraindications. This policy increases the likelihood of throwing out vaccine. However, when the cost of a vial of vaccine is compared with the cost of curative care, it is clear that this policy is cost beneficial (see Table 12).

Table 12: Price of Immunizations

<u>Immunization</u>	<u>Number of Doses</u>	<u>Price</u>
BCG	20	\$1.30
DPT	20	.65
Polio	20	.56
Measles	10	1.20

Source: Nelson, J. (TO for Swaziland and Lesotho) July 1986

There is an additional factor that needs to be considered in assessing the effectiveness of CCCD interventions. In a country, such as Swaziland, seeking to reduce the growth of population, high infant and child mortality are counterproductive. The fertility rate appears to be related to the mortality rate in that families seek to insure that they will have a strong probability of having a given number of children survive.

A recent study, based on data from Lesotho, provides additional support for the cost-beneficial character of the CCCD program. In his study, which focuses on malnutrition in Lesotho, Dr. Julius Tolboom\* shows the relationship between severe protein energy malnutrition (PEM) and diarrhea\* (see Tables 13 and 14).

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\*Note: Dr. Julius Tolboom, is a medical doctor who spent several years in residence at the Queen Elizabeth II hospital in Maseru, Lesotho in the Maternal Child Health Unit. His study covers the period 1984-1985.

Table 13: Gastroenteritis and Giardia in Infants and Children with Severe PEM, During the First Two Weeks of Admission

<u>Type of PEM</u>	<u>GE</u>	<u>Giardia</u>
Marasmus (n=80)	41 %	26 %
Marasmic kwashiorkor (n=31)	39 %	23 %
Kwashiorkor (n=107)	53 %	31 %
TOTAL (n=218)	47 %	28 %

Source: Tolboom, Julius J. M., Aspects of Infant and Childhood Nutrition in Lesotho, p. 17, N.D. (1986), Maseru, Lesotho

Table 14: Admission to the Children's Medical Ward, Queen Elizabeth II Hospital, Maseru, 1981/84

<u>Cause</u>	<u>Percentage Admitted</u>
Acute gastroenteritis (GE)	20.0 %
Lower respiratory tract infection (LRTI)	17.5 %
Severe protein energy malnutrition (PEM)	9.0 %

Note: 85 percent of children admitted were below 5 years of age.

Source: Tolboom, Julius J. M., Aspects of Infant and Child Nutrition in Lesotho, n.d., (1986), Maseru, Lesotho.

(Measles is also implicated, but less clearly than diarrhea.) Not only did PEM appear more likely to occur in children with diarrhea than otherwise, but, in addition, the presence of diarrhea with PEM appeared to be associated with death of the child. In addition, hospital stays for such children were exceptionally long. Tolboom's first recommendation was "to encourage early treatment of acute GE at home with oral rehydration..." and his third was to "stimulate the use of health facilities for... immunization".

## 6.0 Financing

### 6.1 Health Policy

The Fourth National Development Plan issued in July 1983 set forth, in the section on the Ministry of Health, a number of positions relevant for primary care, in general, and CCCD activities, in particular. One of the objectives was "to reduce infant and child mortality and morbidity with special emphasis on diarrheal diseases, malnutrition, and diseases preventable by immunization." Four strategy components were cited: (1) equitable access to health services, (2) manpower training and development, (3) coordination and integration of services, and (4) decentralization and community participation.

At the same time a statement, National Health Policy, was issued. Its message was similar to that of the Development Plan: the "core" of policy is primary health care with emphasis on the prevention of disease.

For the most part, Swaziland has moved in the direction suggested by the above two documents. Nevertheless, as discussed below, the bulk of the MOH budget is devoted to curative care.

### 6.2 Overall Health Sector Financing

Two general observations regarding financing of health care in Swaziland are appropriate. (1) There are a number of important participants including the MOH, other governmental agencies, industry, various international donors and missions. (2) Primary health care has assumed an important, but by no means dominant role, in the context of health care.

In a survey (Gilson)<sup>14\*</sup> examining a wide range of health care expenditures in 1984/85, total expenditures, recurrent and capital, were just over E49.1 million. Recurrent spending was 84.7 percent of the total and capital spending 15.3 percent. This expenditure survey included water and sanitation activities, traditional healers, other private sector services, the MOH, and other government agencies. Defined in this manner, health spending was 6.5 percent of GDP.

The role of various participants in recurrent spending in the health sector was indicated by the survey. The largest source of funds was direct payments accounting for 32.4 percent of the total (see Table 15).

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\*Number refers to placement of reference listed in "Documents Consulted", Annex II

Table 15: Recurrent Health Expenditures, 1984/85  
(Thousands of Emalangeni)

	<u>Amount</u>	<u>Percent</u>
Ministry of Health	12,860	30.2
Other Ministries	2,941	6.9
Other State Bodies	180	0.4
Missions	133	0.3
Industry	2,448	5.7
NGOs	77	0.2
Direct Payments	13,803	32.4
Insurance	1,260	3.0
Self Help	27	0.1
Foreign Aid, Official	7,002	16.4
Foreign Aid, Private	1,875	4.4
TOTAL	42,606	100.0

Source: Gilson, Lucy J. Swaziland: Health Sector Financing and Expenditure Survey, 1984/85. Mbabane, March 1986.

The MOH was the second source of funds, accounting for 30.2 percent. The role of missions appeared smaller than expected, 0.3 percent, because they administer funds not provided by them. Within recurrent expenditures those for primary health care (curative and preventive) reflected 54.9 percent of the total or E36 per capita. For preventive care, the per capita figure falls to E12.

When recurrent expenditures for primary health care are considered in the expenditure survey, the role of foreign aid increases to 24.5 percent and the MOH role declines to 18.4 percent (see Table 16).

**Table 16: Primary Health Care Recurrent Expenditures, 1984/85**  
**(Thousands of Emalangeni)**

	<u>Amount</u>	<u>Percent</u>
Ministry of Health	4,254	18.2
Other Ministries	1,539	6.6
Other State Bodies	82	0.4
Missions	35	0.1
Industry	1,473	6.3
NGOs	50	0.2
Direct Payments	9,529	40.7
Insurance	683	2.9
Self Help	27	0.1
Foreign Aid, Official	4,297	18.4
Foreign Aid, Private	1,433	6.1
TOTAL	23,403	100.0

Source: Gilson, Lucy J. Swaziland: Health Sector Financing and Expenditure Survey, 1984/85. Mbabane, March 1986.

Current budget plans indicate the plans for the health sector defined somewhat more narrowly than in the above survey. Out of total recurrent spending by government, health spending represents 7.0 percent (see Table 17). When capital spending is included along with recurrent spending, health becomes a slightly larger share, 9 percent, of the total because of a sizeable donor contribution to capital spending in the health sector.

Table 17: Summary of Estimated Expenditure, GOS, 1986-87  
(Thousands of Emalangi)

	Recurrent	Capital		Total
		Government	Other	
Statutory Expenditure	49,772	--	--	49,772
Parliament, Cabinet	1,336	210	--	1,546
Planning and Statistics	1,214	634	233	2,081
Police	10,761	1,091	--	11,857
Tinkhundla	2,486	--	--	2,486
Foreign Affairs	6,341	346	--	6,687
Defense and Youth	12,698	266	--	12,964
Agriculture, Cooperatives	13,082	756	3,354	17,192
Commerce, Industry	1,554	2,465	500	4,519
Geological Survey, Mines	1,208	--	--	1,208
Education	49,863	3,049	4,507	57,419
Finance, Audit	916	--	--	916
Treasury, Stores	2,445	275	--	2,720
Tax: Income, Customs	1,578	--	--	1,578
Labor, Public Service	5,223	745	--	5,968
Health	16,196	1,597	11,590	29,383
Justice	2,078	44	--	2,122
Prisons	5,699	1,506	--	7,205
Interior, Resources	10,166	2,925	3,003	16,094
Treasury, King, Ombudsman	2,678	300	--	2,678
Works, Communications	10,247	9,486	36,266	55,999
Central Transfers	23,053	7,000	--	30,053
Appropriated Expenditure	180,822	32,700	59,453	272,975
TOTAL EXPENDITURE	230,594	32,700	59,453	322,747

Source: Estimates for the Year from 1/1/86 to 31/3/87, GOS.

Within the proposed MOH budget for 1986/87, the central administration accounts for 10.8 percent of the total, curative care 73.6 percent, and preventive care 13.1 percent of the total (see Table 18).

Table 18: Summary Expenditure Estimates for Health  
(Thousands of Emalangeni)

	<u>Recurrent</u>	<u>Capital</u>		<u>Total</u>
		<u>Government</u>	<u>Other</u>	
Minister	78	--	--	78
Ministry Administration	1,669	18	--	1,669
Medical Support Services	410	--	--	410
Preventive Medicine	2,120	15	--	2,135
Curative Medicine	11,919	1,564	11,590	25,073
TOTAL	16,196	1,597	11,590	29,383

Source: Estimates for the Year from 1st April 1986 to 31st March 1987,  
the Government of Swaziland.

The share set for curative care for 1986/87 is slightly higher than the share estimated for curative care in 1985/86 (72.7 percent) and the share in provisional figures for 1984/85 (71.2 percent) (see Table 19).

Table 19: Summary Recurrent Expenditure Estimates, Health  
(Thousands of Emalangeni)

	<u>1984/85</u> <u>Provisional</u>	<u>1985/86</u> <u>Estimates</u>	<u>1986/87</u> <u>Estimates</u>
Minister	80	70	78
Ministry Administration	2,094	1,402	1,669
Medical Support Services	114	454	410
Preventive Medicine	1,468	2,166	2,120
Curative Medicine	9,284	10,883	11,919
TOTAL	13,040	14,975	16,196
Curative as Percent of Total	71.2	72.7	73.6

Source: Estimates for the Year from 1st April 1986 to 31st March 1987,  
The Government of Swaziland.

### 6.3 CCCD Financing

#### 6.3.1 CCCD in Comparison with Other Health Sector Spending

The CCCD project budget, with a life of project total budget of \$982.2 thousand (bilateral project inputs plus GOS inputs) or an average annual budget of \$245 thousand, can be compared with the MOH budget (see Tables 6 and 7). It represents 3.8 percent of the total Ministry budget or almost 29 percent of the budget for preventive medicine. (The conversion rate employed is 2.50.) If, instead of the \$245 thousand figure, the estimated costs for the fourth year of the project, e.g. \$156 thousand, are compared with other health care expenditures, the relative role of CCCD spending declines.

#### 6.3.2 Actual CCCD Spending Relative to the Pro-Ag

Of the total amount of the AID bilateral grant of \$703,000 for CCCD, the Pro-Ag indicated declining annual budgets (see Table 6). Spending for the first year was specified at \$428,700. Considerably less than this amount has been disbursed to date. As of July 1986 \$309,828, or 44 percent of the total, had been committed and \$122,216, or 17 percent of the total, had been disbursed (see Table 20).

Table 20: QCCD Project Spending: Commitment, Disbursal and Pipeline  
(in U.S. \$s)

	<u>Committed</u>	<u>Disbursed</u>	<u>Unliquidated</u>	<u>Pipeline</u>
Local Purchase	10,000	4,371	5,629	5,629
Vehicles	120,000	--	120,000	120,000
Computer	25,000	20,031	4,967	4,967
Supplies	9,375	8,775	660	600
Computer Software	2,000	--	2,000	2,000
Equipment, Materials	19,412	17,605	1,807	1,807
Equipment, Materials	6,436	--	6,436	6,436
Macinkers	144	144	--	--
Software	795	635	160	160
Software	175	175	--	--
Software	100	--	100	100
Subtotal	234,153	88,629	145,524	145,524
Mass Media	10,123	10,123	--	--
MMHF	28,900	9,210	19,690	19,690
Traditional ' 's WS	1,213	1,213	--	--
Mid-Managers WS	6,939	6,939	--	--
In-country	28,000	5,741	22,259	22,259
Radio Workshop	500	361	139	139
Subtotal (elem)	75,675	33,587	42,088	42,088
Budget Allowance				
Total	309,828	122,216	187,612	187,612
PSC: Matthews	6,615	4,987	1,628	1,628
PSC: Matthews	5,500	1,957	3,543	3,543
PROJECT TOTAL	321,943	129,160	192,783	192,783

Source: Evaluation Team from USAID sources, July 1986

One reason that disbursements are relatively low is that up to the present there has been no disbursement for vehicles even though they arrived several months ago, which amount to \$147,000 in the Pro-Ag, of which \$120,000 has been committed. The reason for the delay is the failure of the CTA to request payment as a result of a project vehicle being misassigned. While spending is somewhat behind the Pro-Ag schedule, it appears roughly appropriate with where the Project stands at the present time.

Regional spending according to the Pro-Ag is to be \$419,000 (see Table 21). Spending appears to be in line with bilateral spending. The major items are a full time Technical Officer and a full time Administrative Assistant, both of which are now in place.

Table 21: Regional Funding for CCCD, Swaziland

Short-term training of 12 national nurse supervisors in planning and management related to CCCD activities	\$ 12,000
Short-term training of 8 district nurses in mid-level planning and management of CCCD-related activities	8,000
Short-term training of 2 assistant national coordinators in planning and management related to CCCD activities	2,000
Short-term training of 2 cold-chain repair technicians	2,000
Consultant services of regional medical epidemiologist in improving EPI surveillance activities and assisting in EPI-related operational research	10,000
Short-term training of 2 assistant national CCCD coordinators in planning and management of CCCD-related activities	2,000
Consultant services of regional medical epidemiologist in improving CCCD surveillance and promoting the use of oral rehydration	15,000
Short-term training of 2 assistant national coordinators in planning and management related to CCCD activities	2,000
Short-term training of 8 malaria assistant supervisors in mid-level planning and management related to CCCD activities	8,000
Consultant services of regional medical epidemiologist to assist in malaria activities	10,000
Short-term training of 2 assistant managers and 4 district health educators in mid-level planning and management related to CCCD activities	6,000
Consultant services of a video-recording technician to train a national technician from the Swaziland Institute of Health Sciences	5,000
Consultant services of long-term regional medical epidemiologist in improving health information and nutrition surveillance	15,000

Table 21: Regional Funding for CCCD, Swaziland

Consultant services of a long-term regional medical epidemiologist in carrying out operational research	25,000
Consultation services of a long-term (four years) Technical Officer located in Lesotho at an approximate ratio of 33% Swaziland, 66% Lesotho	150,000
Support for annual CCCD project evaluation	50,000
Support for other technical consultive services	25,000
Services of a long-term (four years) Administrative Assistant based in Swaziland	<u>75,000</u>
	\$419,000

Source: Pro-Ag, 06/28/84

The obligations of the GOS under CCCD increase annually over the four years of the Project (see Table 7). Persons in the MOH responsible for budgeting appear to be unaware of a GOS obligation under CCCD. As a result, expenditures that might be understood as reflecting a portion of the obligation have not been separated from the budget as a whole. Major portions of the GOS budget, almost 64 percent of the total, are for vaccine supplies, ORS, and chloroquine, which heretofore have been contributed by donors. The GOS has been paying for transportation costs: gasoline, repairs, and maintenance.

#### 6.4 Financial Capacity to Sustain the CCCD Program

In considering the financial capacity of the GOS to sustain the CCCD interventions, the following issues are considered: (1) the overall economy, which affects both the potential of individuals to pay for services and the potential of the GOS to generate general tax revenue, (2) the potential for increasing revenues from health services, (3) the potential for reducing cost, and (4) conclusions on the question of financial sustainability.

##### 6.4.1 The Economy

The economy of Swaziland experienced a real growth rate of aggregate GDP of 3.1 percent between 1980 and 1983 (see Table 22). However, the population grew at a faster rate so that per capita growth over the period was negative. Sectors performing well over the period were agriculture on individual tenure farms, manufacturing, and forestry.

Table 22: Gross Domestic Product by Sector of Origin, 1980/83  
(Millions of Constant (1980) Emalangeni)

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>Average Annual Growth Rate</u>
Agriculture	88.2	98.8	94.6	95.3	2.6
On SNL	15.0	15.5	8.6	4.6	-32.5
On ITF	52.5	61.0	63.8	65.0	7.4
Other	20.7	22.3	22.1	25.6	7.4
Forestry	5.3	5.7	5.9	6.2	5.1
Mining (excluding iron)	14.1	14.6	12.8	10.7	-8.7
Manufacturing	79.6	88.4	93.0	94.0	5.7
Construction	16.2	18.7	18.9	17.4	2.5
Wholesale, Retail, Hotels, Restaurants	35.6	35.0	40.6	35.8	0.1
Transport, Communications	20.5	21.4	21.4	22.2	2.6
Banking, Insurance, Real Estate	23.6	26.2	26.4	26.3	3.6
Owner Occupied Dwellings	15.6	15.8	16.0	16.0	1.0
Government Services	61.1	66.1	71.5	69.8	4.5
Other	5.9	5.4	6.8	6.8	4.8
TOTAL GDP AT FACTOR COST	365.9	396.1	407.9	400.5	3.1
GDP PER CAPITA (E)	652	684	680	646	-0.3

NOTES: \* Provisional  
 \*\* Includes electricity, water, community, social, and personal services

SNL Swazi Nation Land

ITF Individual Tenure Farms

Source: Economic Review and Outlook, Prime Ministers Office,  
 Department of Economic Planning and Statistics, 1986

There is some evidence, though hard data are as yet unavailable, that the economy has strengthened in recent years (Cohen, April 1986). New firms have entered the economy. Inflation is lower in Swaziland than in the RSA and the Swazi local currency has been "delinked" from the Rand. In 1985 migrant labor earned E105.7 million, an increase of over E40 million from the previous year (Central Bank of Swaziland, Annual Report, 1986, Mbabane, Swaziland). Despite these improvements the economy is heavily dependent on RSA and, therefore, continues to be vulnerable.

#### 6.4.2 Government Revenues and Expenditures

Government revenues have risen consistently since 1981/1982 (see Table 23). The largest share of revenue, 58 percent in 1985/86, is derived from the Customs Union. However, in 1984/85 a new source of revenue, the sales tax, was added. This tax became fully effective the following year when it was almost 8 percent of the total revenues. Expenditures, however, grew more rapidly than revenues so that the government has been in a deficit since 1981/82.

Table 23: Government Revenue, 1980/81--1985/86  
(Millions of Emalangeni)

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985*</u>
Customs Union	86.9	62.7	117.6	120.7	130.4	136.6
Sugar Export Levy	13.4	12.3	1.4	--	--	--
Company Tax	15.7	18.0	18.4	17.2	21.0	24.3
Personal Income and Graded Tax	17.1	20.1	20.2	22.8	26.6	28.6
Sales Tax	--	--	--	--	4.4	13.5
Other Revenue, Grants	30.2	21.1	24.5	24.6	30.9	31.9
TOTAL	163.3	134.2	182.1	185.3	213.3	234.9
Surplus/Deficit	21.1	-48.0	-17.3	-19.8	-10.8	-32.0
Net External Financing	6.2	6.3	0.8	4.2	-8.4	9.1
Net Domestic Financing	-27.3	41.7	16.5	15.7	19.2	22.9

\* All years are fiscal years, i.e. 1980 is 1980/81, 1981 is 1981/82, etc.

Source: Economic Outlook and Review, 1986

### 6.4.3 Self-Financing of Health Care

The large share of direct patient payments in total health spending has already been noted. The amount of this payment in the survey period was E9.5 million, of which E1.2 million went to health care facilities (hospitals, health centers, and clinics), E3.1 million to private practitioners, including dentists, and pharmacies, and E2.8 million to traditional healers (Gilson). Clearly a tradition of private payment for health services is well established.

A uniform pay schedule for health facilities was adopted 1 October, 1984 that instituted a charge of E1 for outpatient care as well as for a hospital day. This reflected an increase for government facilities and a decrease for mission facilities. Initially the outpatient fee applied to immunization visits; this fee has been eliminated in the last few months. The fee is charged for outpatient visits involving diarrhea and malaria. The MOH estimates that it will receive E453 thousand from all fees for medical care in 1986/87 (16)\*

### 6.5 Sustainability

In the previous section a range of estimates of the cost of sustaining CCCD activities in the short and long run were set forth. The ability to sustain the activities is discussed in terms of the following categories: (1) the potential to increase government revenues, in general, (2) the potential to increase MOH revenues, either directly from CCCD related services or from other health services, (3) the potential to reduce the cost of sustaining the interventions. If government revenues, in general, are increased, the issue is whether the MOH benefits appropriately. And, since MOH revenues revert to the Treasury, the situation is similar to that of general revenues. If the MOH is permitted to benefit directly from revenues raised through services offered through the Ministry, there will be more attention to capturing revenue. The total amount collected would be expected to increase.

The minimum estimate of the cost of sustaining CCCD activities in the short run was 8.7 percent of the proposed recurrent budget for 1986/87. It is unlikely that government revenues can be increased sufficiently to cover an increase of this magnitude.

Patients are already paying for treatment of diarrheal disease and malaria. It is inappropriate to institute a charge for immunizations at the present time. (1) Donors object to charging for vaccines or health cards. (2) Immunization, as attested by the low coverage, is not yet adequately accepted by mothers as a necessary health intervention. (3) The current policy of free immunization has not been in place long enough to determine its effect.

That patients' demand for health care is price elastic is evident from the fact that the impact of adoption of the uniform fee schedule resulted in a decline in total outpatient services of 17 percent (21\*). The fact that the rate of immunization coverage rose during the period when a charge for immunization was introduced suggests that achieving a higher level of acceptance is possible. Once mothers have accepted the concept of immunization and a sizeable percent of the population has been immunized, this policy should be reconsidered. If donor concurrence is possible or if donor support is waning, the situation should be reassessed with regard to charging for the health card and immunizations.

While a change in fees for CCCD interventions is not proposed, it would be appropriate to raise patient fees for inpatient services. Since the cost of providing a day of hospitalization is substantially more than the cost of providing an outpatient visit, the fee schedule should be modified in stages to reflect this difference. The E1 fee for a day of hospital care could be raised to E1.50 and the period for which the patient is required to pay could be extended beyond the 10 days that now is in effect. One possibility is to charge for the second 10 days at a rate lower than that charged for the first 10 days. This rate might be E1 or E.75. It has also been suggested that other fees be raised. Grant has raised the possibility of raising the fees for ambulance and X-ray services as a means of preventing abuse. Such increases in fees and revenues, if directly benefitting the MOH, would ease somewhat the Ministry budget.

There may be room for cost reductions in providing CCCD activities. As noted before, Robertson and Qualls found the cost of immunizations in Swaziland to be higher than elsewhere. While some of the higher costs in Swaziland may be irreducible, there is a striking difference in the cost at different facilities. For example, in one clinic the cost per immunization was E1.59. In others the costs range upwards of E11. The existence of sizeable cost difference across facilities suggests differences in efficiency. It may be possible to increase efficiency in some facilities and reduce overall costs. Further study of these differences is warranted.

A proposal that may reduce costs of providing CCCD interventions is to market commercially both ORS packets and chloroquine. If both of these items are sold through RHMs and traders, accessibility will be improved. At the same time patient costs in both money and time will be reduced.

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\*Number refers to placement of references listed in "Documents Consulted", Annex II

If satisfactory packaging of ORS can be obtained with the producer in Lesotho, the packets can be produced for 10 1/2 U.S. cents a piece. Selling these in packets of two for 25 cents would allow a markup for the trader and RHM (or possibly a split of the markup between the retailer and the MOH) so that they would be motivated to stock packets and to store them in good condition. The price should be fixed by government and stated clearly in the media, on posters, and on the packets themselves. No change in clinic and health center policy is proposed; that is, the clinic visit would be charged for, but there would be no additional charge for packets. Clearly 25 cents is less expensive than paying a clinic fee and a possible bus fare as well.

Similarly chloroquine could be sold in the local community, again with no change in policy at the clinic or health center level. In both cases, chloroquine and ORS packets, the range of consumer choice is extended; no one is forced to buy in the market.

If a policy of commercially marketing ORS packets and chloroquine is adopted, a communications campaign is necessary to inform patients of the appropriate use of each. But this is consonant with what has been said earlier about the need for further health education/development communications, particularly with regard to malaria.

While it is generally too early in the life of the CCCD project to make a meaningful assessment of the sustainability of the project, the situation appears affirmative. However, the project will not be sustained on the basis of government revenues. Measures need to be taken to increase financing available for CCCD interventions. One possibility is to reduce costs of both CCCD activities and other MOH activities. Another is to increase patient payment for CCCD activities.

#### 6.6 Recommendations:

- Since the GOS cannot at present calculate its contribution to CCCD, GOS accounting procedures should be modified to make it possible to ascertain readily the contribution of GOS to CCCD. Further, there should be an assessment of spending by GOS vis-a-vis the CCCD obligation.
- Study the possibility of reducing CCCD costs. Robertson's study indicates a wide variation in facility costs that should be further explored. In terms of estimating and controlling costs, it would be useful to extend the HIS to include more cost-related data than is presently there.
- Move quickly toward commercial marketing of both ORS packets and chloroquine. This step adds an additional choice for mothers; no present arrangements are reduced. Use the forthcoming Health Com project as a means of marketing these products.

- Assess by the end of 12 months from now the possibility of charges for immunizations and health cards.
- Encourage policies vis-a-vis other health services that will tend to ease the budget of the MOH. This includes increasing other fees and reducing other costs. In addition, the directing of fees arising from government health services to the MOH should be encouraged.

## 7.0 Program Monitoring/Evaluation and Life of Project

### 7.1 Program Monitoring/Evaluation

Program Monitoring and Evaluation will be facilitated when the five year plans for EPI, CDD and Malaria are completed and approved by the GOS in the next few months. Annual work plans will be revised based on this framework.

The Health Information System (HIS) also has the potential to become a valuable management tool in monitoring and evaluating the progress of the various components of the CCCD program. However, a number of problems require resolution before this opportunity becomes a reality. (Section 4.3 looks at the HIS needs in some detail.)

The CCCD project is well endowed with bilateral funds for both evaluations and operational research, so there is no funding problems in doing more or getting the necessary KAP, implementation, and other surveys done. The difficulty lies in the preparation of the scopes of work and execution of the studies.

In addition to the formal evaluations done with CCCD funding, WHO, UNICEF, and Save the Children in cooperation with the MOH are actively reviewing and assessing the Swazi CCCD activities.

In the field, nurse supervisors, health inspectors, special teams from the Central Level routinely check on the cold chain, deliver vaccines, examine curative and preventive services, etc. A supervisor's check list would make more precise the questions asked, and allow for better statistical comparison.

There is a good foundation in Swaziland for monitoring and evaluation. However, supervisory activities are limited by logistic problems related to lack of transport for supervisory or survey personnel.

Recommendation:

- That the CCCD TO meet with MOH and donors to consider ways to utilize funding currently available to accelerate the surveys, evaluations and operational research needed to improve the management of the CCCD program. Training in research and survey techniques is suggested to help develop a number of Swazi professionals who are qualified and able to undertake these kinds of activities.

7.2 Life of Project

The Project Agreement (Pro-Ag) signed on June 28, 1984 calls for the project to end forty-six months after the signing of the Project Agreement, i.e. April 30, 1988. However, the normal start up time required to bring the CCCD project to a point where it was operational does not appear to have been taken into account. In the Pro-Ag, goals and targets are based on forty-six months and imply that the project became instantly operational on date of signature. In fact, a long preparatory period was required. For example, almost a year was required to order and receive vehicles, basic commodities, organize training programs, and complete hiring of staff. In fact there were no bilateral expenditures in FY 1984. Therefore, the tasks set forth in the Project Agreement were not addressed or operational until the end of the first year.

Further, since Swaziland only had one-third of the time of a TO (Technical Officer) based in Lesotho for the first two years, mobilization and implementation did not move as rapidly as might have been, if there had been a full time TO based in Swaziland. The full time TO recommended by the first year evaluation team arrived at the beginning of the third year. Therefore, the team believes that the Life of Project (LOP) should be extended by 12 months to provide about four full operational years to carry out the goals and objectives of the project.

The commitments and expenditures are about on schedule when the CCCD project is examined from this new perspective. Therefore, if the above recommendation is accepted, no additional funding will be required for the extension of the bilateral program. The regional project will, of course, have to continue the regional support for an additional year.

Recommendation:

- That the Life of Project of the CCCD Project Grant Agreement be amended by USAID and the GOS to extend the project by twelve months until April 30, 1989 (with no additional funding) in order to allow close to four full operational years to accomplish the project objectives.

ANNEX I

Scope of Work  
For Second Year External Evaluation

1. Objectives of Evaluation:

a) To evaluate CCCD activities in two countries through systematic collection and analysis of data and CCCD management and operation at the central, regional and peripheral levels.

b) To measure the extent to which CCCD activities have been intergrated into existing primary health care structure.

c) To offer a series of recommendations to improve the expansion and delivery of CCCD services (including training, health education and health information systems development), and to accelerate their intergration into the primary health care delivery structure given ever present resource constraints.

2. A team comprising an epidemiologist, health management specialist and health economist, will be fielded to conduct an evaluation of CCCD project. The team will work in the Anglophone countries of Swaziland, and Lesotho.

3. Methods of Evaluation:

a) Study relevant reference statements at central and regional levels.

b) Visit selected service delivery units and other health institutions in the rural areas of a representative number of regions of the countries.

c) Review survey data

d) Interview relevant project implementation agents.

4. Evaluation Components:

Project planning administration and management

a) review the CCCD assessment and evaluate its adequacy as the basic planning document for CCCD project in the respective countries.

b) Review the development of plans of operation and the adequacy of those plans to govern and support field activities.

c) Describe and review the capacity of government management and administrative structure to manage and administer a national program incorporating immunization and ORT.

d) Review country project executive management structure and functions with particular emphasis on relevant CCCD project and executive committees.

e) Review the AID, CDC administration and support to project and adequacy of procedures established for project support.

f) Review donor coordination structures and accomplishments.

5. Project Support:

a) Review epidemiologic and health services statistics in order to determine if the CCCD project has exerted an influence on lowering morbidity, mortality or increasing the availability or quality of primary health care in the respective countries.

b) Review the adequacy of information systems current and planned to provide data necessary to determine project impact.

6. Program Operation:

a) Review the delivery system (current and proposed) to be utilized to deliver CCCD services.

b) Review the following operational aspects of delivery system - supervision, logistics and supply, communications, personal coverage, control of funds and supplies.

c) Review the distribution of delivery points of CCCD services.

d) Review staffing distribution to delivering CCCD services.

e) EPI Program Components: (1) analyze geographic coverage of delivery systems and characterize the system; (2) Review immunization policies and schedules; (3) Review frequency of vaccination schedules; (4) Review coverage of immunizations and review immunization practices with special emphasis on sterilization of equipment, immunizing ill children and frequency of immunization clinics.

f) ORT Program Components: (1) Analyze geographic coverage of oral rehydration therapy delivery system and characterize the delivery system; (2) review national ORT policy; (3) Review population coverage of ORT; (4) Review ORT practices with special emphasis on continuing use of I.V., adequacy and frequency of use of ORT and adequacy of public information regarding ORT.

g) Malaria: (1) Analyze geographic coverage of delivery system and characterize the system; (2) Review national malaria and antimalarial chemoprophylaxis policies; (3) Review population coverage of malarial treatments; and (4) Review malaria treatments and chemoprophylaxis practices with particular emphasis on availability of Chloroquine, adherence to national policies, and frequency of antimalarial chemoprophylaxis in pregnant women.

h) Procurement, Distribution and Quality Control of ORS and Other Commodities: (1) Review during acquisition and distribution; (2) Review cold chain performance; (3) Review vaccine distribution system; (4) Review local ORS production; and (5) Review acquisition and distribution of other supplies.

i) Training: (1) review types and magnitude of training provided; (2) review training materials development; (3) review numbers and types of personnel trained and evaluation of their performance; and (4) Review training plan for remainder of project.

j) Target Disease Surveillance and Medical Information System: (1) review baseline surveys - morbidity and mortality; (2) review current reporting and report keeping systems; (3) Review plan for modification of present system to provide accurate M and M data and utilization data; and (4) review health information system activities proposed for remainder of project.

k) Health Education: (1) Review the current health education structure, plan of execution and activities data; (2) review staffing and institutional capacity for delivering health education services; and (3) Review adequacy of technical assistance provided for support to health education activities.

l) Financing: (1) review sources and amount of funding for current program activities; (2) review government normal budget, and auto financing; (3) review USAID bilateral funds, regional funds, and counterpart funds; (4) review future financing recurrent cost estimates and country project ability to finance recurrent cost in fee-for-services systems.

m) Program Costs: (1) review cost for immunization given, cost per fully immunized child, and cost per pregnant woman immunized; (2) Review ORT cost per ORT given, and cost per child covered per year; and (3) review antimalarial treatment and chemoprophylaxis average cost per antimalarial treatment provided, cost per child covered per year, and cost per pregnant woman covered per period of gestation.

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ANNEX III

List of Persons Contacted and Field Visits

MOH/Mbabane

Mr. T.M.J. Zwane, Principal Secretary  
Mr. P. Thompson, Senior Accountant  
Mr. Malankwane, Principal Accountant  
Dr. J.J. Thuku, Director of Medical Services  
Dr. Q.Q. Dlamini, Medical Officer, Primary Health Unit  
Mrs. P. Mthembu, Chief, Health Education Unit  
Matron Ntiwane, Primary Health Unit  
Ms. Z. Tshabalala, Chief, Health Statistics Unit  
Sr. G. Matsebula, CCCD Coordinator and CDD Program Head  
Sr. H. Mdluli, EPI Program Coordinator  
Mr. A. Mndzebele, Health Education Officer/Trainer  
Mr. B. Magongo, Health Education Officer/Trainer  
Mr. C. Mamba, Chief, Malaria Unit  
Mr. I. Mathabela, Senior Parasitologist, Malaria Unit

Save the Children/Mbabane

Mr. W. Msibi, Director

WHO/Mbabane

Mr. L. Menouta, Liaison Officer

UNICEF/Mbabane

Mr. M. Stirling, Liaison Officer

Project Hope

William D. Hawley, MD, MPH, Program Director

Development Communications Project

Ms. E. De Fossard, COP

Primary Health Care Project

Mr. Albert Neill, COP

Traditional Sector Project

Mr. Robert Hitchcock, COP

Regional Hospitals/Country Health Centers and Clinics/Rural Health Motivators

Mbabane Government Hospital:

Dr. T. Shilubane, Dr. E. McGrath

Central Vaccine Store:

Mrs. T. Manyatsi, Central Vaccine Store Supervisor

Mrs. Kelly Shongwe, CVS Operations Officer

King Sobhuza II Clinic (GOS)

Luyengo Clinic (RHM)

RFM Clinic (Mission)

Dr. D. Falk, Medical Practitioner

Siphofaneni (GOS); St. Phillips (Mission); Sithobela (GOS) (and  
Sithobela Vaccine Depot)

Bholi Clinic (GOS); Ndzevane Refugee Center, Clinic; Lavumisa  
Clinic (GOS) Ubombo Ranch Clinic

Entfonjeni (GOS); Emkhuzweni Health Center

Horo (Hhohho) Clinic (GOS), Pigg's Peak Vaccine Depot and  
PHU (GOS);

Motshane Community Clinic, Nkaba Clinic, Pigg's Peak Hospital  
Health Administrator - Mr. Alson Kunene

U.S. Embassy/Mbabane

Ambassador Harvey Nelson, Jr.

USAID/Mbabane

Robert G. Huesmann, Mission Director

Alan Reed, Project Development Officer

Neal P. Cohen, Regional Economist

Richard P. Solloway, Financial Management Officer

Alan C. Foose, Acting Regional Health, Population and  
Development Officer

Mary Pat Selvaggio, Health, Population and Nutrition Officer

Monica Wernette, CCCD Technical Officer

Peter Matthews, CCCD Technical Assistant

AID/Washington

Joe Davis, CCCD Project Director, AFR/TR

Wendy Roseberry, Assistant CCCD Project Director, AFR/TR

CDC Atlanta

Billy Griggs, Director, International Health Office,  
CDC/Atlanta, U S A

Stanley Foster, Deputy Director, Int'l Health Office,  
CDC/Atlanta, U S A

Andy Agle, Technical Coordinator, CCCD program, IHPO/CDC/Atlanta

Jean Roy, Deputy Technical Coordinator, IHPO/CDC/Atlanta

Jason Weisfeld, Chief, Training Activities, IHPO/CDC/Atlanta

T. Stephen Jones, Chief, Evaluation and Research, IHPO/CDC/Atlanta  
Bill Taylor, Evaluation and Research Division  
Ron Waldman, Evaluation and Research Division  
Dennis Olsen, Country Supervisor, Swaziland  
Katherine Parker, Health Education Advisor  
Carol Goettle, Administration

ANNEX IV  
CCCD Swaziland Major Goals and Objectives

1. By 1989, decrease the mortality among children less than five years of age for measles by 40% from the 1984 baseline.
2. By 1989, decrease the mortality among children less than five years for diarrhoeal diseases by 50% from the 1984 baseline.
3. By 1989, decrease the morbidity among children less than five years of age for measles by 40% and for polio by 60% from the 1984 baseline.
4. By 1989, decrease the morbidity among children less than five years of age for malaria by 50% from the 1984 baseline.
5. By 1989, increase the comprehensive immunization coverage of children from birth to 12 months of age to 65% from the 1983 level of 26%.
6. By 1989, increase the use of oral rehydration therapy for diarrhoeal diseases by 50% from the 1984 baseline.

The CCD Project will assist the Ministry of Health in achieving these objectives by:

1. Conducting short term management and technical training courses for local health personnel;
2. Collaborating in activities designed to motivate target members of the community to utilize health services or adopt prescribed health practices;
3. Supporting operational research related to the development of improved methods for controlling target diseases;
4. Providing short term consultancies in the area of management;
5. Providing equipment, materials and logistic support.

Sources:

First Year Project Work Plan, 1984, USAID/Swaziland Semi-Annual Implementation Report for Period 10/85-3/86, and CCCD Swaziland Briefing Paper, June 1986.

## ANNEX V

### List of Recommendations

#### 2.1 Planning, Administration and Management

##### Recommendations:

- That MOH give high priority to finishing the five year plans which will provide a framework for development of annual workplans, facilitate future budget exercises, and substantiate requests for donor financing, etc.
- That EPI, CDD and Malaria program activities be implemented simultaneously and support services in the Health Education Unit (HEU), Training, and Health Information System (HIS) be mobilized to provide continuing support for all three core programs as appropriate to their respective stages of development.

##### Recommendations:

- The Minister of Health or his representative should reiterate to the national heads of the major CCCD and PHC programs as well as the members of the RHMTs the government's policy and commitment to the decentralization plan, and delineate the respective functions of the central government administrators vis a vis the RHMTs, and the respective duties and responsibilities of the principal members within the RHMTs -- i.e., Health Administrators, Medical Officers (MOs), and Nurse Matrons.
- Steps should be taken as soon as possible to remedy the current shortages and delays in filling orders by the Central Medical Stores. Additional training at all levels should be provided so that, workers, clerks, storekeepers, and managers all have the specialized knowledge required to successfully run a central medical stores operation. (Project Hope and/or the Primary Health Care project can provide valuable resources to assist the MOH in solving this urgent problem.)
- Given the importance of an early successful installation and operation of the GOS' decentralization of Primary Health Care (PHC) to achieving the goals of the CCCD program, the GOS and USAID should make support of the decentralization effort a major priority of the GOS/USAID Primary Health Care Project.

##### Recommendations:

- That the MOH fill the senior executive management posts now vacant at the national level with a view to providing more administrative, management time for planning, monitoring, supervising and following up on CCCD/MCH/FP activities.

- That the MOH explore the possibility of filling the vacant posts at HC and Clinic level with a view to increasing the efficiency of the HC/Clinics, increasing outreach, and improving the coverage of EPI, CDD and Malaria, training of Rural Health Motivators (RHMs), etc. (Should the planned staffing for Health Centers and Clinics not be reflected by established posts, steps should be taken by the GOS to remedy this deficiency.)
- That the MOH create posts of deputy for the EPI, CDD, and Malaria programs to alleviate the current work load and provide more time for planning, monitoring, supervising, and evaluating the work.
- That the secretarial support planned for the MOH be provided to overcome this bottleneck to effective operation.

## 2.2 Donor Coordination

### Recommendation:

- The Technical Officer (TO) should consider with the Public Health Unit (PHU) the possibility of reconvening the CCCD work group or task force on a quarterly basis.

### Recommendations:

- Create the position for a medical epidemiologist to provide guidance in the improvements necessary in the HIS. If this is not possible, CCCD should provide TA of a medical epidemiologist to assist in the development of epidemiological analyses. Given the time required to create and staff a new position, the CCCD project should provide a medical epidemiologist to assist the MOH as soon as feasible.
- Develop and publish on a timely basis an epidemiological bulletin for distribution to all health facilities in the country. This bulletin should contain data analyses as well as textual interpretations on the morbidity and mortality patterns in the country.
- Fill the vacancy for a second key punch operator in the computer division of the central level statistical unit/MOH.

## 2.4 Expanded Programme of Immunizations

### Recommendations:

- Appoint a deputy coordinator to the EPI unit to assist with the management and supervision of program activities.

- The evaluation team cannot recommend strongly enough the need to develop an epidemic response capability that would permit the early detection and investigation of increased occurrence of vaccine preventable diseases and in turn permit the early implementation of control measures through increased immunization activities in areas identified as a risk.
- In hard to reach areas, consideration should be given to reducing the number of contacts operationally necessary to fully immunize a child before the age of one year, to three contacts. However, children who do attend health centers should be immunized at monthly intervals per the WHO recommended vaccination schedule.
- Consideration should be given to conduct well planned National Immunization Days in order to boost coverages through the establishment of numerous temporary immunization posts in areas presently not covered by immunization services.
- Ensure the reduction in "missed opportunities" for immunization through the screening and immunization of all children who present to the health sector for curative services.
- Change national norms with respect to discarding of unused doses in open vials at the end of the day in order to reduce vaccine wastage. The comparative cost of single dose vials of measles vaccine should be studied in light of the present high wastage of measles vaccine.
- Ensure that a sterile needle and a sterile syringe be used for each child vaccinated.
- The EPI Unit should change the vaccine ordering procedures to be based on the target population to be covered rather than on the previous month's vaccine utilization.
- Strategies for increasing coverages with TT among women in the fertile age group should be reviewed.
- There is the need to reinstitute an EPI target disease surveillance system to carefully monitor the immunization history of reported cases.

## 2.5 Control of Diarrheal Diseases

### Recommendations:

- The CDD strategy begin to emphasize the use of ORS packets and decrease emphasis on SSS solutions prepared in the home.

- Health communication project activities should include "maintenance" stages following initial messages to ensure the continuous awareness and education of the population.
- An assessment of ORT utilization at the community level.
- The use of the RHM as a distribution point for the introduction of ORS packets into the community.
- Develop a data collection system for monitoring the use, distribution, and supply of ORS packets.
- Given the identified problems with distribution of supplies from the central level, consideration should be given to the possible development of a regional distribution system analagous to that in place for vaccine supplies. Consideration to the availability of packets in the commercial sector (chemists, traders and traditional healers) should also be given.
- To recall all of the ORS packets imported in 1983 with a simultaneous distribution of newly imported packets.
- That the MOH consider creating the post of CDD program deputy director to carry out all phases of CDD program activities.

## 2.6 Malaria Control Program

### Recommendations:

- There is the need to create a position for a medical epidemiologist assigned to the malaria control program activities. (Given the time required to create and staff a new position, the CCCD project should provide technical assistance of a medical epidemiologist to assist the MOH as soon as feasible.)
- Malaria control program activities should be integrated within the framework of primary health care in Swaziland.
- A vector control expert should be provided by the CCCD project to evaluate the cost efficacy of continuing the vector control activities.
- There is the need for a major health education campaign directed at the population to increase their awareness of malaria as a serious problem within the country and to educate the population to seek immediate treatment upon the appearance of malaria symptoms.

- Consideration should be given to the development of mass media communication messages directed at a reduction in contact between the vector and the population.
- There is the need to improve the passive case detection and confirmation activities in all health facilities in the country in order to document and follow the extent of malaria activity.
- Testing of malaria sensitivity to a chloroquine treatment dose of 25mg/kg should be performed.
- There is the need to carefully review the supply and distribution network of chloroquine throughout the country.
- RHMs should be given chloroquine tablets to serve as a distribution point in the community.
- There is the need for the procurement and distribution of non-chloroquine anti-malarials to all designated referral centers in the country.

## 2.7 Health Education/Communications

### Recommendations:

- Recognition should be given to the importance of communications in health development especially in view of communication strategies in CCCD intervention areas over the last three years.
- That a multi-faceted information/education program focusing on the several target audiences be undertaken, and directed toward all three CCCD interventions.
- That the forthcoming Health Com Project now under consideration by the GOS be utilized by CCCD as the means to introduce the above mentioned information/education program.\*

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\*On August 18, 1986, after the evaluation team returned to the United States, it was informed that the GOS/USAID had postponed indefinitely the Health Com initiative which was proposed for early FY 87 because the government felt it already had a very heavy workload given its present program in the health sector, especially with the USAID/PHC project just getting under way. However, the team continues to feel that it is important for the MOH to have help in this area. Consideration should be given to reinstating the request for technical assistance under Health Com as soon as feasible. In the interim short term TA might be envisaged.

- Careful consideration should be given to the unit in the GOS to be responsible for health communications. The HEU may require expansion and significant support if it is to become the communications center of MOH. If not HEU, a determination is needed as to what other GOS/MOH department(s) can assume responsibilities for coordinating on-going programs and special campaigns in CCCD.
- Emphasis should be given to training in health communications along with training in other areas since it is the communication network that disseminates much of the information needed to bring about successful behavioral change.
- Since one of two key MOH staff involved in communications has departed from Swaziland for long-term training, CCCD should examine staffing needs in CCCD communications activities, including management/planning capability of present staff and staffing needs for future CCCD communications efforts.

## 2.8 Costs

### 2.8.1 Financial Sustainability

#### Recommendations:

- Study the possibility of reducing CCCD costs. Robertson and Qualls' study indicates a wide variation in facility costs that should be further explored. In terms of estimating and controlling costs, it would be useful to extend the HIS to include more cost-related data than are presently there.
- Move quickly toward commercial marketing of both ORS packets and chloroquine. Use the forthcoming Health Com project now under consideration by the GOS as a means of marketing these products.\*
- Encourage policies vis-a-vis other health services that will tend to ease the budget of the MOH. This includes increasing other fees and attempting to reduce other costs. In addition, fees arising from the provision of health services should be directed to the MOH rather than the Treasury.
- Within 12 months reassess the policy of no charge for immunization and consider the possibility of charging for health cards and immunization services.

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\*Since the evaluation team was in Swaziland, the government has decided not to go ahead with the Health Com Project.

## 2.9 Training/Continuing Education

### Recommendations:

- MOH should add a line item for training in its next budget so as to assure that training will continue in the future as an essential Ministry activity.
- Given the shortage of general management skills, generic management training should be provided to mid-level managers at national, regional and clinic levels.
- CCCD should continue its support of training of new RHMs, and encourage continuing education for those RHMs already trained.
- Health staff could benefit from an in-country seminar on the use of HIS information as a management tool.
- A core group of trainers (two in each region) should be established in each region to train nurses and nurse assistants in all CCCD interventions.
- Once the five year plans now being drafted in EPI, CDD and Malaria are completed and approved, continuing education courses about them should be organized to bring the national, regional and clinic level health professionals up to date.

### 2.9.1 Program Monitoring/Evaluation and Life of Project

#### Recommendations:

- That the CCCD to meet with MOH and donors to consider ways to utilize funding currently available to accelerate the surveys, evaluations and operational research needed to improve the management of the CCCD program. Training in research and survey techniques is suggested to help develop a number of Swazi professionals who are qualified and able to undertake these kinds of activities.
- That the Life of Project of the CCCD Project Grant Agreement be amended by USAID and the GOS to extend the project by twelve months until April 30, 1989 (with no additional funding) in order to allow almost four full operational years to accomplish the project objectives.

Note: A full listing of recommendations contained in the report by subject and page number can be found in Annex V).

## 3.0 Evaluation Process

### 4.1.1 Status of Current Planning

Recommendation:

- That MOH give high priority to finishing these five year plans which will provide a framework for development of annual workplans, facilitate future budget exercises, and substantiate requests for donor financing, etc.

4.1.2 Project Strategy

Recommendation:

- That EPI, CDD and Malaria programs be brought about simultaneously and support services in HEU, Training, and HIS be mobilized to provide continuing support for all three core programs as appropriate to their respective stages of development.

4.2 Administration and Management

Recommendations:

- The Minister of Health or his representative should reiterate to the national heads of the major CCCD and PHC programs as well as the members of the RHMTs the government's policy and commitment to the decentralization plan, and delineate the respective functions of the central government administrators vis a vis the RHMTs, and the respective duties and responsibilities of the principal members within the RHMTs - i.e., Health Administrators, Medical Officers (MOs), and Nurse Matrons.
- Given the importance of an early successful installation and operation of the GOS' decentralization of Primary Health Care to achieving the goals of the CCCD program, the GOS and USAID should make support of the decentralization effort a major priority of the GOS/USAID Primary Health Care Project.
- Procedures for ordering medicines and other supplies from the Central Medical Stores (CMS), and the method of distribution to the HCs and Clinics should be reviewed. Steps should be taken as soon as possible to remedy the current shortages and delays in filling orders which impact directly on the ability of the HCs and Clinics to operate effectively their Maternal Child Health/Family Planning/CCCD (MCH/FP/CCCD) programs. (Project HOPE and/or the Primary Health Care project could provide valuable resources to assist the MOH in solving this urgent problem.) Additional training at all levels should be provided so that workers, clerks, storekeepers and managers all have the specialized knowledge required to successfully run a central medical stores operation.

#### 4.2.2 Staffing

##### Recommendations:

- That the MOH fill the senior executive management posts now vacant at the national level with a view to providing more administrative/management time for planning/monitoring/supervising and following up on CCCD/MCH/FH activities.
- That the MOH explore the possibility of filling the vacant posts at HC and Clinic level with a view to increasing the effectiveness of the HC/Clinics, increasing outreach, and improving the coverage of EPI, CDD and Malaria, training of Rural Health Motivators (RHMs), etc. (Should the planned staffing for Health Centers and Clinics not be reflected by established posts, steps should be taken by the GOS to remedy this deficiency.)
- That the MOH obtain permission to create three deputy posts to provide additional support to CCCD programs in EPI, CDD and Malaria.
- That secretarial support planned for the MOH be provided to overcome this bottleneck to effective operations.

#### 4.2.3 Management (National/Regional/Local or Operational Level

##### 4.2.3.3 Local or Operational Level

##### Recommendations:

- The EPI Unit should change the vaccine ordering procedures to be based on the target population to be covered rather than on the previous month's vaccine utilization.
- National norms related to the discarding of unused, opened vials of polio, DPT, DT and TT vaccines should be reevaluated in order to decrease the observed costly increase in vaccine wastage. In addition, a study on the comparative cost of the use of single dose vials of measles vaccine versus the cost of 600-700% wastage through the use of 10 dose vials should be conducted.
- All health facilities should store their daily active vaccine vials in the King-Seeley vaccine carriers to ensure that temperatures above +8° are not surpassed, thereby permitting unused vials to be used in subsequent vaccination sessions.
- The temperature monitoring graph should be modified to use intervals of 2°C with the 0° and 8° lines marked heavily so that temperature recordings outside the recommended range will be readily recognized and alert the health facility staff to adjust the refrigerator settings immediately.

- All children should be immunized with a sterile needle and a sterile syringe. "One child per needle and syringe".
- Given the cost implications for ordering increased quantities of disposable syringes, consideration should be given to change to reusable syringes and needles.

#### 4.4.4 Training of Health Care Personnel in EPI Activities

#### 4.4.4 Training of Health Care Personnel in EPI Activities

#### RECOMMENDATION:

- Training of health care providers should heavily emphasize the avoidance of "missed opportunities".
- All health care personnel, especially those involved in provision of curative services, must be aware of the necessity to review all children's immunization status prior to provision of curative services and not miss the opportunity to immunize an unprotected child.
- The EPI manual for health care providers should be modified to clarify the section on contraindications for vaccination.

#### 4.4.5 Vaccination Coverage

#### Recommendations:

- Strategies for increasing coverages among the less than one year old population should be reviewed.
- Strategies for increasing coverages with TT among women in the fertile age group should be reviewed.
- Vaccination coverage surveys should include information on coverages of women in the fertile age group with TT.

#### 4.4.6 Morbidity and Mortality Due to Vaccine Preventable Diseases

#### Recommendations:

- The earlier recommendation to create the post for a medical epidemiologist to work closely with the statistical unit to design and implement an active epidemiologically based surveillance system for the EPI target diseases is restated.
- There is the need to reinstitute an EPI target disease surveillance system to carefully monitor the immunization history of reported cases.

- The evaluation team cannot recommend strongly enough the need to develop an epidemic response capability that would permit the early detection and investigation of increased occurrence of vaccine preventable diseases and in turn permit the early implementation of control measures through increased immunization activities in areas identified as at risk.
- The EPI coverage surveys should be reanalyzed to ascertain the proportion of children vaccinated against measles earlier than nine months of age. If the proportion is found to be high, consideration must be given to revaccination of these children.
- With the observed occurrence of tuberculosis in children of 0-5 years old, there is the need to assess the efficacy of BCG vaccine. Given the availability of operations research funding through the CCCD project, the evaluation team recommends that such a study be funded.

#### Recommendations:

- The earlier recommendation to create the post for a medical epidemiologist to work closely with the statistical unit to design and implement an epidemiologically based surveillance system for the EPI target diseases is restated.
- There is the need to reinstitute an EPI target disease surveillance system to carefully monitor the immunization history of reported cases.
- The evaluation team cannot recommend strongly enough the need to develop an epidemic response capability that would permit the early detection and investigation of increased occurrence of vaccine preventable diseases and in turn permit the early implementation of control measures through increased immunization activities in areas identified as at risk.
- The EPI coverage surveys should be reanalyzed to ascertain the proportion of children vaccinated against measles earlier than nine months of age. If the proportion is found to be high, consideration must be given to the revaccination of these children.

#### 4.5 Control of Diarrheal Diseases (CDD)

##### Recommendation:

- There is the need to create the post of CDD program deputy director to assist in the carrying out of all phases of CDD program activities.

##### 4.5.2 Oral Rehydration Therapy (ORT)

Recommendations:

- The CDD program should decrease the emphasis on a home based solution and increase the emphasis on the need to obtain ORS packets. Because of the findings of potentially dangerous SSS prepared at home by over half of the mothers tested, the change to ORS packets should be implemented.
- There is still the clearly defined need for continued education of the senior medical staff to promote the utilization of ORT for diarrheal episodes.
- There is a strong need to assess ORT utilization at the community level. Consideration should be given to the addition of questions related to the management of diarrheal episodes in the next annual vaccination coverage survey.\*
- All health communication project activities should have "maintenance" stages following initial messages to ensure continuous awareness and education of the population.

4.5.3 ORS Supplies and Distribution

Recommendations:

- The CDD unit should recall the 1984 shipment of ORS packets with a simultaneous distribution of fresh packets.
- Given the concerns about the continued use of a potentially dangerous SSS by mothers, combined with the need to increase the availability of the ORS packets at the community level, the RHM should be used as a distribution point for the introduction of ORS packets into the community.
- The distribution of ORS packets to the RHMs should be accompanied with education of the RHMs to ensure that children who are not responding well while receiving ORT are immediately taken to the nearest health facility for further treatment.
- Given the identified problems with distribution of supplies from the central level, consideration should be given to the possible development of a regional distribution system analagous to that in place for vaccine supplies. Consideration to the availability of packets in the commercial sector (chemists, traders and traditional healers) should also be given.
- There is the identified need to develop a data collection system for monitoring the use of ORS packets.

#### 4.5.4 Hospital ORT Units

##### Recommendation:

- There is the clearly identified need to improve upon existing reporting networks to increase the information available on diarrheal disease morbidity and mortality.

#### 4.6 Malarial Control Program

##### Recommendation:

The vertical nature of malaria control activities combined with the absence of direct health care professional input into malarial activities has led the evaluation team to recommend the creation of a position for a medical epidemiologist assigned to the malaria control program, and to stress the need for integration of malaria program activities within the framework of primary health care in Swaziland.

#### 4.6.2 MOH Policies

- There is a need for an evaluation of the cost efficiency of vector control activities. The CCCD project should provide the technical assistance necessary for this study.
- There should be continued support for vector breeding site reduction and larvicidal treatment activities.
- Consideration be given to development of mass media messages directed at reduction in contact between the vector and the population.
- Prior to the development of messages, preliminary KAP investigations to ascertain population perception of the malaria problem and their practices in response to malaria should be conducted.

#### 4.6.5 Chemoprophylaxis

##### Recommendation:

- The policy of chemoprophylaxis of the work force should be reassessed in light of the emergency of chloroquine resistance.

#### 4.6.6 Passive Case Detection and Treatment of Presumptive Cases

## Recommendations:

- There is a need to improve the passive case detection activities and confirmation activities occurring in all health facilities in the country in order to document and follow the geographic extent of malaria activity.
- MOH policy should ensure radical treatment of all presumptive malaria cases immediately upon diagnosis and should discourage the practice of partial treatment awaiting slide confirmation.
- RHMs should be included in malaria control activities as a means of bringing chloroquine closer to the community for more rapid identification and treatment of presumptive malaria cases.

### 4.6.7 Chloroquine Resistance

#### Recommendation:

- All efforts should be made to ensure that the second stage of testing of the chloroquine treatment regimen is performed during the upcoming malarial season.

### 4.6.8 Chloroquine and Non-Chloroquine Antimalarials Distribution

#### Recommendation:

- There is a critical need to carefully review the chloroquine throughout the country.
- There is the need for procurement and distribution of non-chloroquine antimalarials to all designated referral centers.

### 4.6.9 Morbidity and Mortality Due to Malaria

#### Recommendation:

- There is the need for health education activities countrywide now that there has been re-introduction of malaria into the middlelevel region.

## 4.7 Health Education/Communications

### 4.7.1 Current Activities

in CCCD intervention areas over the last three years.

- That a multi-faceted information/education program focusing on the several target audiences be undertaken, and directed toward all three CCCD interventions.

- That the forthcoming Health Com Project now under consideration by the GOS be utilized by CCCD as the means to introduce the information/educational program.\*
- Careful consideration should be given to the unit in the GOS to be responsible for health communications. The HEU may require expansion and significant support if it is to become the communications center of MOH. If not HEU, a determination is needed as to what other GOS/MOH department(s) can assume responsibilities for coordinating on-going programs and special campaigns in CCCD.
- Emphasis should be given to training in health communications along with training in other areas since it is the communication network that disseminates much of the information needed to bring about successful behavior change.
- Since one of two key MOH staff involved in communications has departed from Swaziland for long-term training, CCCD should examine staffing needs in CCCD communications activities, including management/planning capability of present staff and staffing needs for future CCCD communications efforts.
- Efforts to strengthen regionalization (decentralization) should be made and encouraged since regional management appears to be essential to a successful health education/communications endeavor.

#### 4.8 Training/Continuing Education

In the light of the above, the following training recommendations are made:

- Generic management training should be provided to upper-level managers at national, regional, clinic levels.
- CCCD should continue its support of training of RHMs and encourage continuing education for those RHMs already trained.
- A course should be given in the use of HIS information as a management tool at the national, regional and clinic level.
- A core group of trainers (two in each region) should be established in each region to train nurses and nurses assistants in all CCCD interventions.
- Once the five year plans now being drafted in EPI, CDD, and Malaria are completed and approved, continuing education courses about them should be organized on program norms and technologies to bring the national, regional and clinic level health professionals up to date.

- The MOH should add a line item for training in its next budget so as to assure that training will continue in the future as an essential Ministry activity.

## 5.0 Program Costs

### Recommendation:

- Costs of CCCD services warrant further investigation. It may be that some costs have already fallen, and it may be that steps can be taken to reduce other costs.

## 5.3 Cost-Benefit Analysis

### .6 Recommendations:

- Since the GOS cannot at present calculate its contribution to CCCD, GOS accounting procedures should be modified to make it possible to ascertain readily the contribution of GOS to CCCD. Further, there should be an assessment of spending by GOS vis-a-vis the CCCD obligation.
- Study the possibility of reducing CCCD costs. Robertson's study indicates a wide variation in facility costs that should be further explored. In terms of estimating and controlling costs, it would be useful to extend the HIS to include more cost-related data than is presently there.
- Move quickly toward commercial marketing of both ORS packets and chloroquine. This step adds an additional choice for mothers; no present arrangements are reduced. Use the forthcoming Health Com project as a means of marketing these products.
- Assess by the end of 12 months from now the possibility of charges for immunizations and health cards.
- Encourage policies vis-a-vis other health services that will tend to ease the budget of the MOH. This includes increasing other fees and reducing other costs. In addition, the directing of fees arising from government health services to the MOH should be encouraged.

## 7.0 Program Monitoring/Evaluation and Life of Project

### Recommendation:

- That the CCCD TO meet with MOH and donors to consider ways to utilize funding currently available to accelerate the surveys, evaluations and operational research needed to improve the management of the CCCD program. Training in research and survey techniques is suggested to help develop a number of Swazi professionals who are qualified and able to undertake these kinds of activities.

## 7.2 Life of Project

### Recommendation:

- That the Life of Project of the CCD Project Grant Agreement be amended by USAID and the GOS to extend the project by twelve months until April 30, 1989 (with no additional funding) in order to allow close to four full operational years to accomplish the project objectives.