

**AFRICA CHILD SURVIVAL INITIATIVE  
COMBATTING CHILDHOOD COMMUNICABLE DISEASES  
(ACSI-CCCD)**

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**PROJECT REPORT**



**UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT**  
Africa Regional Project (698-0421)



**U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES**  
Public Health Service  
Centers for Disease Control  
and Prevention  
International Health Programs Office



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Atlanta, Georgia 30333

# Introduction

During the last 13 years (1982-1993), The Agency for International Development (A.I.D.) through its Africa Child Survival Initiative - Combatting Childhood Communicable Diseases Project (ACSI-CCCD) has been working with African nations to strengthen their capacity to improve child health and survival. Under the aegis of a regional project, assistance has been provided to 13 countries with durations of assistance ranging from 4-9 years.

This end-of-project report presents a brief country-by-country summary of major areas of collaboration and lists publications produced in summarizing project activities. In reviewing the achievements of each participating country, it is useful to reflect briefly upon the situation at the beginning of the 1980s and upon the current challenges now confronting Ministries of Health in sub-Saharan Africa.

## *Before 1982*

At the inception of the ACSI-CCCD project, much of sub-Saharan Africa had been energized by the campaign to eradicate smallpox — both by the successful achievement of this remarkable goal and by the recognition that Ministries of Health could organize to accomplish such a notable achievement. In West and Central African countries, the smallpox eradication effort introduced and incorporated measles vaccination as an integral component of national vaccination programs. Although the mobile team strategy was initially successful in reducing the incidence of this major killer of African children (3-5 measles-associated deaths per 100 births), the lack of a health infrastructure to identify and vaccinate new susceptible children, together with a decline in external resources, led to reemergence of measles as a major killer of children. Although under-five mortality had declined during the 1970s, levels in most sub-Saharan African countries remained high: 200-400 deaths per 1000 live births.

## *CCCD 1982-1993*

The ACSI-CCCD project had a dual agenda: 1) strengthening of public health capacity and 2) reducing under-five morbidity and mortality. Technical cooperation used three interventions and four support strategies:

### *Interventions*

1. Immunization
2. Case Management of Diarrhea
3. Malaria  
Case Management  
Prophylaxis in Pregnancy

### *Support Strategies*

1. Health Information Systems
2. Training and supervision
3. Health Education
4. Operational Research

The ACSI-CCCD project provided participating countries with an opportunity to institutionalize three priority child survival strategies within the framework of primary health care. Capacity building focused on strengthening planning, training, implementation, and evaluation.

African countries made great progress in improving the quantity, quality, and effectiveness of immunization. This expansion of childhood immunization was one of the most remarkable achievements of the 1980s. The worldwide expansion of childhood vaccination programs was promoted and supported by the World Health Organization's (WHO) Expanded Programme on Immunization (EPI) and by UNICEF. Driven by UNICEF's political and financial mobilization strategies and supported technically by WHO, childhood vaccination coverage achieved 1990 projected targets in the majority of countries across the globe.<sup>1</sup>

Substantial achievements accompanied the development of programs for the control of diarrheal disease; the dissemination of oral rehydration therapy as a key strategy in the reduction of mortality from diarrheal disease was arguably the most critical.

In the area of malaria control, the ACSI-CCCD project made major contributions in working with countries in the areas of problem definition and in the development of policy. National capacities were established to assess *Plasmodium falciparum* drug sensitivity. On the basis of these findings, policies, generally non-existent at the start of the program, were established and, as indicated by continuing surveillance of drug sensitivity, modified over time. Increasing resistance to chloroquine, the standard method of treatment, and the lack of affordable second line drugs have limited program impact on malaria. In many countries, malaria-associated morbidity and mortality rose substantially. ACSI-CCCD's inputs into health information, training, and operational research are providing leadership in addressing this major cause of under-five mortality in Africa today.

The ACSI-CCCD project was a major partner in the progress achieved by many African child survival programs in the 1980s. Key lessons derived from the ACSI-CCCD experience have been summarized:

- Reliable and timely health information is essential to planning and management.
- Understanding community knowledge, attitudes, and practices is an important early step in program development.
- Data provide the foundation for policy formulation.
- Quality of services is critical to effective program implementation.
- Hands-on training is an effective strategy to upgrade the quality of facility case management of diarrhea.
- Vaccines can be effectively delivered in Africa.

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<sup>1</sup> ACSI-CCCD Project Document 099-4006, *Thirteen Lessons Learned, 1981-1993*. Atlanta, GA, 1993.

- Setting targets and monitoring progress provide essential data for program management and modification.
- Applied research is important to solving problems encountered in program implementation.
- Regional projects are an effective strategy for technical assistance.
- Technical officers in Ministries of Health provide and facilitate effective technical assistance.
- Local leadership is key to program implementation.
- Administrative support is critical to program implementation.
- USAID-CDC partnership was an effective mechanism for directing technical assistance.

These themes are reflected throughout this end-of-project report. Many of the themes also figure importantly in a series of end-of-project publications that represent a joint collaboration effort on the parts of participating ministries, CDC, and A.I.D. Africa Bureau's Office of Analysis, Research, and Technical Support (ARTS) (see catalogue of publications beginning on page 58).

### ***World Summit for Children and the Future***

In the early 1990s, momentum for greater global child survival efforts continued to grow. In September 1990, the largest gathering of world leaders in history assembled in New York at the World Summit for Children.<sup>2</sup> Led by 71 heads of state and 88 other senior officials, the World Summit adopted a Declaration on the Survival, Protection, and Development of Children and a Plan of Action for the 1990s. In sum, 139 nations signed the Declaration. The Summit Declaration lays out seven major goals for child survival, development, and protection and specifies supporting goals in the areas of women's health and education (4), nutrition (8), child health (6), water and sanitation (3), basic education (4), and children in difficult circumstances (1). These goals are shown in Table 1.<sup>3</sup>

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<sup>2</sup> UNICEF, 1993. *The State of the World's Children, 1993*.

<sup>3</sup> UNICEF, 1991. *First Call for Children. World Declaration and Plan of Action from the World Summit for Children*.

**Table 1. Child Summit Goals for Children and Development in the 1990s**

GOAL AREA	TARGET
<b>MAJOR GOALS</b>	
1. Infant <5 mortality 2. Maternal mortality 3. Severe & moderate malnutrition <5 4. Safe drinking water Safe means of disposal of excreta 5. Basic education  6. Adult illiteracy 7. Protection of children in difficult circumstances	Reduce to below 50 per 1,000 live births Reduce to below 70 per 1,000 live births Reduce 50% Reduce 50% 100% access 100% access 100% access with 80% completion of primary school Reduce illiteracy 50% Improved
<b>II. SUPPORTING GOALS</b> <b>A. Women's Health And Education</b>	
8. Health & nutrition needs of females 9. Family planning services 10. Prenatal and obstetric care 11. Primary education for girls	Special attention 100% access 100% access 100% access
<b>B. Nutrition</b>	
12. Severe & moderate malnutrition < 5 13. Low birth weight 14. Iron deficiency anemia in women 15. Iodine deficiency disorders 16. Vitamin A deficiency 17. Exclusive breast feeding age 4-6 months Complementary breast feeding to 24 months 18. Growth promotion and regular monitoring 19. Knowledge & services to increase food production	Reduce 50% Reduce to less than 10% Reduce 33% Virtual elimination Virtual elimination 100% empowerment of women 100% empowerment of women  Institutionalized in 100% countries  Dissemination
<b>C. Child Health</b>	
20. Poliomyelitis 21. Neonatal tetanus 22. Measles 23. Vaccination coverage DPT, polio, measles, BCG, and tetanus in child-bearing women 24. Diarrhea 25. Acute respiratory infection	100% eradication Elimination Reduce deaths 95% Reduce cases 90% At least 90% in children under 12 months  Reduce deaths 50% Reduce incidence 25% Reduce deaths 33%
<b>D. Water And Sanitation</b>	
26. Safe drinking water 27. Sanitary means of excreta disposal 28. Guinea worm disease	100% access 100% access 100% elimination
<b>E. Basic Education</b>	
29. Early childhood development activities	Expansion

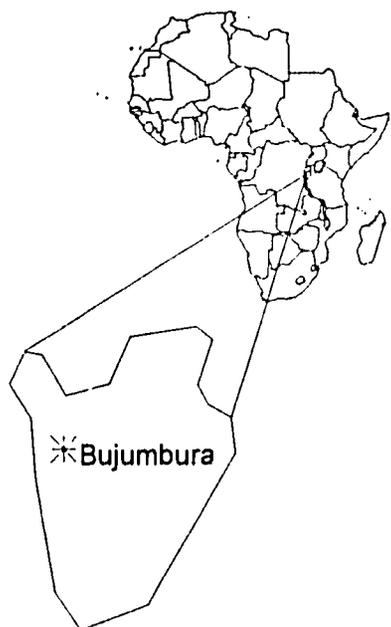
GOAL AREA	TARGET
30. Basic education 31. Adult illiteracy 32. Acquisition of knowledge for better living	100% access 80% achievement of primary education 50% reduction Increased
<b>F. Children In Difficult Circumstances</b>	
33. Protection of children in especially difficult circumstances	Improved

These goals of the World Summit for Children represent formidable new challenges for this decade of the 1990s and beyond. The goals remind us of the multiple major themes and trends that will need to be addressed in the coming years. Those themes and trends include:

- The combined effects of the global economic recession and the short-term effects of the World Bank's structural adjustment programs, which will cause a decline from the relatively greater prosperity of the 1980s.
- The end of the Cold War and, with it, the end of support for many small dictatorships and subsequent political instability and civil war.
- The persistent challenge for sub-Saharan African governments to achieve significant reductions in population growth rates through successful implementation of family planning programs.
- A combined set of issues that will confront health program organizations in developing nations (i.e., the integration of multiple vertical programs, decentralization, cost recovery and health program financing, coordination among the increasing number of donor agencies and institutions, the need for improved program management, and the demand for strengthened health and management information systems to guide the approach to all of these issues).
- The global AIDS pandemic and its associated marked increase in the incidence of tuberculosis.
- The demographic transition, with an increasing health burden involving acute and chronic diseases of young and middle-aged adults.

In the face of these formidable challenges, we must remind ourselves of what has been accomplished in the past decade and thus be encouraged to continue in our efforts to contribute toward the greater health of children in the world.

# Burundi



## ACSI-CCCD History and Milestones

	1985	1993
Population (millions)	4.7	5.7
Infant mortality	119	108
Under 5 mortality	200	181
Annual number of <5 deaths		
DPT3 coverage %	36	83
Measles coverage %	42	75
Polio3 coverage %	29	89
Total fertility rate	6.4	6.8
Contraceptive prevalence		
Per capita income \$US	220	210

(Source: The State of the World's Children 1993)

	<b>1982</b>	
	<b>1983</b>	Country assessment
	<b>1984</b>	
	<b>1985</b>	Project agreement signed (Phase I)
	<b>1986</b>	Cyril Pervhac (T.O.) assigned First project review
	<b>1987</b>	First project evaluation
	<b>1988</b>	Robert Weierbach (T.O.) assigned Project agreement signed (Phase II) Second project review
	<b>1989</b>	Third project review
	<b>1990</b>	Fourth project review
	<b>1991</b>	Completion of Phase I
	<b>1992</b>	Brad Hersh (T.O.) assigned Bulletin Epidemiologique du Burundi published Audit of project grant agreement
	<b>1993</b>	PACD

# Burundi

## Health Information Systems

The strengthening of Health Information Systems (HIS) and the Epidemiology and Statistics (EPISTAT) Unit of the MOH was a major objective of CCCD Phase II.

Routine outpatient reporting form - In August 1992, a national commission was formed to review and revise the forms (7 pages and 111 diagnoses) used for routine monthly disease reporting from health centers. The reporting form was streamlined (1 page and 40 diagnoses) and designed to be useful at central, regional, and district levels.

National hospital inpatient surveillance system - In collaboration with the University of Burundi, School of Medicine, Department of Public Health, and the Centre Hospitalier Universitaire-Kamenge (CHUK), the hospital inpatient system first developed in Liberia, then modified in Togo, was further modified and adapted for use in Burundi. After successful implementation at the CHUK, the system will be extended to all of Burundi's hospitals (five central and five peripheral).

HIV sentinel surveillance - In response to the MOH and WHO, EPISTAT is providing technical assistance in expanding HIV sentinel surveillance among women attending pre-natal clinics and in integrating AIDS case surveillance and HIV sentinel surveillance activities into the work of EPISTAT. Currently six sites provide testing; eventually one site per province is expected to participate. This activity is a component in the Mission's HIV/AIDS strategy developed in January 1993.

Rapid alert system - EPISTAT personnel began preliminary work on a proposed weekly rapid alert system for diseases of epidemiologic importance (cholera, measles, meningitis, dysentery, etc.) Pilot testing will precede full implementation.

Cholera Outbreak in Rumonge, Burundi - An epidemic of cholera swept through Western Burundi in April 1993. Each person less than 5 years of age admitted to the cholera treatment center in Rumonge was matched by age and sex with two persons living in the next nearest family compound where no one less than five years of age had diarrhea during the previous 7 days. *Vibrio cholerae* O1 serotype Ogawa was cultured from all water samples and rectal swabs. On the basis of the results, access to Lake Tanganyika was interrupted and potable water was transported daily to the town. Less than a week later, the cholera outbreak in Rumonge ended. To our knowledge, this is the first cholera epidemic associated with contamination of the Rift Valley Lakes, which have a combined length of several hundred miles. Rapid identification of the primary source of infection and implementation of control measures quickly ended this epidemic.

Quarterly epidemiologic bulletin - On January 10, 1993, the inaugural issue of the *Bulletin Epidemiologique du Burundi* (BEB) was published (2,500 copies) and distributed to health care workers throughout the country. Articles in the first issue included an introduction to EPISTAT and BEB, a description of a meningitis outbreak, a description of surveillance in Burundi, a

summary of Burundi HIV/AIDS data, and reported morbidity data from health centers for the first 6 months of 1992. The BEB is expected to become an excellent vehicle for increased communication between the central and peripheral levels. Other international donors have expressed interest in providing both technical and financial support to BEB. Future topics will include the epidemiology (in Burundi) of schistosomiasis, dysentery, Malaria, 1992 inpatient surveillance at Centre Hospitalier Universitaire-Kamenge (CHUK) in Bujumbura, and a review of 1992 health center morbidity data.

## Expanded Programme on Immunization

Burundi's EPI is one of the strongest in Africa. Morbidity reductions have been noted for all the targeted vaccine-preventable diseases. EPI activities have been largely supported by UNICEF with its provision of vaccines, injection equipment, and refrigerators. ACSI-CCCD provided a full-time technical advisor and focused on training of health workers and delivery of vaccine especially in the area of reducing missed opportunities.

By 1986, all of Burundi's health centers were fully equipped with cold chain equipment and vaccination supplies; by 1987, daily vaccinations with all antigens occurred everywhere. An accelerated plan for the elimination of neonatal tetanus was developed in 1988, and the training of all rural health center staff was completed. Immunization coverage rates in 1992 for children less than 1 year of age were DPT1 (92%), OPV3 (85%), and Measles (73%) (Figures 1-3).

Figure 1

### DPT 1, Polio 3, and Measles Vaccination Coverage Burundi, 1984 - 1992

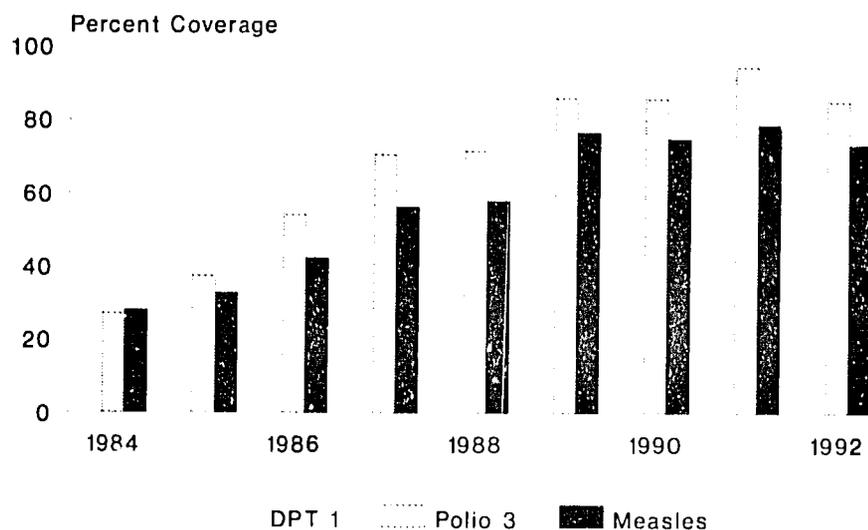


Figure 2

Measles Incidence and Vaccine Coverage  
Burundi, 1977 - 1992

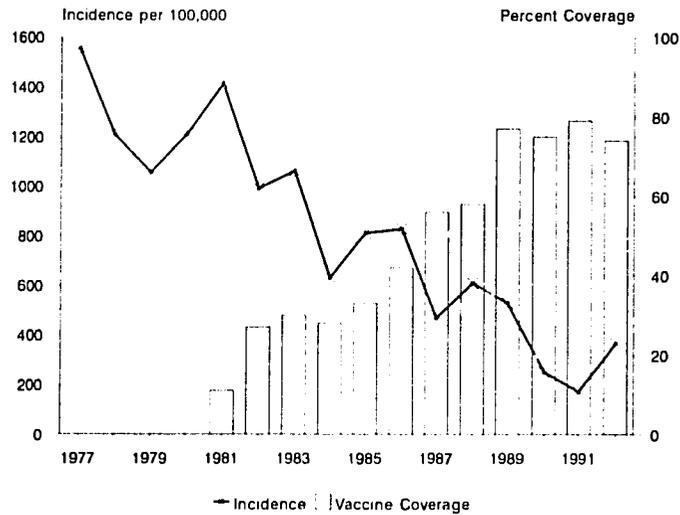
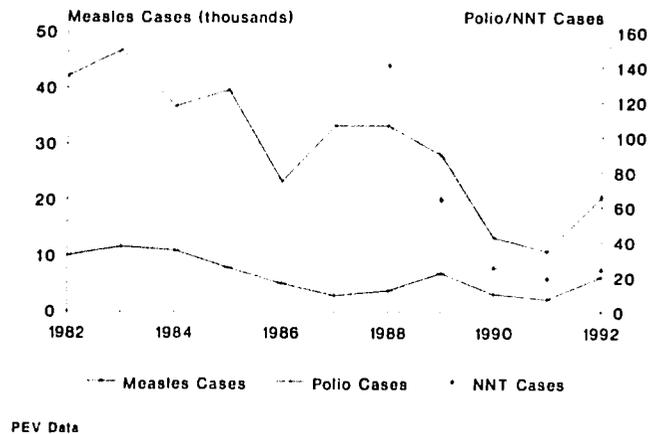


Figure 3

Neonatal Tetanus, Polio, & Measles Cases  
Burundi, 1982 - 1992



Recent activities have included a collaborative effort between EPI, EPISTAT, and UNICEF personnel concerning the development of a rapid alert surveillance system for vaccine-preventable diseases, such as polio, measles, and neonatal tetanus. This system will include detailed case investigations of all reported cases of polio and neonatal tetanus in Burundi.

## Applied Research

A number of studies were conducted in Burundi. Three of the most notable are described below.

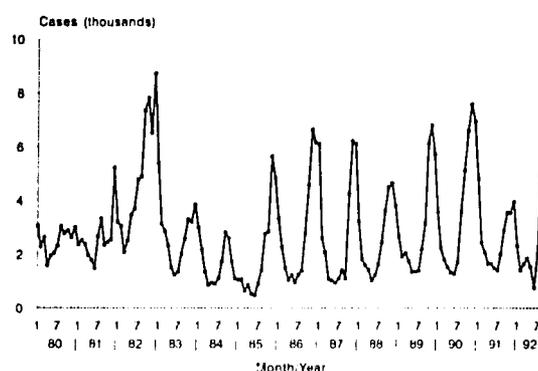
The Epidemiology of Dysentery in Burundi - Dysentery is the fifth most common cause of health facility visits in Burundi and is usually due to strains of *Shigella dysenteriae* type 1 that are resistant to inexpensive antibiotics. A community-based cluster survey was conducted in the Kibuye Sector (1990 population 221,315). It was recommended that (1) the national treatment policy should be changed so that Nalidixic acid should become the first-line drug for the treatment of all cases of dysentery; (2) a sentinel surveillance system should be established in three regional hospitals to monitor the pattern of *Shigella* drug resistance; (3) health workers should be trained to give the full 5-day course of antibiotics to persons with dysentery at the time of their first clinic visit; and (4) an emphasis be placed on prevention of dysentery (Figure 4).

Cholera Outbreak in Rumonge, Burundi - An epidemic of cholera swept through Western Burundi in April 1993. Each person less than 5 years of age admitted to the cholera treatment center in Rumonge was matched by age and sex with two persons living in the next nearest family compound where no one less than five years of age had diarrhea during the previous 7 days. *Vibrio cholerae* O1 serotype Ogawa was cultured from all water samples and rectal swabs. On the basis of the results, access to Lake Tanganyika was interrupted and potable water was transported daily to the town.

The Integration of Family Planning Services With Childhood Immunization Services in Burundi - The goal of the study was to assess the vaccine coverage effect of integrating family planning counseling and service delivery with immunization services. The objectives were to measure the effect on contraceptive prevalence, vaccination coverage, supervision, and health care worker and client satisfaction by comparing health centers that have integrated FP and EPI with health centers offering non-integrated service delivery. Preliminary results have revealed that the integration of these services has no adverse effect on contraceptive prevalence or vaccine coverage.

Figure 4

Cases of Bacillary Dysentery  
Declared by Month  
Burundi, 1980-92



Source: Epistar

# Central African Republic



## ACSI-CCCD History and Milestones

	1985	1993
Population (millions)	2.3	3.1
Infant mortality	140	106
Under 5 mortality	237	180
Annual number of deaths	74,000	25,000
DPT3 coverage %	24%	25%
Measles coverage %	30%	25%
Polio3 coverage %	24%	26%
Total fertility rate	5.9	6.2
Contraceptive prevalence	—	—
Per capita income	190	390

(Source: The State of the World's Children 1993)

	<b>1982</b>	
	<b>1983</b>	Country assessment
Project agreement signed	<b>1984</b>	
ORT training center	<b>1985</b>	Karen Reed (T.O.-based in Congo) assigned
Vaccination coverage and KAP studies	<b>1986</b>	Katherine Montgomery (T.O.) assigned
CCCD external evaluation	<b>1987</b>	National in-service training strategy
Evaluation of health worker practices	<b>1988</b>	ORT units in 3 prefectures
Community mobilization plan	<b>1989</b>	Joseph Naimoli (T.O.) assigned
National ORT symposium	<b>1989</b>	HIS Unit established
National vaccination coverage survey	<b>1989</b>	Hospital sentinel surveillance system
National in-service training program	<b>1989</b>	CDD training needs assessment
National CDD program	<b>1990</b>	EPI social mobilization program
DMPGE Echo epidemiology newsletter published	<b>1990</b>	Karen Hawkins Reed (T.O.) assigned
Catch-up vaccination campaign Bangui	<b>1991</b>	Malaria training materials
National vaccination coverage survey	<b>1991</b>	Follow-on CS project designed
National malaria symposium	<b>1992</b>	Project completed
	<b>1993</b>	

# Central African Republic

## Model Health Worker Training Methodology

A highlight of CCCD assistance to the Ministry of Public Health was the development and institutionalization of a national in-service training strategy. First applied to EPI and then subsequently to diarrheal diseases and malaria control, this approach included the following major phases 1) establishment of a training unit, 2) development of an annual training plan, 3) assessment of training needs, 4) development of training materials, 5) training of trainers, 6) in-service training and follow-up, and 7) assessment of the effect of training on health worker performance. Through regional workshops during 1988 and 1989, at least two health agents from each fixed vaccination site in the country were trained in EPI and subsequently in diarrhea case management. Post-training evaluations showed measurable progress in improving the quality of health work performance in the delivery of immunizations and the treatment of diarrhea (Figures 1 and 2).

Figure 1

Improving Quality of Services  
Pre/Post Training Assessment of Needs  
Central African Republic, 1988 - 1989

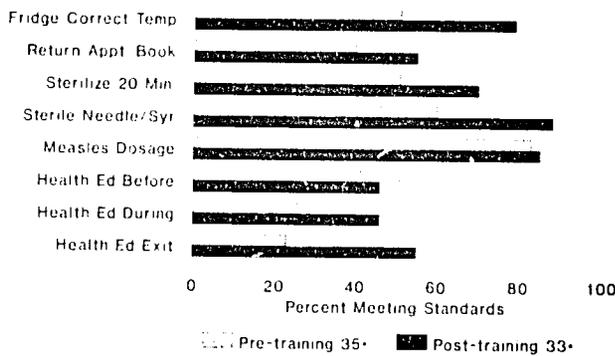
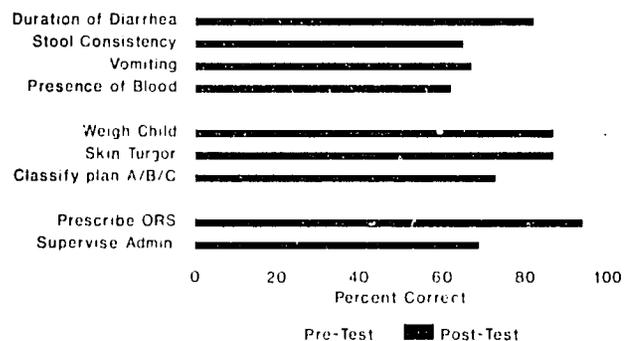


Figure 2

CDD Health Facility Surveys  
Evaluation/Treatment  
Central African Republic, 1989 - 1990

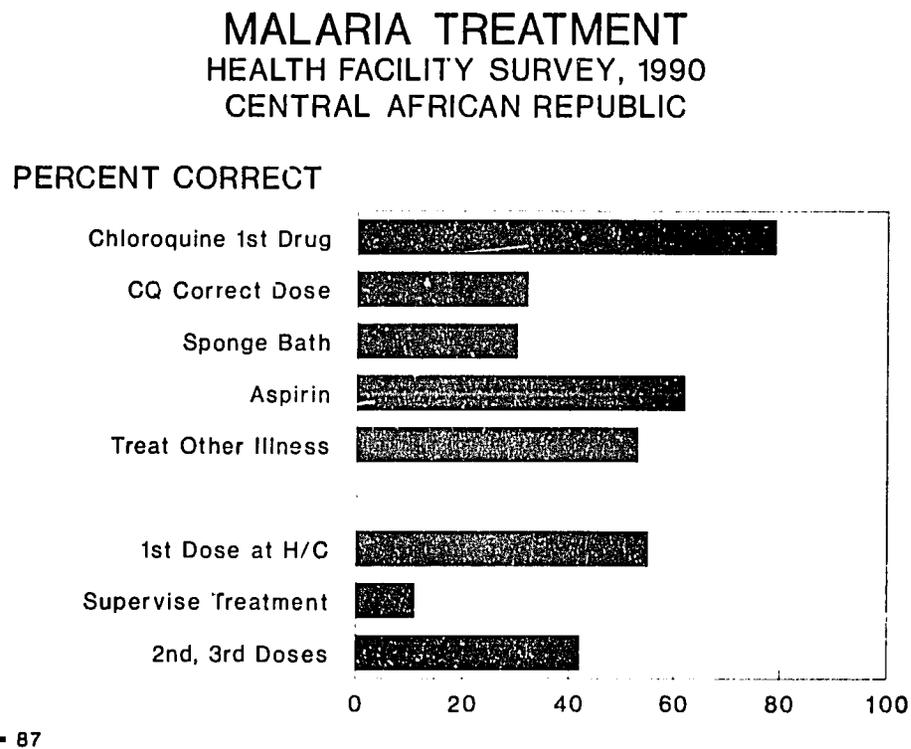


n=144 pre-test/138 post-test

## National Malaria Treatment And Control Policy

As a participant in the regional CCCD/WHO-AFRO Francophone Africa Malaria Initiative, the Central African Republic (CAR) in 1992 conducted a national malaria policy development workshop followed by a major international symposium on malaria in CAR. Prior to these events, the Ministry of Health had conducted needs assessments for health worker skills in malaria treatment (Figure 3) and had developed a training manual. The workshop introduced major decision makers in CAR to a draft national policy document and included discussion on primary goals and objectives, treatment protocols, and prevention interventions. The symposium sensitized Central African physicians and pharmacists to the current understanding of malaria, to proposed case management protocols, to drug resistance, to prevention, and to experiences in other African countries. Over 200 persons attended from 10 countries. The symposium resulted in revisions of training materials and a final policy document.

Figure 3



## **EPI Fixed-site immunization Strategy**

The Ministry of Public Health has sought to extend EPI services widely throughout the country. Beginning in 1988, the Ministry organized 21 mobile teams to cover the 8 most densely populated prefectures and to complement existing services in health facilities. Given concerns about supervision and sustainability of services, the Ministry began to focus on improving the quality of vaccination services in fixed vaccination sites and to expand the number of sites through health worker training. These efforts, bolstered by substantial social mobilization activities, led to the country's meeting or surpassing its child immunization targets, with coverage rates of 77% for three doses of polio and 73% for measles in 1989. However, nationwide strikes and a decrease in UNICEF financial support slowed EPI progress significantly. "Catch-up" vaccination and measles outbreak prevention campaigns later helped stabilize the declining coverage rates. The Ministry remains committed to the fixed-site immunization strategy and plans to establish new sites during a follow-on child survival project.

# Congo



## ACSI-CCCD History and Milestones

	<b>1982</b>	
	<b>1983</b>	Country assessment
Project agreement signed	<b>1984</b>	
Developed 1986 CCCD Activity Plan	<b>1985</b>	Project begun Karen Reed (T O ) assigned
ACSI-CCCD Consultative Meeting	<b>1986</b>	Brian Fitzgibbon (T O ) assigned
	<b>1987</b>	First project evaluation Project termination
	<b>1988</b>	
	<b>1989</b>	
	<b>1990</b>	
	<b>1991</b>	
	<b>1992</b>	
	<b>1993</b>	

	1985	1993
Population (millions)	1.7	2.3
Infant mortality	77	83
Under 5 mortality	122	110
Annual number of deaths	9	11
DPT3 coverage %	52	74
Measles coverage %	59	64
Polio3 coverage %	59	74
Total fertility rate	6.0	6.3
Contraceptive prevalence	—	—
Per capita income	310	1010

(Source: The State of the World's Children 1993)

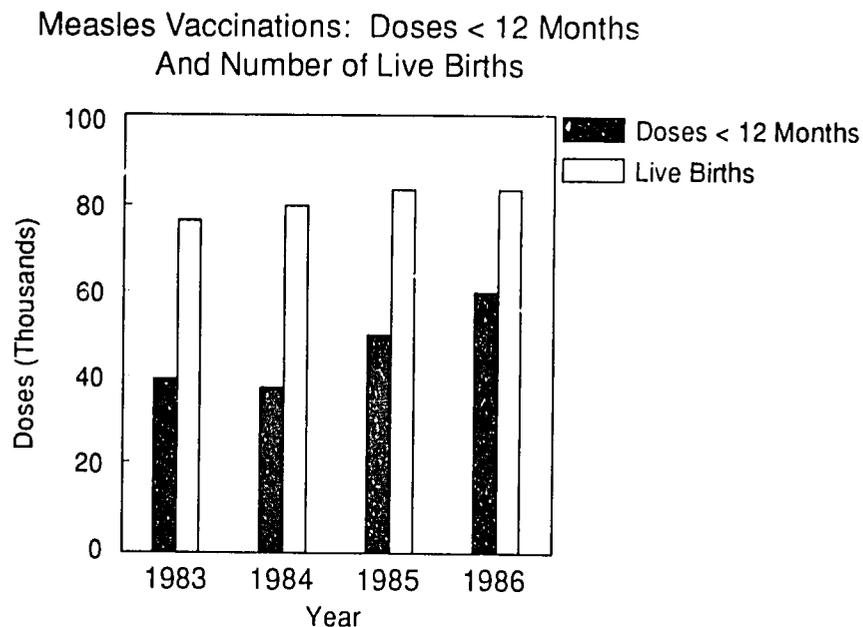
# Congo

The Government of the Republic of Congo hosted the Third ACSI-CCCD Consultative Meeting in Brazzaville in March 1986.

During the life of the project, ACSI-CCCD worked with the Ministry of Health on national malaria and CDD plans that were adopted by the government.

The President of the Republic personally launched the 1986 national vaccination campaign. Public participation exceeded expectations; vaccination coverage increased significantly.

Figure 1



Two important studies supported by ACSI-CCCD were conducted with the Ministry of Health. They include:

- An EPI sterilization practices survey that contributed to the Africa-wide alert and a policy to assure the use of one needle - one syringe for each EPI vaccination;
- A study on the persistence of maternal antibodies for measles in children less than one year of age.

The project was terminated in 1987.

# Côte d'Ivoire



## ACSI-CCCD History and Milestones

	<b>1982</b>	
	<b>1983</b>	Country assessment
	<b>1984</b>	
Project agreement signed	<b>1985</b>	Bob Weierbach (T.O.) assigned
First project review	<b>1986</b>	
	<b>1987</b>	First project evaluation
	<b>1988</b>	Second project evaluation ACSI-CCCD Consultative Meeting ORT unit begun
Extension design	<b>1989</b>	Jim Herrington (T.O.) assigned
UNICEF UCI campaign	<b>1990</b>	
	<b>1991</b>	National vaccine coverage survey
	<b>1992</b>	Project completed
	<b>1993</b>	

Country Statistical Profile		
	1985	1993
Population	9.8	12.5
Infant mortality	105	93
Under 5 mortality	157	127
Annual number of <5 deaths	69	77
DPT# coverage %	11	37
Measles coverage	31	47
Polio3 coverage	11	37
Total fertility rate	6.7	7.4
Contraceptive prevalence	3	
Per capita income	610	730

(Source: The State of the World's Children 1993)

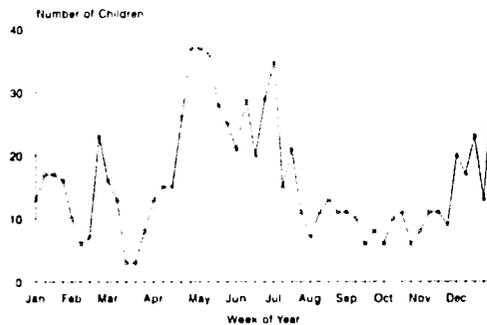
# Côte d'Ivoire

The major areas of Ivorian CCCD collaboration were the control of diarrheal diseases, EPI, malaria, training, and the development of the health information system.

## Control of Diarrheal Diseases

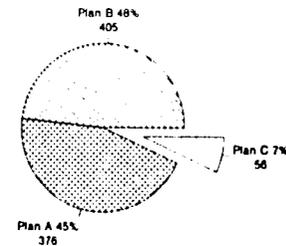
Major emphasis was placed on the development of ORT units and training for ORT personnel throughout the country. Personnel assigned to the Oral Rehydration Therapy Center at the Pediatric Services of the University Teaching Hospital in Treichville (Abidjan) include four midwives, one nurse, and a physician director. The ORT Center was inaugurated in 1990. It has since trained more than 100 regional health staff members.

Number of Children Treated by Week  
O.R.T. Center, University Hospital  
Treichville, Côte d'Ivoire, Jan. - Dec., 1990



Source: O.R.T. Center patient records  
N=853 new patients

Dehydration Status on Admission  
O.R.T. Center, University Hospital  
Treichville, Jan-Dec. 1990, Côte d'Ivoire

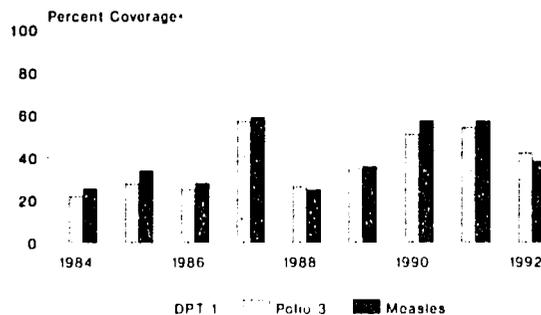


Source: Patient records  
N=837 mean age = 13 months

## Expanded Programme on Immunization

Vaccination coverage in Côte d'Ivoire reached a peak in 1987 as the result of a mass campaign. Coverage then fell off before gradually climbing and remaining stable until 1991, the last year for which data are available. A comparison of 1987 and 1990 coverage rates for the metropolitan area of Abidjan shows that rates are almost identical for the two periods. Periods of high coverage were followed by significant drops in disease incidence.

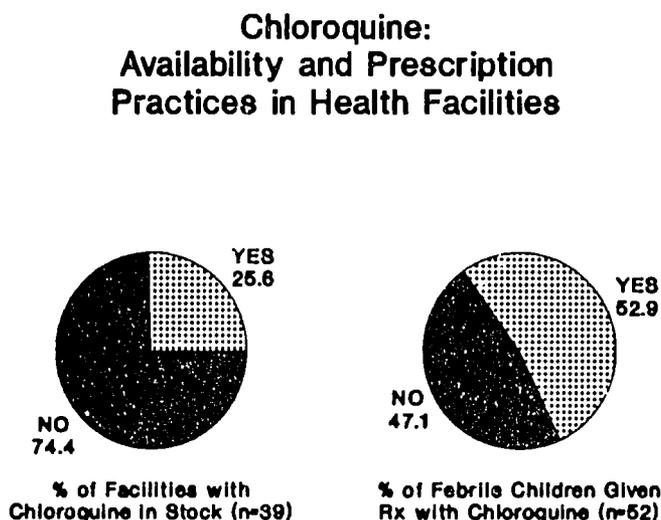
DPT 1, Polio 3, and Measles  
Vaccination Coverage  
Côte d'Ivoire, 1984 - 1992



\* Vacc. of divided by surviving infants x 100

## Malaria

A malaria sentinel surveillance system was developed with the Epidemiology Department of the Institute of Public Health. Five sentinel sites monitored chloroquine-resistant malaria using the *in vivo* testing methodology developed by ACSI-CCCD. These data were used in the formulation of policy.



## Training

Côte d'Ivoire, 1991

In 1990 and 1991 baseline and follow-up surveys of training needs of peripheral health personnel were completed. An in-service training program was developed and implemented. Inadequate supplies of medicines and materials, particularly chloroquine, were observed in most rural health facilities. Ensuring adequate supplies of drugs and vaccines in peripheral health facilities was found to be an important adjunct of in-service training in order to assure quality health delivery.

A follow-up to the 1990 baseline Assessment of Training Needs Survey was conducted in February 1991 in eight rural health districts to assess the effect of peripheral training courses conducted during 1990. A random sample of 41 health facilities selected for on-site observation revealed that in-service training of peripheral health workers improved job performance. Workers who participated in the peripheral training were more likely than their non-in-service trained colleagues to determine a patient's age and weight, use a sterile syringe, administer the immunization at the correct site, and provide patient education. Improved patient education practices included giving information on 1) completion of an immunization series, 2) what disease is prevented by the immunization, and 3) what possible side effects might occur.

## Health Information Systems

ACSI-CCCD provided computer equipment, software, and support to the Institute of Hygiene for the installation of the Computerized EPI Information System (CEIS) as recommended by the World Health Organization. Full-time staff now routinely enter data and generate country reports.

# Guinea



## ACSI-CCCD History and Milestones

Country Statistical Profile		
	1985	1993
Population (millions)	6.1	5.9
Infant mortality	103	138
Under 5 mortality	259	234
Annual number of <5 deaths (x1000)	74	71
DPT3 coverage %		
Measles coverage %	15	
Polio3 coverage %	2	
Total fertility rate	5.3	7.0
Contraceptive prevalence	1	
Per capita income	330	480

(Source: The State of the World's Children 1993)

	<b>1982</b>	
	<b>1983</b>	Country assessment
	<b>1984</b>	
	<b>1985</b>	Dianna Gerski (T.O.) assigned
Project agreement signed	<b>1986</b>	First project review
KAP study conducted	<b>1987</b>	Scott McKeown (T.O.) assigned
First project evaluation	<b>1988</b>	Project redesigned
End of project agreement	<b>1989</b>	Project extension signed
Second project evaluation	<b>1990</b>	National vaccine coverage survey
	<b>1991</b>	Second project review
	<b>1992</b>	Project completed
	<b>1993</b>	Sustainability assessment

# Guinea

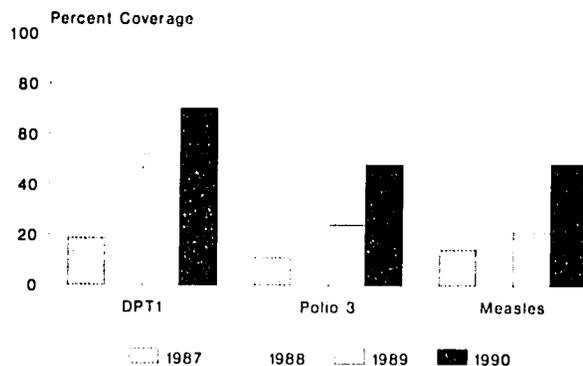
## Expanded Programme on Immunization

The ACSI-CCCD project in Guinea began in September 1985 with the assignment of a full time Technical Officer to the Ministry of Health (MOH). The project ended in 1991. For many years the country's public health infrastructure had been neglected because of the low priority attached by the government to public health. In 1986, the government adopted a national primary health care (PHC) initiative with the Expanded Programme on Immunization (EPI) as the core priority. Immunization efforts had been intermittent during the previous decade and coverage was very low in all regions of the country. Initially the MOH supported efforts in three pilot areas of the country. Coverage in these three areas increased over a 3-year implementation period.

Vaccination services at fixed health centers in the three project areas became the core of this PHC initiative. A national mass campaign was conducted in 1987, and further emphasis was given to the EPI by the 1989 UNICEF initiative. The steady gains in vaccination coverage experienced in the three project areas were further enhanced by the UNICEF effort. However, coverage for fully vaccinated children still remained low.

Figure 1

DPT1, Polio 3, Measles  
Vaccination Coverage  
3 CCCD Focus Areas, Guinea, 1987 - 1990



Remarkably, reductions in morbidity due to vaccine preventable diseases were observed. Polio and neonatal tetanus were at record low levels. Measles morbidity and mortality has decreased markedly since 1986 in the three project areas.

## Health Information Systems

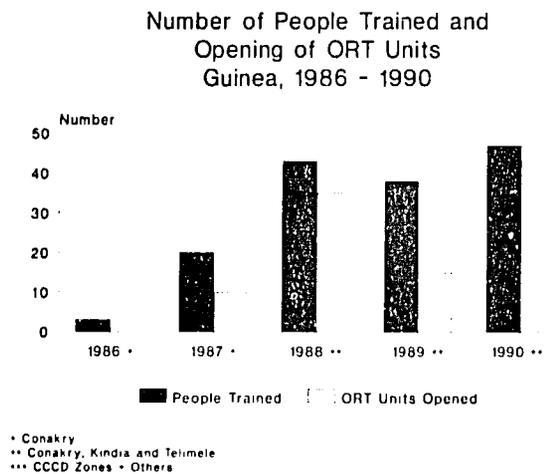
Improvements in Guinea's health information system occurred when government policies were adopted to support primary health care. The U.S. Bureau of the Census conducted assessments and followed up with training of personnel. Technical staff were trained in computer applications in public health at the University of Kinshasa and returned home to assume important roles in disease monitoring and reporting. Data on malaria and diarrheal diseases were routinely collected.

## Malaria and Diarrheal Diseases

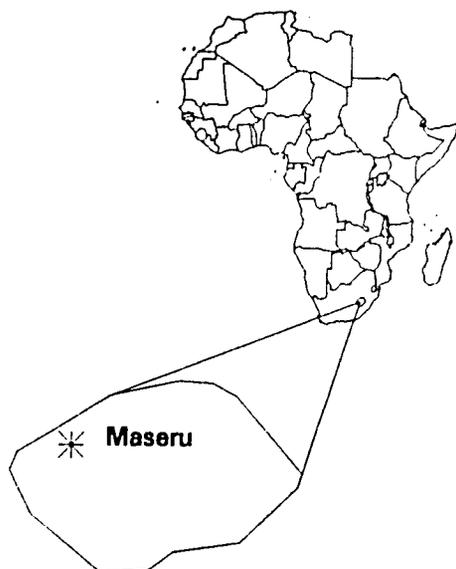
The project supported the assessment and implementation of action plans for malaria and diarrhea. An inter-African team from ACSI-CCCD programs in Zaire and Togo assisted Guinea in training personnel in malaria in vivo surveillance and in setting national malaria policy. *Plasmodium falciparum* drug sensitivity was assessed. Results were used in the formulation of a national policy.

A national policy was also established for the ORT program. This was preceded by an assessment of the diarrhea problem, training of personnel, and assurance of supplies of oral rehydration salts (ORS). The opening of ORT centers in the three project areas was completed by the end of the project date.

Figure 2



# Lesotho



## ACSI-CCCD History and Milestones

Country Statistical Profile		
	1985	1993
Population (millions)	1.5	1.8
Infant mortality	106	82
Under 5 mortality	144	137
Annual number of <5 deaths	9,000	9,000
DPT3 coverage	65%	75%
Measles coverage	63%	76%
Polio3 coverage	65%	74%
Total fertility rate	5.8	4.8
Contraceptive prevalence		5%
Per capita income \$US	530	470

(Source: The State of the World's Children 1993)

	<b>1982</b>	
	<b>1983</b>	Country assessment
Project agreement signed	<b>1984</b>	John Nelson (T O ) assigned
	<b>1985</b>	CDD and EPI 5-year plans National Diarrheal Disease Symposium Con't educ wkshps for HSA trainers
National ORT Unit	<b>1986</b>	EPI/CCD evaluation HEALTHCOM project begun
External project evaluation		
Third year project review	<b>1987</b>	National ORT policy Three national ORT symposia David Gittelman (T O ) assigned
Epidemiologic bulletin		
International Family Health Evaluation	<b>1988</b>	External project evaluation Measles control strategies Training program evaluation
Measles vaccination campaigns in schools	<b>1989</b>	ARI control program design workshop
HEALTHCOM project completed	<b>1990</b>	ARI control program 3 pilot HSAs National immunization coverage survey
ARI control program Phase I evaluation	<b>1991</b>	CCCD project completed
	<b>1992</b>	
	<b>1993</b>	Sustainability assessment

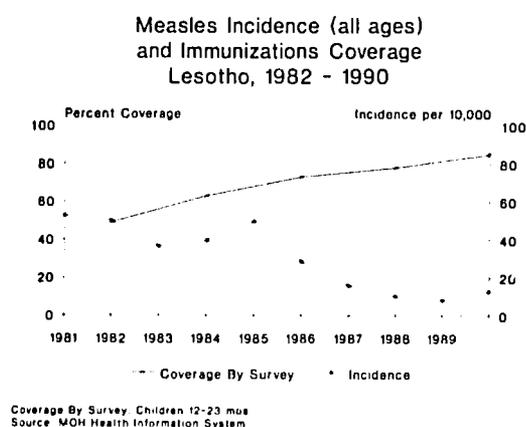
# Lesotho

The CCCD Project began in Lesotho in 1984 and was completed in May 1991. The Project initially focussed on supporting the national Expanded Program for Immunization and the Control of Diarrheal Diseases Program. Later, the Ministry of Health asked that CCCD help establish a national control program for acute respiratory infections (ARI). Highlights of project achievements:

## Expanded Programme on Immunization: Measles Control

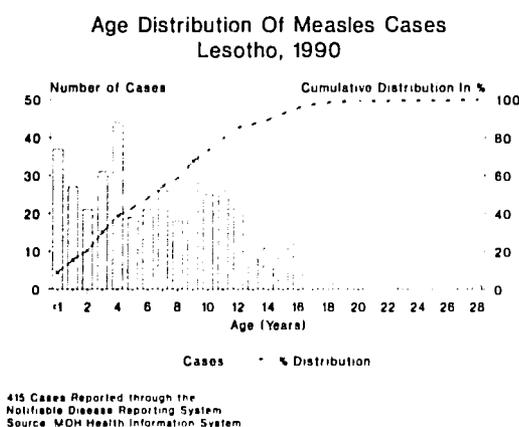
Lesotho's well-managed EPI Program increased measles vaccination coverage for children aged 12 to 23 months from 49% in 1982 to 85% in 1990, thereby decreasing measles incidence significantly (Figure 1).

Figure 1



Analysis from routine reports in 1986 showed that new measles cases were occurring mainly among school-age children. In 1990, 61% of measles cases identified through the notifiable disease reporting system occurred in persons aged 5 years and older (Figure 2).

Figure 2



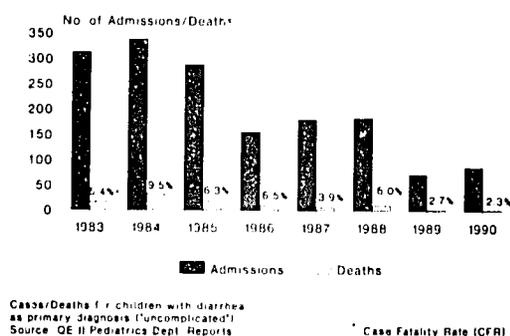
A national seroprevalence survey in new school entrants found 13.5% seronegative for measles antibody. Given this data and concerns for program sustainability, the Ministry identified options for measles control strategies. In 16 Health Service Areas nearly 100,000 school children were vaccinated during 1989 and 1990. In 1991, the Ministry adopted a two-dose vaccination policy, with the second dose administered at 18 months of age together with the diphtheria-tetanus vaccine.

## Control of Diarrheal Diseases: ORT Units and Community Education

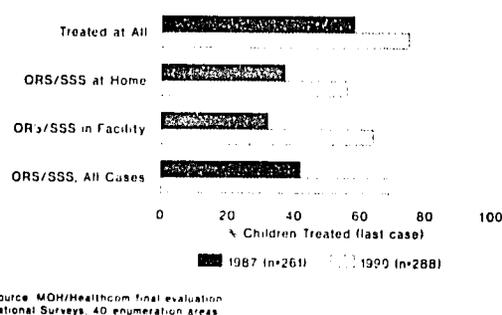
Lesotho established its first oral rehydration therapy unit at the Queen Elizabeth II Hospital in Maseru. Pediatric diarrhea admissions at the hospital peaked in 1984 and by 1990 had decreased by 75%, while deaths fell 94% (Figure 3). The MOH established ORT Units in most hospitals and many health centers throughout the country. Community educational materials such as ORT pamphlets and teaching flip charts were used to increase ORS and salt and sugar solution (SSS) use at home and in facilities. The overall percentage of last reported diarrhea cases that received ORS or SSS rose from 42% in 1987 to 69% in 1990, while ORS or SSS use at home increased from 37% to 56% in the same period (Figure 4).

Figure 3

Pediatric Diarrhea Admissions, Deaths,  
and Case Fatality Rate  
QE II Hospital, Lesotho, 1983 - 1990



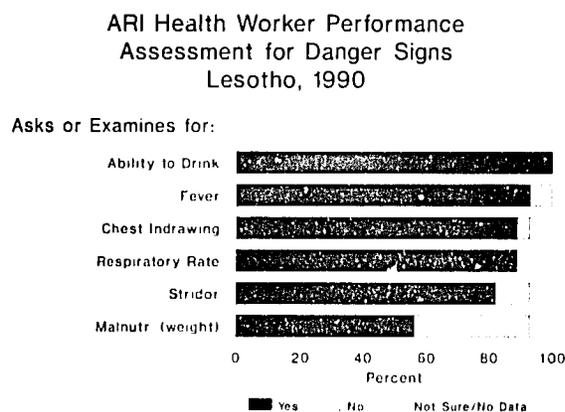
ORT Community Practices in Lesotho  
Mothers/Caretakers Reported Treatment of  
Childhood Diarrhea, 1987 and 1990



## Control of Acute Respiratory Infections

With nearly half of childhood outpatient visits in 1988 attributable to ARI, CCCD assisted the Ministry to develop an ARI control program. The Ministry collected baseline clinical and ethnographic data to develop national control policies and strategies under the new WHO guidelines. Program coordinators developed a training curriculum and materials for health center staff in three pilot Health Service Areas (HSAs). An assessment in 1991 found that most health workers classify and treat ARI according to MOH/WHO guidelines but need to improve patient education (Figure 5). Training was extended to five more HSAs from 1991 through 1993.

Figure 5



27 Children observed in 10 facilities  
Source: ARI supervisory checklists

## Decentralized Continuing Education Program

CCCD and UNICEF supported the Ministry's efforts to decentralize continuing education for health workers to the HSAs. A cadre of core trainers planned and implemented training activities in each HSA and attended regular national, and later regional, continuing education workshops. A number of HSAs continue to organize local courses and monitor post-training performance. But staff turnover, lack of transportation, and inadequate resources for support from the central level have hampered development of continuing education.

# Liberia



## ACSI-CCCD History and Milestones

	1982	County assessment
	1983	Project agreement signed
	1984	James Thornton (T O ) assigned
First project review		
	1985	
	1986	First project evaluation
	1987	
Second project review		
	1988	Second project evaluation
	1989	Barbara Maciak (T O ) assigned
Third project review		
	1990	Technical Officer evacuated
Project terminated		
	1991	
	1992	
	1993	

	1985	1993
Population (millions)	2.2	2.7
Infant mortality	127	131
Under 5 mortality	215	200
Annual number of <5 deaths	23/1000	25/1000
DPT3 coverage %	43	28
Measles coverage %	44	55
Polio3 coverage %	43	28
Total fertility rate	6.9	6.8
Contraceptive prevalence	6	6
Per capita income \$US	470	450

(Source: The State of the World's Children 1993)

# Liberia

## Health Financing

Fee for Service (FSS) System - Based on the assessment conducted in March 1990 shortly before the outbreak of hostilities, Liberia had made significant progress in promulgating a fee for service (FSS) system for health services at all levels and was one of the first African countries to establish revolving drug funds at the community level. At the time of this assessment, all health facilities in Liberia charged a fee for service or registration fee before services were rendered. Under the Ministry policy of decentralization, all fees generated were retained at the country or community level. However, due to the lack of a standardized financial management reporting system, each county adopted its own accounting and financial reporting system but this data was not reported to the central level. Although information was collected in some counties about the revenues generated through the FFS, there was no way to determine what percentage of expected revenues this represented. There was also no mechanism available to determine if the appropriate fees were being levied and collected. A negative consequence was that the FFS indirectly caused unrealistic expectations among many communities and there was no realistic understanding about how these fees could contribute to the operating expenses for a County Health Department, hospital, health centers and health posts. In the absence of solid information about the actual costs of operating each of the facilities and services, it was not possible to determine what a realistic contribution these fees could make to total costs. A comparison of clinic revenues that included fee for service and drug fees is shown in Figure 1. The total revenues collected from FFS in selected clinics is depicted in Figure 2.

Figure 1

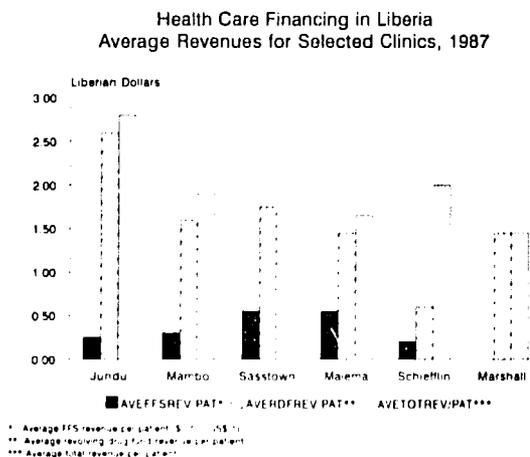
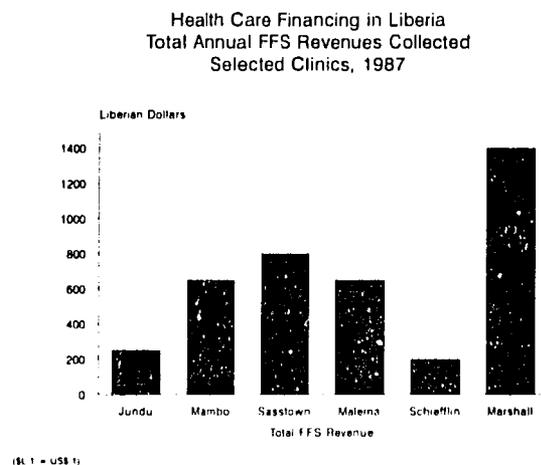


Figure 2

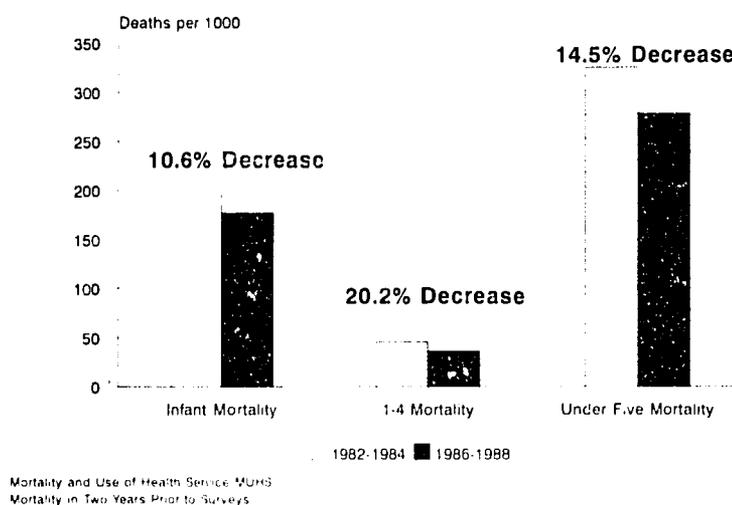


## Health Information Systems (HIS)

Mortality and Use of Health Services (MUHS) - Two MUHS surveys were undertaken in 1984 and 1988 in the Liberian counties of Bomi, Grand Cape Mount and Lofa to obtain pre-program or baseline estimates of childhood mortality, to measure the knowledge and reported practices of mothers regarding health issues and their use of health services, and to assess possible changes in infant and child mortality. Results revealed that infant and child mortality (ages 1-4 years) decreased 20% during this period (Figure 3). While it is difficult to specifically attribute the decline in mortality to the CCCD program, the analyses did show several indications of possible program effect. The considerable decline in reported neonatal tetanus could be attributed to the immunization of pregnant women with tetanus toxoid (TT), while the number of deaths with fever reported as a symptom declined significantly in the 6-35 month old age group presumably related to the presumptive treatment of fever with chloroquine. The surveys also revealed that the availability of antimalarial drugs in the homes in these counties increased from 5% to 35% between 1984 and 1988.

Figure 3

Infant, Child, and Under Five Mortality  
Bomi, Cape Mount, and Lower Lofa, Liberia  
MUHS Surveys 1984 and 1988

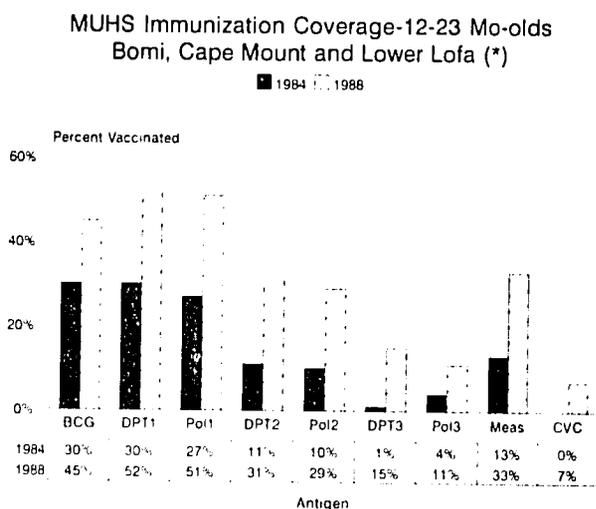


Hospital Based Sentinel Reporting System - A computerized hospital based sentinel surveillance system was established in five hospitals throughout the country and provided important information on the causes of infant and child hospitalization. Specific activities included the installation of computers and software in each hospital, training of appropriate staff, and the simplification of all reporting forms for the system to facilitate data collection, analysis and reporting. Parallel efforts to expand the development and field testing of this system using information collected by 30 clinics throughout the project area was curtailed due to the outbreak of hostilities and subsequent evacuation of project staff in the country.

## Expanded Programme on Immunization

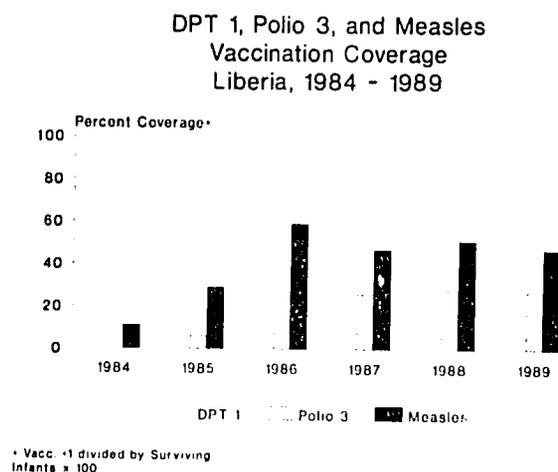
The national EPI in Liberia was launched in 1978 and initially employed a completely mobile effort for delivering vaccinations, but redirected efforts toward utilizing the existing network of static health facilities throughout the country to provide immunization services. The annual vaccination week strategy employed in Liberia was recognized as an important contribution to vaccination coverage by increasing the availability of vaccines and accounting for one-third of all annual vaccinations. Immunization coverage rates documented by vaccination cards increased two fold or more between the two MUHS surveys in 1984 and 1988. Due to the unavailability or loss of cards, true coverage rates were estimated to be 10-20 percent higher for both surveys. (Figure 4). The documented increases in coverage, especially for first contact antigens showed progress towards the national targets (29.% to 52.7% for DPT1 and 13% to 33.2% for measles). The service statistical data on vaccinations of children under 1 suggest that actual coverage was in the range of 60-70% for DPT1 and 50-60% for measles. The decentralization of management, the strengthening of logistics (vaccine supply and cold chain), training, and supervision significantly increased the quality and effectiveness of immunization services. Trends in vaccination coverage are shown in Figure 5.

Figure 4



\* With Age and Interval Restrictions  
14-15 & POL1 - 6 W. Measles - 9 MO  
1st DPT and POL 152 and 253 - 4 mos

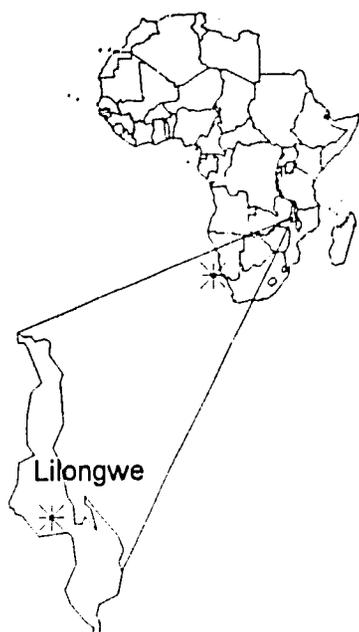
Figure 5



## Control of Diarrheal Diseases

Mother's recognition and knowledge of ORS packets - Recognition of ORS packets and their identification for the treatment of diarrhea increased from 15.7 % in 1984 to 29% in 1988. Among mothers surveyed in the 1988 MUHS, 35% reported using ORS packets for the treatment of diarrhea. From an overall program perspective, the percentage of acute childhood diarrhea treated with increased fluids or sugar-salt solution (SSS) changed very little between 1984 and 1988 reflecting little progress in the institution of ORT (ORS and SSS) in the treatment of diarrhea. This lack of success was attributed to the emphasis on immunization during the first three years of the program, the problems in the correct home mixing of SSS causing safety concerns, and the limited distribution of ORS packets to health facilities.

# Malawi



## ACSI-CCCD History and Milestones

Country Statistical Profile		
	1985	1993
Population (millions)	6.9	9.9
Infant mortality	157	144
Under 5 mortality	275	228
Annual number of <5 deaths	102,000	123,000
DPT3 coverage %	56	81
Measles coverage %	50	78
Polio3 coverage %	55	78
Total fertility rate	7.0	7.6
Contraceptive prevalence	1(1984)	7%
Per capita income \$US	180	200

(Source: The State of the World's Children 1993)

	1982	
	1983	
	1984	Country assessment
Project agreement signed		
National ORT and malaria policies	1985	Reginald Hawkins (T O ) assigned
ACSI-CCCD Consultative Meeting		David Heyman (Epidemiologist) assigned
CCCD mid-level management course	1986	EPI sterilization practices review
HEALTHCOM project		CCCD external evaluation
ORT units nationwide		Malaria treatment guide
In-service training/computers and software	1987	Mid-level epidemiology course
	1988	Project Completed
	1989	
	1990	
	1991	
	1992	
	1993	

# Malawi

The CCCD project in Malawi operated from 1984 to 1988 with the assistance of both a Technical Officer and a Field Epidemiologist from CDC. The project made particularly strong contributions in the areas of health information systems, malaria control, and controlling diarrheal diseases (CDD). CCCD support of malaria control research activities continued through 1992.

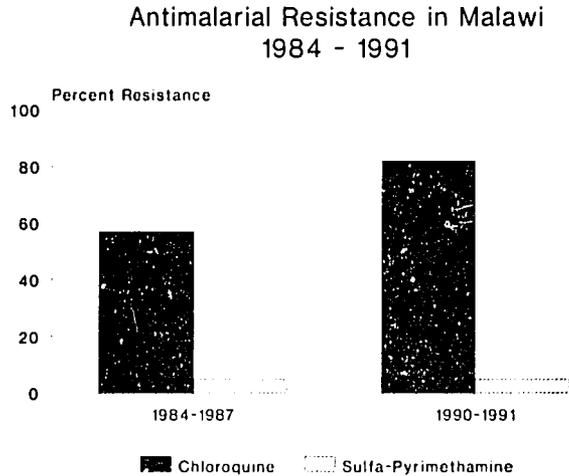
## Health Information Systems (HIS)

The CCCD project assisted the Ministry of Health to transform its HIS from a hand-tally system to one comprising computerized data processing and analysis. After assessing health information needs, CCCD provided computer equipment and training for Ministry staff; this support strengthened the routine reporting system and demonstrated the usefulness of HIS data for program management. Production time for annual reports decreased from 3 years to less than a year. Indicators were developed to monitor progress in EPI, CDD, and malaria control, and data collection methods and forms were established or revised. CCCD helped Ministry staff monitor community treatment practices by instituting sentinel surveillance in 12 sites. In addition, specific surveys were conducted to evaluate health facility and community practices in the CCCD intervention areas. The Ministry published results of its routine data reporting system and assessments in the Malawi Epidemiological Quarterly.

## Malaria Control: Research and Policy Development

From its inception, the CCCD project provided significant assistance in several key areas of the malaria control program, including 1) surveillance of the incidence of malaria and drug sensitivity, 2) assessment of clinical and community-level treatment practices, and 3) development of national treatment and prophylaxis policies. A number of *in vivo* studies were conducted to test the efficacy of various antimalarial drugs, and the studies particularly focussed on chloroquine sensitivity. A number of these studies (including those related to the effects on birth weight of chemoprophylaxis in pregnant women and the efficacy of chloroquine and Sulfadoxine/pyrimethamine (SP) among pediatric patients) were conducted under the CCCD-supported Mangochi Malaria Research Project. By 1990, studies indicated that chloroquine was inadequate for treating clinical falciparum malaria in very young children. Using these results, the Ministry revised its national policy in 1992, replacing chloroquine with SP as the drug of choice in the treatment of uncomplicated malaria.

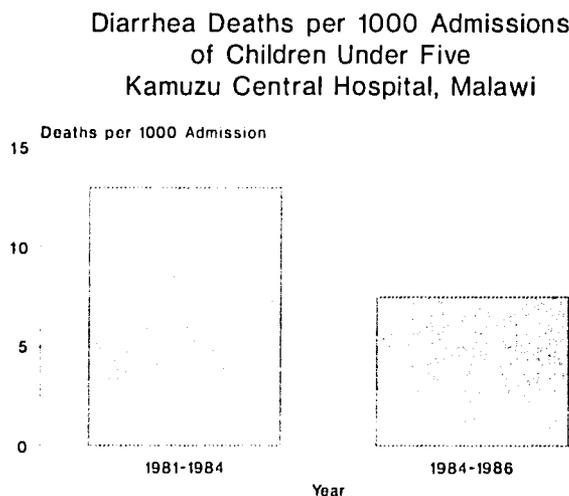
Figure 1



### Control of Diarrheal Diseases: ORT Units

A diarrheal disease control committee formed in 1981 recommended that oral rehydration therapy (ORT) services be integrated into the activities of all outpatient and inpatient facilities. With CCCD support, the Ministry established a model ORT Unit at Kamuzu Central Hospital in Lilongwe. Refresher courses were conducted for all district health staff, and a 5-year implementation plan was established. CCCD procured basic ORT supplies and equipment to help the Ministry establish ORT units in nearly all government and private hospitals and outpatient facilities. The Ministry distributed to the community 30,000 ORS containers imprinted with instructions and health messages. By 1987, a system of supervisory visits was created to establish and maintain the ORT units. Results of a survey of pediatric admissions for diarrhea at Kamuzu Central Hospital revealed that, when compared with the years from 1981 to 1984, the years 1984 through 1986 showed a 40% reduction in mortality.

Figure 2



# Nigeria



## ACSI-CCCD History and Milestones

Country Statistical Profile		
	1985	1993
Population (millions)	95.2	112.2
Infant mortality	110	86
Under 5 mortality	182	188
Annual number of <5 deaths		
DPT3 coverage %	25	44
Measles coverage %	20	46
Polio3 coverage %	25	44
Total fertility rate	7.1	6.6
Contraceptive prevalence		6
Per capita income \$US	730	270

(Source: The State of the World's Children 1993)

	1982	
	1983	
	1984	
	1985	Country assessment
	1986	Management analysis conducted
Project agreement signed	1987	John Nelson (T O ) assigned Jason Weisfield (Epidemiologist) assigned
First project evaluation	1988	Review of CCCD technical assistance
CDC administrative review	1989	Warren Jones (T O ) assigned Internal evaluation of project
	1990	Barbara Maciak (T O ) assigned
Second project evaluation Monitoring and evaluation plan	1991	James Herrington (T O ) assigned First bulleting of epidemiology
	1992	ACSI-CCCD project extension
Sustainability assessment	1993	Project completed

# Nigeria

## Continuing Education

Continuing Education Unit (CEU) - CCCD supported the establishment of the Niger State Continuing Education Unit (CEU) Program in 1989 as a response to the growing need for improved clinical, managerial, and supervisory skills among PHC managers and health facility workers. Prior evaluations and needs assessments documented the need for improved health worker performance in the case management of diarrhea and immunization, in educating mothers about their treatment and response to children with diarrhea and fever, and in developing logistics systems to assure availability of drugs and vaccines. Outcomes of the initial CEU training in Niger State showed that supervisors had improved in more than five performance indicators, and health workers showed improvement in the treatment of diarrhea as well as in the education of mothers concerning SSS mixtures. The CEU development and training strategy are now being replicated in the other 8 focus states.

Technical training and the development of CEUs have been critical objectives of the project. Specific activities have involved conducting in-state orientations for Continuing Education Unit (CEU) staff from Sokoto and Kebbi States to develop state CE policies; conducting Facility Needs Assessment Surveys in Kaura Namoda and Zuru Local Governments (Focus LGAs in Sokoto and Kebbi States); conducting Supervisory Skills Building Workshops for CEU staff from Niger, Plateau, and Enugu States; conducting field visits to Jega School of Health Technology (SHT) Kebbi State; renovating and repairing the Continuing Education Unit located within Jega SHT; supporting interstate visits by Jega CEU staff to observe CEU operations and training activities at Minna CEU, Niger State; and continuing the routine training of LGA managers and facility-based PHC workers in Plateau, Niger, Enugu, and Lagos states.

In-Service Training in Health Education — CCCD developed *Communicating About Health: A Guide For Facilitators* that outlines a set of activities and provides special learning experiences to help health workers improve their patient education skills. The Guide was designed to be used as a 5-day workshop where health workers can discuss and consider ideas, come to new conclusions, and create their own way of working with patients. When they return to their work assignments, participants then try these new methods. The last step involves meeting again to share experiences and to examine what they have learned.

Community Health Officer (CHO) Curricula Development - At the request of the Federal Ministry of Health, a 3-year CHO training program that could be implemented in the Schools of Public Health Nursing was developed for students with no previous health training. The curricula for this program focussed on community-based and village health worker activities, developing clinical skills of the community health extension worker, the coordination of clinic and community PHC services, and additional management and training skills needed by the CHO. Concurrent activities included a training of trainers (TOT) workshop for public health nursing school representatives and developing an essential books list for upgrading libraries of the Schools of Health Technology and Schools of Public Health Nursing.

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## Health Information Systems

Notifiable Disease and Epidemic reporting systems of the Epidemiological Division, Department of Disease Control and International Health - This disease reporting system stimulated by the 1986-87 yellow fever epidemic, collects mandated reports of 40 notifiable diseases from all health facilities, as well as emergency reports on 9 of these 40 disease. The CCCD project has funded a series of workshops in 6 of the nine focus states to date for LGA disease control officers. A computer software program called EPID, designed by the CCCD Project, is currently in use at the Federal level, in 8 of the 9 focus states. It has been designed for ease of use in data entry, routine reporting and more complex analysis.

Nigeria Bulletin of Epidemiology - The Epidemiological Division of the Department of Disease Control and International Health of the Federal Ministry of Health began publishing the Nigeria Bulletin of Epidemiology in February 1991 in collaboration with the CCCD project. The Bulletin is distributed free to institutions at the federal, state, and local government levels; to medical schools and teaching hospitals; to schools of health technology and nursing; and to voluntary health agencies. The publication of the Nigeria Bulletin of Epidemiology provides a valuable resource for health professionals by disseminating information on disease trends in Nigeria, reporting on public health issues and policy, facilitating exchange of health information among people and organizations delivering health care in Nigeria, and increasing awareness of the importance of disease surveillance.

To date six issues have been published, three in 1991, three in 1992 and one in press in 1993. Bulletin issues published have concentrated on key problems of public health significance in Nigeria. Bulletin issues have served as a primary feedback mechanism for reporting on epidemic diseases (HIV/AIDS, Yellow Fever, Lassa Fever) and endemic diseases (malaria, measles, neonatal tetanus) in Nigeria. Health policies reported on in detail have included cholera, malaria and the EPI programme. The Federal Ministry of Health has established an editorial office and assigned a full-time staff member to be the managing editor for the bulletin. The Chief Consultant Epidemiologist serves as Editor of the Bulletin.

Primary Health Care Monitoring and Evaluation (PHC M&E) system - This system collects routine statistics from the health facility and community level in local government areas (LGAs) throughout the nation. The system has been implemented nationwide and comprises an integrated monitoring system for PHC in Nigeria, including EPI service statistics, public sector family planning activities and maternal and child health program reporting. The PHC M&E forms were totally revised in 1991. Nationwide training was held in the use of the reporting system in all 593 local government areas in 1991. The training stressed the use of simple indicators at the health facility level and local government level.

At the State and Federal level, a software program called NICARE was developed collaboratively by the CCCD and FHS, which enables simplified data entry and analysis of information collected using the PHC M&E system. This software has been installed in two Federal level offices (PHC M&E and Epidemiological Division) and in 8 of the 9 focus states.

The Commodity and Logistics Management (CLM) Software - CLM, a stock control software for vaccines and supplies, was developed in Nigeria under the direction of the CCCD project Epidemiologist with programming by Management Sciences for Health. The software is written in Clipper 5.01 and is a direct development of an earlier stock and logistics software (SLM) program funded by REACH/USAID. The CLM software has been adopted by the national vaccine cold stores and EPI unit in Nigeria. The program has been presented in detail to the Global Committee for Computerized EPI Information Systems in July 1993 at WHO/EPI/Geneva. This committee has recommended that CLM be further developed and adopted as the global standard for vaccine and cold chain logistics management. The Africa Bureau/USAID has agreed to fund CLM's continued development for use in Nigeria and in other countries. CLM is being developed to meet the commodity management needs for not only vaccines but also family planning and CDD programme commodities.

Installation of MEDLINE at the Central Medical Library - Additional HIS-related activities included the establishment of MEDLINE, a CD-ROM based system containing over a million references to journal articles in the biomedical, medical, and scientific literature. MEDLINE is in use at the Central Medical Library, Yaba, Lagos. The Central Medical Library provides literature search services to researchers and health institutions around the country.

## Health Education

1987 - 1991 - The centrally-funded HEALTHCOM project provided assistance to the health education component of CCCD during this period.

The African Regional Health Education Center (ARHEC) - This Nigerian based organization started in 1973 and since 1987 has conducted four annual intercountry Health Education Planning and Management workshops. Topics included child survival, PHC, immunization, and malaria. Evaluation of the workshops has shown positive results including improved knowledge and abilities in preparing plans and using epidemiological data to justify resources for health education activities. ARHEC staff have also pretested UNICEF training and educational materials in eight States and collaborated with HEALTHCOM in PHC baseline household and school surveys conducted in Rafi and Suleja LGAs regarding measles, malaria, and school health.

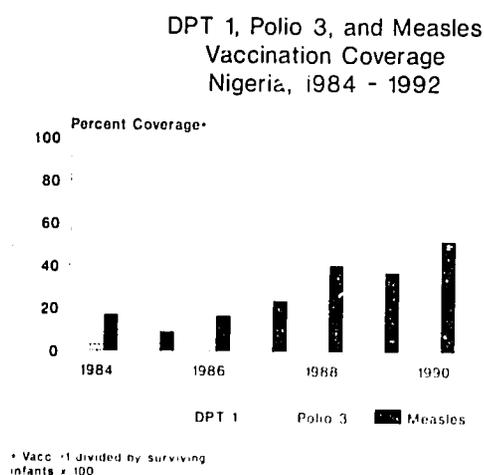
1991 - 1993 — Following the end of HEALTHCOM technical assistance, CDC was asked by USAID to conduct a health education assessment. This was done between January-February 1992. Several recommendations from the assessment were implemented.

- **Organizational Development**  
An organizational development exercise with the FMOH Health Education Branch (HEB) was conducted in order to strengthen its capacity as the national leader for health education strategies and implementation in Nigeria. Recommendations were made to the FMOH for strengthening the national health education office and program.

- **Health Education Efficacy**  
A selected review of field work and research activities in Nigeria from 1980 to 1992 was conducted by the FMOH and ARHEC to determine the efficacy of health education in Nigeria. This exercise summarized successful health education programs with an emphasis on the factors that facilitated their successes. Materials were collected and reviewed from the four primary health care zones in Nigeria. Specific topic areas examined included community health education, patient health education, school health education, and health education in work places. The findings clearly showed that health education works in different settings in solving health problems. It was also clear that the scope for the application of health education is as wide as the varying health problems affecting individuals, families, and communities.
- **Modifiable Risk Factor Tracking System (MRFTS)**  
In collaboration with the African Regional Health Education Center (ARHEC), a pilot MRFTS (an adaptation of the U.S. Behavioral Risk Factor Surveillance System) was developed to monitor the trends of modifiable behavioral and environmental risk factors of diseases addressed by CCCD and other priority health issues in Nigeria. The behavioral information collected under this system is expected to be used by the Federal, State, and LGA health departments to plan, implement, and evaluate risk reduction and disease prevention programs. Target areas for intervention include immunization, case management of fever, diarrhea and ARI, child nutrition, maternal care including family planning, and HIV/AIDS and Sexually Transmitted Diseases (STDs).

## Expanded Programme on Immunization (EPI)

Figure 1

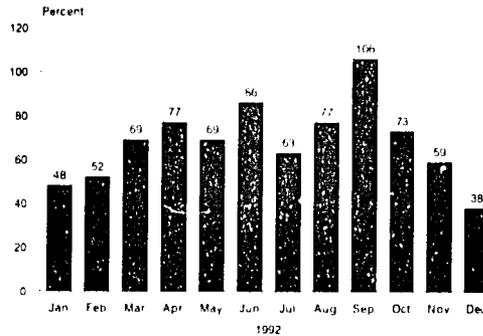


Vaccine coverage — EPI coverage for 1992 was estimated using the CCCD developed NICARE reporting system of the Federal Ministry of Health (FMOH). Figure 1 shows immunization activity by antigen for 1992. This reflects 74% of the expected reports received at the national level. Administrative estimates of immunization coverage for children aged 0-11 months have

seen improvement in certain CCCD focus states (Figure 2). Other states show flat or slightly lower coverage than in 1991 (Figures 3 and 4). Estimates are made on the basis of the number of doses of an antigen administered in a given state divided by the number (1991 census) of children in the target population aged 0 to 11 months estimated for 1992.

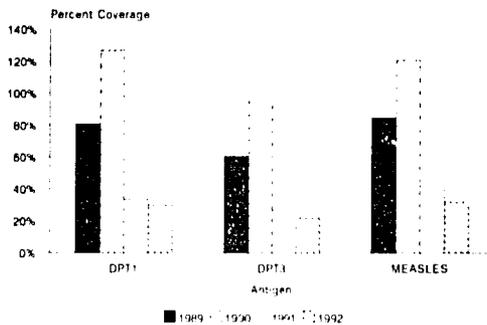
Figure 2

Administrative Coverage for DPT3 Antigen by Month for Target Population of Children Ages 0-11 months Enugu State, Nigeria, Jan - Dec 1992



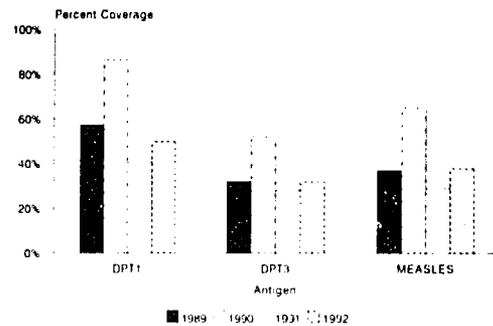
Source: STATE EPI UNIT ENUGU

EPI Coverage Rates by Antigen Children < 12 Months Plateau State, Nigeria, 1989 - 1992



Source: EPI/CCD Division, FM/PH  
Est. target population based on 1991 National Population Census  
Note: 1992 Reporting Rate is 37% as of 31 March 1992

EPI Coverage Rates by Antigen Children < 12 Months Niger State, Nigeria, 1989 - 1992



Source: EPI/CCD Division, FM/PH  
Est. target population based on 1991 National Population Census  
Reporting Rate in 1992 was 45% as of 31 March 1992

**The National Urban EPI/Metropolitan Lagos Project** — In response to the poor quality of EPI indicators in Lagos State, indicators that included very high dropout rates and low measles immunization coverage in metropolitan Lagos, a pilot urban EPI intervention was developed. Results of a REACH immunization coverage survey in September 1992 of 12 urban LGAs in Lagos State showed that, although there was high access to services (median 93%), there was suboptimal coverage (median 60%) with a median dropout rate of 10% between DPT1 and DPT3 and 12% between DPT3 and measles. Only 18 (20%) of 91 health workers routinely calculated dropout rates. Barriers to immunization services included the lack of integrated services, separate days for immunization, unavailability of all antigens each day, not screening mothers during children's visits, and unavailability of yellow fever vaccine.

## Control of Diarrheal Diseases

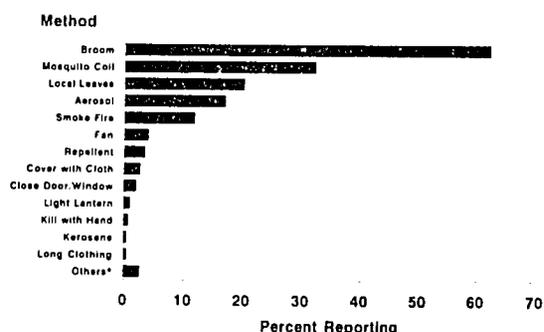
**ORT Units and Clinical ORT Training** — During 1992, ORT Corners were established and equipped in all health facilities in Ife Central Local Government Area (LGA) and Osun State; two additional facilities were developed as ORT Demonstration and Training Units in Suleja and Gurara LGAs. Clinical ORT Training was conducted for LGA CDD Managers and facility health workers in Focus LGAs in Niger State.

## Malaria

**The Use of Pesticide Impregnated Bednet and Curtain Study** — Malaria is highly endemic in Nigeria and is one of the major causes of morbidity and mortality. The search for practical and effective control measures that could be carried out by community residents led to a study to examine the use of bed nets or house curtains impregnated with an insecticide (synthetic pyrethroids). The objectives of this study were to measure malaria incidence and prevalence (individual episodes of clinical malaria, anemia, and severe malaria during and after a community-wide trial of permethrin residual house application and of permethrin-impregnated bed nets and curtains); to determine human-vector contact (number of female mosquitoes resting in houses and indoor and outdoor biting rates); to determine the susceptibility of mosquito vectors to permethrin and the duration of effectiveness of impregnated bed nets and curtains; and to evaluate community compliance in the permethrin treatment and use of impregnated bed nets and curtains during a period of 24 months. Figures 5 and 6 depict information on the social and behavioral aspects of the malaria control component of this study.

Figure 5

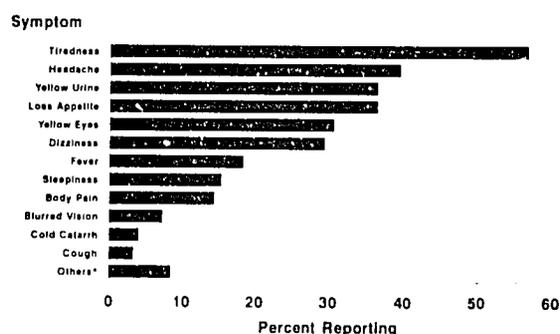
**Preventive Methods Used in Past Month**  
Social and Behavioral Aspects of Malaria Control  
Nsukka LGA, Nigeria, 1992



Source: W.R. Brieger, et al. "Social and Behavioral Aspects of Implementing a Strategy of Impregnated Bednets and Curtains for Malaria Control: A Baseline Study." n=405 persons interviewed.  
\* Others include disinfectant, palm kernel oil, immunization, cut grass, incense.

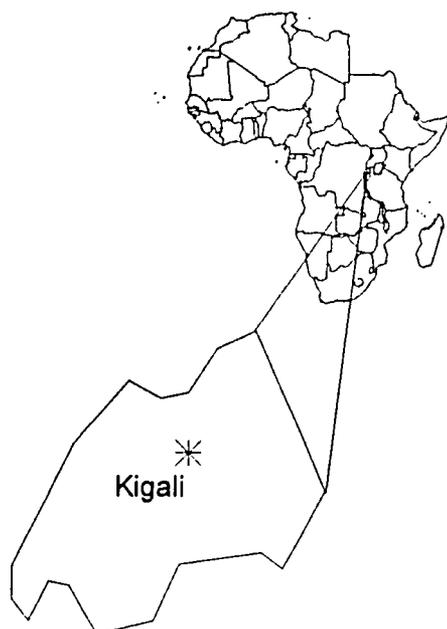
Figure 6

**Perceived Malaria Symptoms**  
Social and Behavioral Aspects of Malaria Control  
Nsukka LGA, Nigeria, 1992



Source: W.R. Brieger, et al. "Social and Behavioral Aspects of Implementing a Strategy of Impregnated Bednets and Curtains for Malaria Control: A Baseline Study." n=405 persons interviewed.  
\* Others include diarrhea, dry throat, yellow hands, body odor, bitter mouth, sweat, weak joints.

# Rwanda



## ACSI-CCCD History and Milestones

Country Statistical Profile		
	1985	1993
Population (millions)	6.1	7.3
Infant mortality	127	112
Under 5 mortality	214	189
Annual number of <5 deaths	68,000	71,000
DPT3 coverage %	44	85
Measles coverage %	45	81
Polio3 coverage %	50	85
Total fertility rate	7.4	8.5
Contraceptive prevalence	N/A	10
Per capita income \$US	280	310

(Source: The State of the World's Children 1993)

	<b>1982</b>	
	<b>1983</b>	Country assessment
Project agreement signed	<b>1984</b>	
Mid-level management training	<b>1985</b>	Maryanne Neill (T.O.) assigned
First project review		CDD and malaria KAP surveys
National CDD and malaria plans	<b>1986</b>	ORT demonstration and training centers
Intensified supervisory systems implemented		First project evaluation
Second project review	<b>1987</b>	Increases in malaria morbidity documented
In vivo surveillance of malaria treatment		Measles information campaign
		Mid-level management training/regions
National health information system	<b>1988</b>	Second project evaluation
		Project completed
	<b>1989</b>	
	<b>1990</b>	
	<b>1991</b>	
	<b>1992</b>	
	<b>1993</b>	

# Rwanda

The CCCD project supported the Ministry of Health and Social Affairs in Rwanda from 1984 to 1988. Project achievements were especially noteworthy in the areas of supervision, health education, and childhood immunization.

## National Supervisory System For CCCD Interventions

With CCCD support, the Ministry established an innovative national supervisory system for the CCCD interventions. The system included a supervisory checklist that provided quality information on health center performance to regional medical officers and to national Ministry staff. The checklists were computerized, and the data collected were incorporated into the national health information system. With an effective national level supervisory team trained, the supervisory reports that were generated helped regional supervisors detect and respond to problems in their regional facilities. Supervisors provided on-the-job training to health workers to help correct identified performance problems. Nevertheless, despite critical political and financial problems, use of the checklists during routine supervision has continued through 1993—5 years after the PACD.

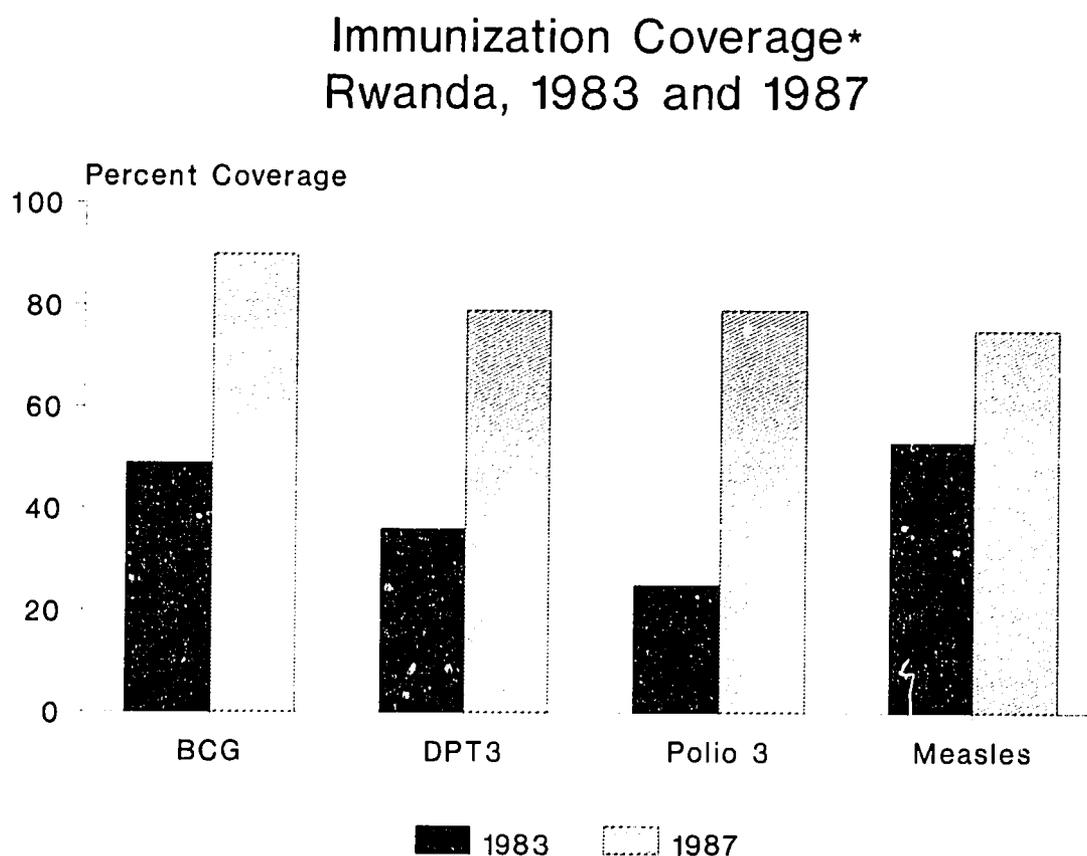
## Health Education

Health education was an outstanding component of the CCCD Project in Rwanda. The project provided training and logistical support to help the Health Education Division conduct baseline information about knowledge, attitudes, and practices of health workers and mothers concerning CCCD-supported interventions. The Division developed and produced a variety of educational materials based on community research and trained primary care workers to use them in promoting health messages (especially recognition of target diseases, home treatment of fever and diarrhea, understanding of the immunization schedule, and attendance at health centers providing CCCD services). Several successful “mini-campaigns” were conducted to promote vaccinations.

## Expanded Programme on Immunization

CCCD support for strong supervisory and health education activities, together with significant Rwandan government commitment to EPI and support from the private sector, led to important achievements in childhood vaccination coverage and disease reduction in Rwanda. Coverage for OPV3 rose from 25% in 1983 to 79% in 1987, and measles coverage rose from 53% to 75% during the same period. (Figure 1) Measles cases in children decreased 54% from 1984 to 1987, and mortality decreased 26%. A fixed vaccination strategy, a strong training component, and effective social mobilization efforts also contributed to EPI's success. The country has sustained a strong EPI program through 1993, but the successes are threatened by political conflicts, a decrease in donor financial support, and inadequate staffing.

Figure 1



\* Children 12-23 months

# Swaziland



## ACSI-CCCD History and Milestones

Country Statistical Profile		
	1985	1993
Population (millions)	700,000	771,000
Infant mortality	124	76
Under 5 mortality	182	113
Annual number of <5 deaths	6,000	3,300
DPT3 coverage	66%	79%
Measles coverage	59%	70%
Polio3 coverage	76%	79%
Total fertility rate		6.5
Contraceptive prevalence		17%
Per capita income \$US	790	820

(Source: The State of the World's Children 1993)

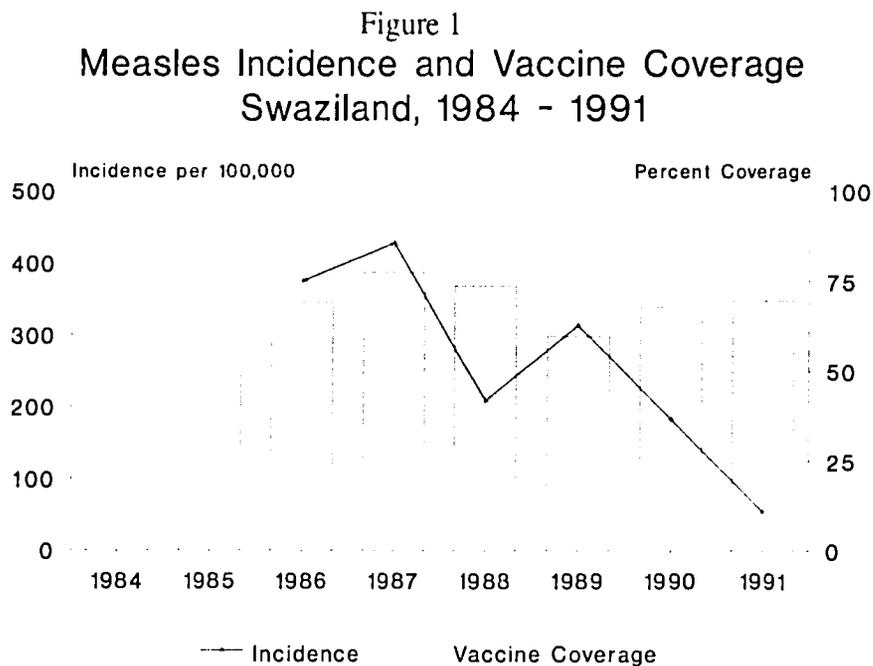
	<b>1982</b>	
	<b>1983</b>	Country assessment
Project agreement signed	<b>1984</b>	John Nelson (T.O.-based in Lesotho) assigned
Mid-level managers course	<b>1985</b>	In-service CCCD training procedures First project review
First project evaluation	<b>1986</b>	
Nationwide cold chain network Malaria active case detection re-instituted Measles mass vaccination	<b>1987</b>	Larry Brown (T.O.) assigned EPI, Malaria, and CDD 3-yr workplans
National EPI policy statement Second project evaluation	<b>1988</b>	Presumptive treatment of fever-policy National ORT training center Outbreak investigation and control system
Third project evaluation	<b>1989</b>	National immunization coverage survey
ACSI-CCCD extension approved	<b>1990</b>	Assessment of national ORT training ARI 3-year workplan Malaria HE field research-completed
Training needs assessments in 20 clinics	<b>1991</b>	ARI control program Project completed
	<b>1992</b>	
ORTU evaluation	<b>1993</b>	

# Swaziland

The ACSI-CCCD project in Swaziland began in 1984. A part-time Technical Officer based in Lesotho was assigned to assist the Ministry of Health. A full time officer served in Swaziland from 1988 to 1991. The project focused its support on immunization and diarrheal disease control programs. Some assistance in malaria research and, later, in the development of a program to control acute respiratory infections (ARI) in children was provided. From 1991 to 1992, when the project was completed, ACSI-CCCD assisted with a variety of operational research activities especially in the area of family planning.

## Expanded Programme on Immunization: Disease Outbreak Investigation and Control Unit

CCCD provided technical support and guidance to the Swaziland EPI. This program, one of the best in Africa, achieved high rates of coverage and disease reduction. Measles vaccination coverage for infant rose from 59% in 1984 to 70% in 1990 (somewhat lower than in 1988-1989). SEPI's efforts helped reduce measles incidence from 375/100,000 in 1986 to 54/100,000 in 1991 (Figure 1).



• Vacc.  $\div$  divided by surviving  
infants X 100  
Source: MOH Central Statistics

The Swaziland Expanded Programme on Immunization (SEPI) established a disease outbreak and investigation control unit in 1988 to identify and respond to outbreaks of target diseases. Together with improved sentinel surveillance and various immunization promotion activities, the unit contributed significantly to a decrease in disease incidence.

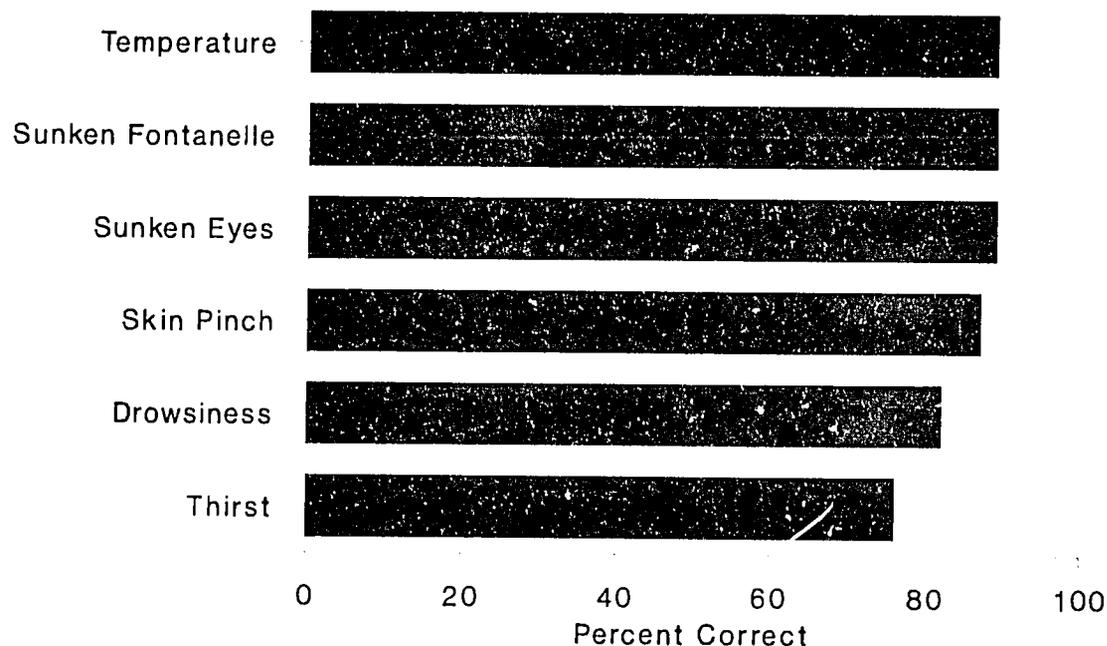
## Swaziland Diarrheal Diseases Training and Treatment Center

The Ministry of Health established a diarrheal diseases training and treatment center at Mbabane General Hospital in 1988. From 1988 to 1991 the center trained nearly 180 nurses to assess and manage children with diarrhea and dehydration. By 1991, ORT corners were established at about 90% of health facilities following national and regional-level trainings.

In 1991, the Ministry of Health assessed the effect of this ORT training on actual clinical performance of health workers in the field. Most workers assessed cases properly, including examination for signs of dehydration. More than 85% of workers demonstrated how to give ORS and observed the child taking the solution. Nearly three-fourths of clinicians gave proper advice to mothers regarding diet, ORS intake, breastfeeding, and prevention of diarrhea (Figure 2).

Figure 2

### Assessment of Dehydration by Trained Health Workers Swaziland, 1991



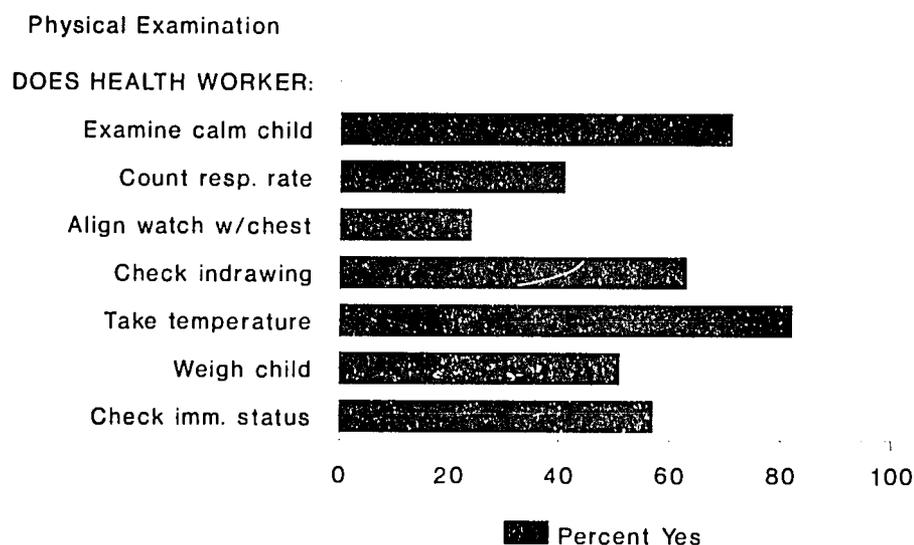
38 Health workers in 20 facilities

## Acute Respiratory Infections (ARI) Control Program

The Ministry of Health successfully launched a national ARI control program in 1991. Following baseline ethnographic research, the Ministry designed a program plan, conducted a training needs assessment for health workers, completed a training curriculum for nurses, and trained 67 nurses and 64 doctors in ARI standard case management. The training needs assessment in 15 facilities found that health workers performed routine physical examinations well but needed instruction in new case management protocols. The study provided baseline information to evaluate the effect of subsequent ARI training and monitoring (Figure 3).

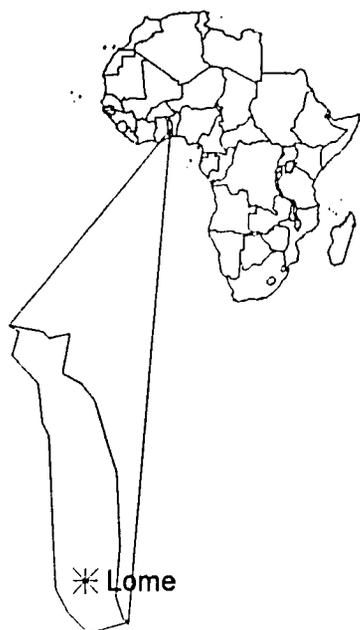
Figure 3

### ARI: Case Assessment by Health Workers Swaziland, 1991



49 observations in 15 facilities  
Source: Needs Assessment Report, 6/1991

# Togo



## ACSI-CCCD History and Milestones

Country Statistical Profile		
	1985	1993
Population (millions)	3.0	3.7
Infant mortality	98	88
Under 5 mortality	160	143
Annual number of deaths (x1000)		23
DPT3 coverage %	9	
Measles coverage %	9	
Polio3 coverage %	47	
Total fertility rate	6.1	6.6
Contraceptive prevalence	-	
Per capita income \$US	250	410
(Source: The State of the World's Children 1993)		

	<b>1982</b>	
Project agreement signed	<b>1983</b>	Kevin Murphy (T.O.) assigned
First project evaluation	<b>1984</b>	MUHS conducted
ACSI-CCCD Consultative Meeting		HIS consultations begun
	<b>1985</b>	In vivo malaria testing
		Malaria policy
	<b>1986</b>	Brian Fitzgibbon (T O ) assigned
Second project evaluation	<b>1987</b>	
Project extension		Evaluation of training in MOH
	<b>1988</b>	UNICEF vaccination campaign
Third project evaluation	<b>1989</b>	Karen Wilkins (T O ) assigned
	<b>1990</b>	HIS for inpatient developed
		First project review
	<b>1991</b>	
	<b>1992</b>	
	<b>1993</b>	Project completed

# Togo

## Expanded Programme on Immunization

The ACSI-CCCD project in Togo began in April 1983 when the Ministry of Health (MOH) was planning the implementation of its new Expanded Programme on Immunization. Immunizations had been sporadic during the previous decade and coverage was very low throughout the country. Initially the MOH planned to conduct a mobile campaign based in Lomé. With input from the new ACSI-CCCD team the strategy was changed to emphasize vaccination services at fixed health centers throughout the country. Further impetus was provided by the 1989 UNICEF initiative. Gains in vaccination coverage were impressive until internal problems began in the early 1990s. Morbidity reductions from vaccine preventable diseases have also been noted. Polio and neonatal tetanus are at record low levels. Measles morbidity and mortality decreased markedly since 1986.

Figure 1

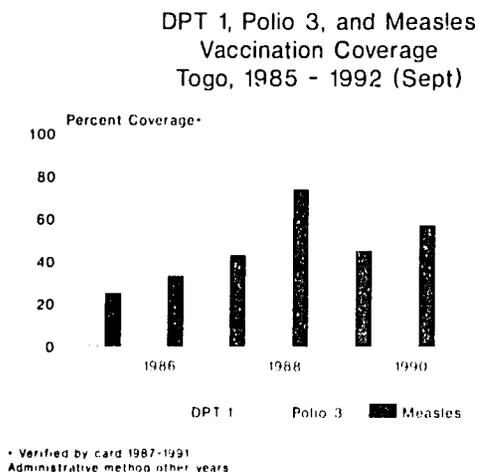
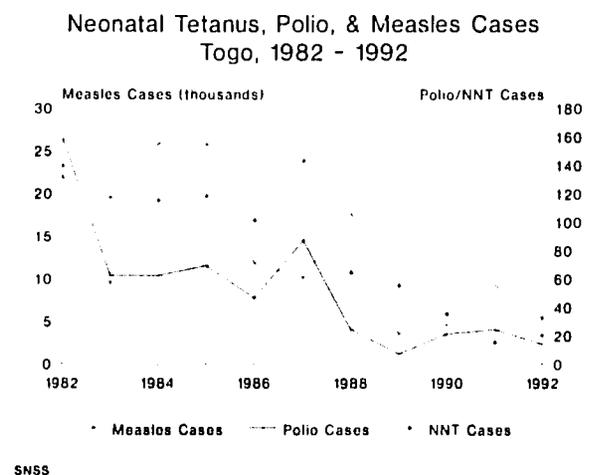


Figure 2



## Health Information Systems

After the implementation of the national EPI, the priority of the MOH was to modernize its HIS. The HIS was chronically out of date and needed to be simplified and streamlined to provide current data on the diseases reported in the country. A series of field consultations by CCCD and MOH staff to the various health facility levels in the interior were conducted and a plan of action was established. The list of reportable conditions was revised and case definitions were established. Training was conducted in each prefecture for personnel in charge of disease reporting. At a later date the 21 regional hospitals were included in the system. The system currently provides useful data for the planning of health services and for the surveillance of

diseases on a prompt and accurate basis. The graphic presentation of the data has served to improve the quality of the annual statistical reports and to make them more usable for decision makers in the MOH and in the donor agencies.

## Malaria Program

Malaria has been a reportable disease in Togo for many years. With the imminent threat of resistant malaria emerging, the ACSI-CCCD project assisted the ministry of health to set up surveillance for chemo-resistance to available antimalarial drugs. At the onset of the project, chloroquine at the level of 10 milligrams per kilogram of body weight was 100% successful in the treatment of malaria. During the late 1980s, however, chloroquine resistant strains of the parasite became prevalent in the country. This change was detected by the MOH surveillance system, and a new national treatment protocol (25 mg/kg 3-day treatment) for malaria was promulgated and adopted nationally. The surveillance of drug resistance in Togo is now a top priority of the MOH's malaria program.

Figure 3

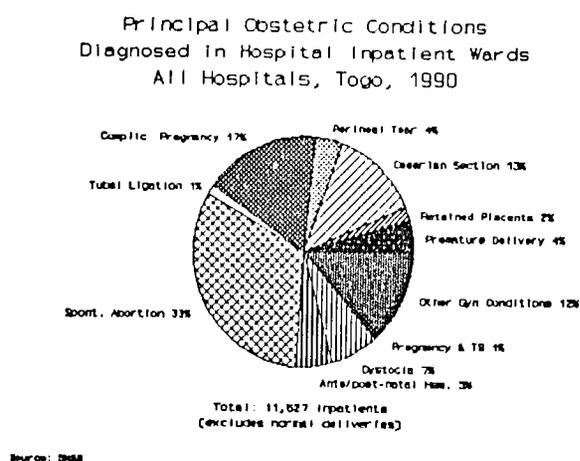
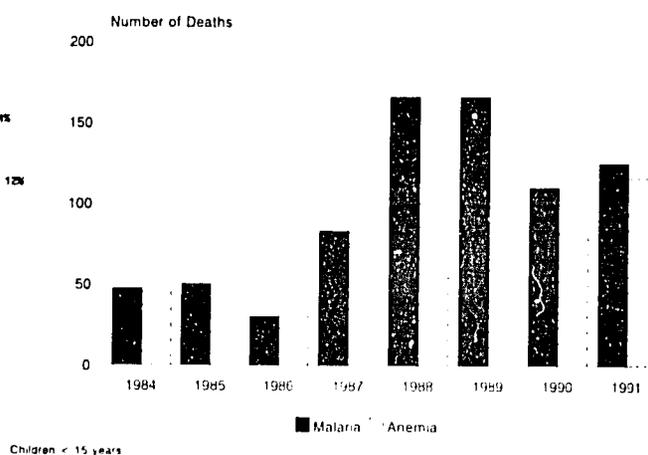


Figure 4

Deaths due to Malaria and Anemia  
Pediatric Service, CHU  
Lomé, Togo, 1984 - 1990



## Oral Rehydration Therapy

The project worked with national colleagues to diffuse and popularize the use of oral rehydration therapy in the home and in the medical system of Togo. In cooperation with the Peace Corps and with a village well-digging project in the Plateaux Region, the project assisted in training village leaders in the use of ORT.

# Zaire



## ACSI-CCCD History and Milestones

Country Statistical Profile		
	1985	1993
Population (millions)	29.9	38.7
Infant mortality	103	117
Under 5 mortality	170	180
Annual number of deaths <5 (x1000)	231	233
DPT3 coverage %		16
Measles coverage %	18	
Polio3 coverage %		22
Total fertility rate	6.1	6.7
Contraceptive prevalence	-	1
Per capita income \$US	140	230

(Source: The State of the World's Children 1993)

	<b>1982</b>	Country assessment
Project agreement signed		Jean Roy (T.O.) assigned
	<b>1983</b>	William Taylor (Epidemiologist) assigned
	<b>1984</b>	Melinda Moore (Epidemiologist) assigned
MUHS survey		
	<b>1985</b>	
First project evaluation		
	<b>1986</b>	Malaria policy approved
	<b>1987</b>	John Paul Brennan (T.O.) assigned
Malaria and pregnancy studies		
	<b>1988</b>	MUHS survey
Second project evaluation		Andrew Vernon (Epidemiologist) assigned
	<b>1989</b>	Karen Wilkins (T.O.) assigned
		E-Z vaccine study in Kinshasa
	<b>1990</b>	ZSPH health education course
National EPI, CDD, Malaria		
	<b>1991</b>	
FP and AIDS survey		Project terminated
	<b>1992</b>	
	<b>1993</b>	

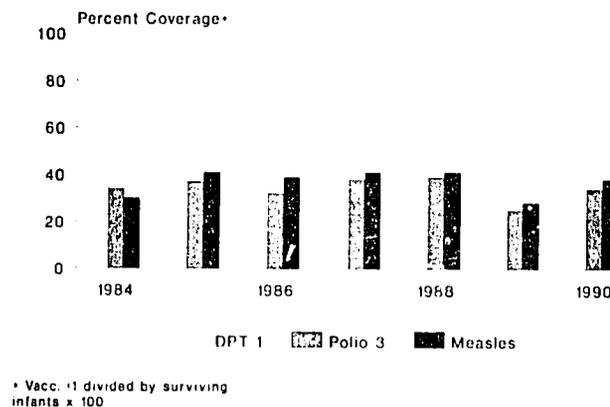
# Zaire

## Expanded Programme on Immunization

The ACSI-CCCD project was initiated in September 1982 with the assignment of a full-time technical officer to the EPI unit of the Ministry of Health. The project ended in 1990 when USAID suspended its technical assistance programs. The health system of Zaire had for many years been a cooperative effort among private, religious, and government sectors to provide services through a network of decentralized Health Zones, each with a population of about 250,000. The country's public infrastructure, especially its roads and health facilities, was poorly funded by the government and was largely dependent upon the support of donors, NGOs, and local populations for its survival. The Expanded Programme on Immunization was a priority activity in all operational Health Zones. Immunization services depended on receiving from Kinshasa uninterrupted vaccine supplies to far-reaching regional EPI outposts (Antennes) where storage facilities and personnel were available to serve surrounding rural areas. This allowed vaccination services to be provided widely. A system of modest fees imposed at fixed health centers in the Health Zones provides a source of income for the centers and allows them to buy supplies. In areas of good coverage and where surveillance is ongoing, disease incidence rates have fallen.

Figure 1

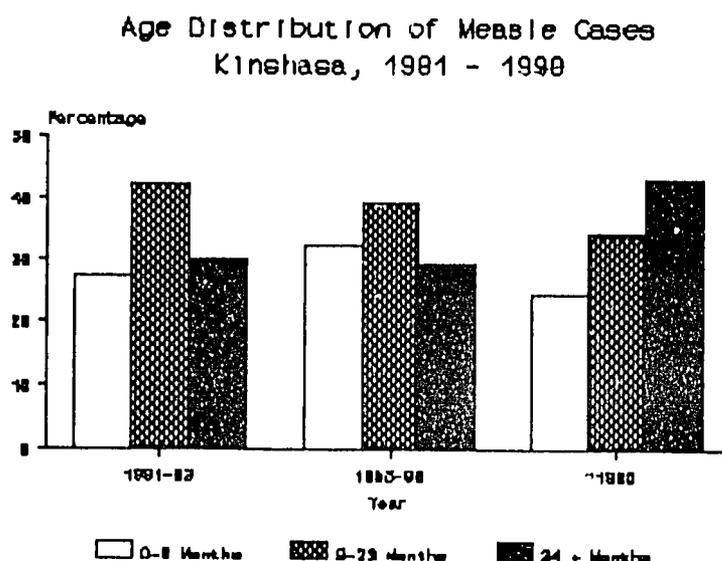
DPT 1, Polio 3, and Measles  
Vaccination Coverage  
Zaire, 1984 - 1989



Although national coverage rates did not dramatically increase after the first 4 years of project activities, the Health Zones succeeded in sustaining a significant coverage in spite of serious civil disruptions in some areas.

The epidemiology of measles in Kinshasa exemplifies the problem of measles in urban Africa. Approximately one third of cases occur in children younger than 9 months of age, the recommended age for administration of the standard Schwarz vaccine. As part of the CCCD operational research agenda, medium dose Edmonston-Zagreb vaccine was administered at 6 months of age.

Figure 2



## National Health Survey

With assistance from UNICEF and ACSI-CCCD, an unprecedented national vaccine coverage survey (including AIDS, family planning, CDD, and malaria data) was conducted in 1991 shortly before travel became impossible in the interior of the country. This survey found that considerable knowledge and use of ORT and correct antimalarial therapy had become institutionalized in Zaire. For example, results of the survey found that 27% of mothers treat children at home with SSS and that 42% of patients are treated at health centers with ORS. For malaria treatment, 89% of patients were treated correctly with chloroquine when seen at a health center, and 59% were treated at home with an oral antimalarial drug before going to the center. Because of the decentralized nature of Zaire's health system, a national HIS was not a high priority for the project. Assuring local supervision of the Health Zone's facilities and assuring locally generated data for decision making were important initiatives. These initiatives were achieved by training zonal medical officers in both the technical and managerial components of primary health care service delivery. Courses in health education in collaboration with the University of Kinshasa's School of Public Health also served to improve health workers' patient-education skills.

## **Leadership**

The project succeeded well in developing public health leadership. An impressive number of nationals now hold positions with WHO and continue to contribute significantly to public health developments in Africa (e.g., the WHO EPI Coordinator for Africa and two WHO Country Representatives).

## **Decentralization**

Zaire was able to assure nearly 50% national vaccination coverage and equally high rates of ORT and correct malaria treatment because of the wisdom of its decentralized strategy, its auto-financing approaches, and the tenacity of its health workers.

# CATALOGUE OF PUBLICATIONS

## ACSI-CCCD<sup>1</sup> & AFR/ARTS<sup>2</sup> COLLABORATION

### CATALOGUE NUMBER

### CONTROL OF DIARRHEAL DISEASES

099-4066 **Why Swazi mothers use traditional healers to care for children with diarrhea.**  
R Wilson, G Stroh, T Mnuzebele, K Parker, M Moore, Q Dlamini.

099-4067 *Pourquoi les mères de Swaziland utilisent les guérisseurs traditionnels pour les enfants avec la diarrhée.*

Journal Article. A qualitative study designed to determine what motivates mothers to seek healers for treating their child with diarrhoea. Results of individual and group interviews are compared and contrasted, and recommendations are made for improving patient education and designing similar studies in sub-Saharan African countries.

099-4034 **Diarrhoea Treatment Unit Training Course: A Guide for facilitators.**

This guide outlines a 6-day training course on Oral Rehydration Therapy, designed for experienced health workers who are learning about modern diarrhoea case management and who might manage ORT "corners" in hospitals and clinics where they work.

### EXPANDED PROGRAMME ON IMMUNIZATION (EPI)

099-4010 **Expanded program on Immunization (EPI) in 13 African countries.**  
S Foster, B Fitzgibbon, K Murphy, J Gindler, L Ackerman-Gulaid.

099-4011 *Programme élargi de vaccination (PEV) dans 13 pays africains.*

Monograph. Documents 10 years of experience with the EPI program in 13 different African countries. Reviews issues learned in key programmatic areas, and identifies key issues to be addressed over the next 10 years.

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<sup>1</sup> Africa Child Survival Initiative - Combatting Childhood Communicable Diseases Project

<sup>2</sup> Agency for International Development, Africa Bureau/Office of Analysis, Research and Technical Support

## MALARIA

099-4032 **Evaluation of National Malaria Control Programs In Africa.**  
J Bryce, JB ROUNGOU, P NGUYEN, JF NAIMOLI, JG BREMAN.

099-4033 *Evaluation des programmes nationaux de lutte contre le paludisme en Afrique.*

Journal Article. This article responds to the needs of international agencies and national program managers to strengthen program evaluation as an important strategy for improving the efficiency and effectiveness of malaria control programs.

099-4016 **Controlling malaria In Francophone Africa: Taking the Initiative. A series of papers on the ACSI-CCCD Malaria Initiative.**  
JF NAIMOLI, P NGUYEN-DINH, eds.

099-4030 *La lutte contre le paludisme en Afrique francophone: Prendre l'initiative.*

Contains nine pieces meant to summarize the process of this initiative. All will appear together in a folder-type arrangement. Describes the processes and results of a comprehensive approach to public health policy development and programming as applied to malaria control in francophone Africa.

1. Epidemiologic and Economic Considerations of Malaria control in Africa.  
EH Benzerroug, A Beljaev, D Barakamfitye.
2. A Field Manager's Perspective on Malaria in Africa.  
S. Nkurikiye, JB ROUNGOU, LJ SCHULTZ.
3. Using Epidemiological and Behavioral Data to Develop National Policy.  
SM Lemine, P NGUYEN-DINH, J BRYCE
4. A Strategic Approach to Improving Malaria Control Program Plans.  
KN Saarlàs, JF Naimoli
5. The Management of Antimalarial Drugs in the Central African Republic.  
D Yazipo, JC Setzer, SC Redd.
6. Action-Research in Health Worker Supervision in Côte d'Ivoire.  
J Niangue, JF Naimoli, MD LaPointe.
7. Strengthening Communication Between Health Workers and Mothers.  
L Sanwogou, EM Nagler, KA Parker, *et alia*.
8. Developing Skills for the Evaluation of Malaria Control Programs.  
KM Paluku, P NGUYEN-DINH, EH Benzerroug, J Bryce.
9. The Future of Malaria Control in Africa.  
D Barakamfitye, JG Bremen, KA Parker.

099-4025 **Multiple methods for workshop evaluation.**  
K Saarlàs, *et alia*.

099-4043 *Diverses méthodes d'évaluation d'un atelier de formation.*

Journal Article. Describes methods used to evaluate the intercountry workshops in program planning and management for malaria control.

## MALARIA (continued)

- 099-4023 **A training manual for program managers on program planning for malaria control.**  
International Health Program Office, Malaria Branch, CDC.
- 099-4044 *Un manual de formation pour le développement de planification d'un programme de paludisme.*  
  
Training curriculum and materials. Developed by and for program managers to build capacities in planning national malaria control programs.
- 099-4243 **Malaria Control in the African Region: Guidelines for the Evaluation of National Programs.**
- 099-4244 *Lutte contre le paludisme dans la region africaine: Guide pour l'evaluation des programmes nationaux.*  
  
Monograph. This document summarizes the Francophone African national malaria control managers experience with the planning workshop (described in the previous document).
- 099-4024 **A training manual for program managers on policy development for malaria**  
International Health Program Office, Malaria Branch, CDC.
- 099-4045 *Un manual de formation pour le développement de politique d'un programme de paludisme.*  
  
Training curriculum and materials. Developed by and for program managers to build capacities in national malaria control policy development.
- 099-4048 **Mangochi Monograph: Malaria Management and Prevention in Pregnancy.**  
R Steketee, J Breman, K Campbell.
- 099-4049 *Mangochi monographie: sur le traitement et prevention du paludisme pendant la grossesse.*  
  
Monograph. An evaluation of a malaria intervention during pregnancy and its effects on peripartum, neonatal, and early childhood survival.
- 099-4050 **The control of Malaria in Africa: The ACSI-CCCD project.**  
R Steketee, J Breman, K Campbell.
- 099-4051 *Le contrôle du paludisme en Afrique: l'expérience du ACSI-CCCD.*  
  
Monograph. Describes malaria treatment and prevention policy, "lessons learned" from the CCCD experience.

## MALARIA (continued)

099-4072 **Addressing the challenges of Malaria.**  
R Stekette, J Bremen, K Campbell.

099-4073 *Réponse aux défis du paludisme.*

Monograph. Describes national malaria program implementation in light of what is known from the experiences of the ACSI-CCCD project.

## ACUTE RESPIRATORY INFECTIONS

099-4064 **Diagnosis and management of acute respiratory infections by Swazi child caretakers, healers, and health providers, 1990-1991.**  
R Wilson, M Nxumalo, b Magongo, K Parker, G Shelley, Q Diamini.

099-4065 *Diagnostique et prise en charge des infections respiratoires aiguës par les personnes administrant les soins, les guérisseurs, et les agents de santé, à l'enfant Swazi: 1990-1991.*

Journal Article. A description of an anthropologic study designed to investigate local ARI terminology, symptoms, and practices. Respondents included health workers, healers, and mothers. Data were used to design training materials for health providers and health education materials for the community.

099-4068 **An ethnographic study of pediatric acute respiratory infections Ile-Ife, Nigeria, 1991.**  
R Wilson, SA Ajabeng-Asem, KA Parker.

099-4069 *Etude ethnographique concernant les infections aiguës des prises respiratoires chez les enfants à Ile-Ife, Nigéria.*

Journal Article. A field test of results from the WHO focused ethnographic study. A series of methods are used to determine mothers explanatory model of ARI. Mother's perception of ARI illness terms, symptoms, and treatment practices are reported.

099-4070 **Anthropologic methods for policy and program development: pediatric acute respiratory infections in Lesotho, 1989.**  
R Wilson, I Kimane, A Mokdad, M Shale, S Redd.

099-4071 *Méthodes anthropologiques et épidémiologiques utilisés pour le développement de politiques et de programme concernant les infections aiguës des voies respiratoires au Lesotho en 1989.*

Journal Article. Study summarizes the methods and results of a two-phase ARI community study conducted in Lesotho in 1989. Recommendations are made for future ARI community studies.

## ACUTE RESPIRATORY INFECTIONS (continued)

099-4242 **Pile Sort Techniques for Primary Health Care Program Development: Analysis of *s/Swati* Terms for Acute Respiratory Infections.**  
R Wilson

099-4242 Journal Article.

## TRAINING

099-4002 **Continuing education systems - A guide for policy makers and program managers.**  
A Voigt, J Kanne.

099-4013 *Systèmes de education continue: un guide pour les responsables politiques et les directeurs de programmes.*

Resource Guide. A how-to guide for developing a continuing education system for health workers.

**Planning a continuing education policy workshop.**  
A Voigt, J Kanne.

*Organisation d'un atelier sur la politique d'education continue.*

This companion piece to the above guide contains materials to facilitate the development of a workshop designed to assist program managers and policy makers as they develop continuing education policy statements to meet their specific needs.

099-4003 **Adult education perspectives in primary health care training.**  
K Berney, A Voigt, J Kanne.

099-4044 *La formation en soins de santé primaires dans le contexte de l'éducation des adultes.*

A description of how, and why, training evolved from didactic to "skills practice" during the CCCD project.

099-4014 **Continuing Education: The rationale for a system approach.**  
A Voigt, A Adegoroye, J Kanne

099-4028 *L'éducation continue: la raison pour une approche systématique.*

Journal Article. A description of the whys and hows of the transformation of training under the CCCD project from ad hoc delivery (donor funded and driven) to systematic (meeting the needs of local health workers as a part of on-going interventions.)

## TRAINING (continued)

- 099-4001 **Skills assessment in primary health care training.**  
J Bryce, A Adegrooye.
- 099-4000 *Evaluation des compétences au cours d'une formation en soins de santé primaires.*  
  
Journal Article. A description of the development and field testing of a method designed to document changes in skills as a result of primary health care training in Niger State, Nigeria.
- 099-4047 **Health Education for Malaria Control In the Context of a Primary Health Care Approach: A Training Program Guide.**  
ACSI-CCCD Project Staff
- 099-4040 **Improving Teaching Skills: Demonstration, Lecture or Talk, Discussion, and Role Play.**

## HEALTH EDUCATION

- 099-4026 **Strengthening patient education for ORT services In the Central African Republic.**  
J Naimoli, S Endsley, JB ROUNGOU, KA PARKER, J BRYCE, R DOUTIZONGA, M  
Gbadjamo
- 099-4004 *Renforcement de l'éducation des patients pour les services de TRO en République centrafricaine.*  
  
Journal Article. A description of the effect of a health worker training program in diarrhea case management on patient education facilities in the Central African Republic (C.A.R.). The experience demonstrated that patient education can be improved through inservice training that integrates the teaching of clinical and communication skills.
- 099-4037 **Working with communities to increase the use of health services: An experience from Togo, West Africa**  
J Naimoli, A Gbekley, T Bamaze, K Parker, J Bryce, G Naimoli.
- 099-4038 *Collaboration communautaire pour augmenter l'utilisation des services de santé: une expérience provenant du Togo, Afrique de l'ouest.*  
  
A descriptive article demonstrating that motivated and skilled district health teams can increase community involvement in promoting positive health behavior. The major factors for the success of the project are summarized, and issues related to project replication and diffusion are discussed.

## HEALTH EDUCATION (continued)

- 099-4012 **Challenging health workers to develop a participatory approach to patient education.**  
K Berney, A Olukoya, A Voigt.
- 099-4042 *Une approche à l'éducation des patients basée sur la participation: Un défi aux agents de santé.*  
  
Journal Article. Describes a participatory approach for improving the interpersonal communications skills of health care workers.
- 099-4074 **Communicating about health: A guide for facilitators.**  
K Berney, A Olukoya.
- 099-4075 *Communication concernant la santé: un guide pour les facilitateurs.*  
  
A guide suggesting a new approach for health workers, encouraging them to create their own way of working with people in order to solve health problems and promote good health.
- 099-4063 **Rethinking primary health care training.**  
J Bryce, F Cutts, J Naimoli, M Beesley
- 099-3999 *Réévaluation de la formation SSP.*  
  
A summary document outlining some of the major challenges facing PHC planners and managers as they seek to address the effectiveness of primary health care interventions.
- 099-4047 **Health Education and Management for Child Survival Programs: A Training Program Guide.**

## ETHNOGRAPHY

- 099-4008 **Ethnographic research for family planning policy development, Abidjan, Côte d'Ivoire, 1991.**  
R Wilson, S Darret, K Khale, N Barkey.
- 099-4009 *Recherche ethnographique concernant le développement d'une politique de planning familiale, à Abidjan en Côte d'Ivoire, 1991.*  
  
Journal Article. Describes the process of a policy ethnography survey (PES), and shows how it can be applied to develop a family planning (or other health) intervention.

## APPLIED RESEARCH

- 099-4054 **Applied research in the Africa Child Survival Initiative: A compendium of USAID-supported research in the ASCI-CCCD Project, 1982-1993.**  
E Joseph, A Vernon (Bilingual).

Annotated summary. A compendium of over 10 important applied research studies carried out under the auspices of CCCD and funded by A.I.D. Each summary contains a description of the study methods, results, implications of the results for public health programs, and where possible the impact of the OR study on the health system in the region or country where study was conducted.

- 099-4052 **Applied Research in the Africa Child Survival Initiative: Lesson Learned from the ACSI-CCCD Project, 1982-1993.**  
E Joseph, A Vernon (Bilingual).

Monograph. Summarizing the experience of CCCD and presenting a conceptual model for all uses of OR in public health program development and implementation.

## FINANCING HEALTH CARE

- 099-4060 **The costs of continuing education units: A spreadsheet model for budgeting and forecasting.** D McFarland, A Voigt, L Idoko, S Schmidt.

- 099-4061 *Coûts des unités d'éducation continue: budgétisation et prévision.*

Journal Article. Describe the costs of developing and maintaining a continuing education program.

## MANAGEMENT

- 099-4055 **Assigning Technical Officers to Ministries of Health: A management study.**  
JKL Dawkins. R Amonoo-Lartson, RP Wilson.

- 099-4056 *Etude sur la gestion de programmes internationaux de santé publique.*

Monograph. A case study on the assignment of Technical Officers to Ministries of Health in implementation of the CCCD Project.

- 099-4041 **ACSI-CCCD End-of-project report.**  
Field Services Division, IHPO, CDC.

## MANAGEMENT (continued)

Monograph. A comprehensive summary of the 12 year CCCD experience in 13 African countries, including chapters on the child survival interventions (EPI, CDD, Malaria, ARI, and Family Planning), the research strategies (health information, health education, training, operations research, and formative research), and cross-cutting regional central issues (management, intercountry activities, regional projects, and special studies).

- 099-4006 **Thirteen Lessons Learned: 1981-1993.**  
S Foster

Monograph. A general overview of CCCD, its political genesis, implementation, achievements, failures, and lessons learned.

- 099-4053 **Building on CCCD experience for the future.**  
J Bryce, J Naimoli, D McFarland

- 099-4059 *Bâtir l'avenir sur l'expérience de l'ACSI-CCCD.*

*Journal Article. Presents strategies for strengthening the public health policy and program development process for specific interventions, drawing upon experience gained through CCCD.*

## HEALTH INFORMATION SYSTEMS

- 099-4022 **Computer-based applications for health information systems in developing countries:**  
**Hospital-based morbidity and mortality reporting system.**  
**Health center-based morbidity reporting system.** K Bussell.

- 099-4036 *Applications informatiques des systèmes d'information sur la santé:*  
*Système de compte-rendu de mortalité et de morbidité basé dans les hôpitaux*  
*Système de compte-rendu de morbidité basé dans les centres de santé*

Module and diskettes. A complete system which demonstrates a hospital-based morbidity and mortality reporting system.

- 099-4039 **A summary of the CCCD experience with routine surveillance.**  
A. Vernon.

- 099-4057 *Résumé de l'expérience du CCCD sur la surveillance de routine.*

Journal Article. A summary document discussing concepts, tools, and specific country experiences; practical considerations of training, supervision, feedback, sustainability, quality control, data management, and data integrity; and future directions.

## IMPACT OF CCCD IN TWO AFRICAN COUNTRIES

099-4007

A supplement to the International Journal of Epidemiology containing nine articles. Available as one document, in English only.

### **1. Impact of health programs on child mortality in Africa: evidence from Zaire and Liberia.** DC Ewbank. Int J Epidemiol 1991; 20S.

Describes the results of research (Mortality and Use of Health Services [MUHS] studies) designed to measure changes in the coverage of health services in infant and child mortality rates associated with the implementation of CCCD in Zaire and Liberia.

### **2. Infant and child mortality in two countries of Liberia: results of a survey in 1938 and trends since 1984.**

S Becker, F Diop, JN Thornton. Int J Epidemiol 1991; 20S

Describes the results of research (Mortality and Use of Health Services [MUHS] studies) designed to measure changes in childhood mortality.

### **3. Immunization, oral rehydration therapy, and malaria chemotherapy in children under-five in Bomi and Grand Cape Mount Counties, Liberia, 1984 and 1988.**

S Foster, RA Spiegel, A Mokdad. Int J Epidemiol 1991; 20S.

Describes the results of research (Mortality and Use of Health Services [MUHS] studies) designed to measure changes in 3 primary health care services: immunization of infants, antimalarial treatment of children with fever, and oral rehydration of childhood diarrhea.

### **4. Infant and child mortality in two counties of Liberia: 1984**

S Becker, JN Thornton, W Holder. Int J Epidemiol 1991; 20S

Describes the results of research (Mortality and Use of Health Services [MUHS] studies) designed to measure changes in estimate baseline infant and child mortality in Liberia.

### **5. Impact of selective primary care on childhood mortality in a rural health zone in Zaire.** A Chahnazarian, D Ewbank, B Makani, K Ekouevi, Int J Epidemiol 1991; 20S

Describes the results of research (Mortality and Use of Health Services [MUHS] studies) designed to measure the impact of selective primary health care on childhood mortality in Kingandu, Zaire.

## **IMPACT OF CCCD IN TWO AFRICAN COUNTRIES (continued)**

**6. Changes in use of health services in a rural health zone in Zaire: A public health case study.** A Vernon, WR Taylor, A Biey. *Int J Epidemiol* 1991; 20S

Describes the results of research (Mortality and Use of Health Services [MUHS] studies) designed to measure the changes in medical care infrastructure and the increasing coverage of three selected primary health care interventions: immunization of infants, antimalarial treatment of children with fever, and oral rehydration of childhood diarrhea.

**7. Mortality and use of health surveys in rural Zaire.** W Taylor, A Chanazarian, J Weinman. *Int J Epidemiol* 1991; 20S

Describes the results of research (Mortality and Use of Health Services [MUHS] studies) designed to measure use of medical services by the population and to estimate the child mortality rate before the CCCD program began

**8. The study design for evaluating the impact of child survival program in Africa: Combatting Childhood Communicable Diseases Project.** D Ewbank. *Int J. Epidemiol* 1991; 20S.

Describes the results of research (Mortality and Use of Health Services [MUHS] studies) designed to measure the mortality impact of the CCCD programs.

**9. Monitoring Child Survival Programs in Africa: The Africa Child Survival Initiative.** S Foster. *Int J Epidemiol* 1991; 20S

Summarizes the CCD Project goals and activities to share the experiences of a technical assistance program in assessing the effectiveness of national child survival strategies in providing selected primary health care interventions.

## **ACSI-CCCD INTERCOUNTRY CONSULTATIVE MEETING**

**Abstracts of presentations from the 1993 ACSI-CCCD consultative meeting.**

Conference Agenda Book. Describes those presentations made at the 1993 Child Survival Forum in Dakar, Senegal.

099-4017 **Africa's Progress in Child Survival: A Forum in Dakar, Senegal 29 March - 2 April, 1993.**

099-4018 *L'état d'avancement de la survie de l'enfant en Afrique: un forum en Dakar, Sénégal, le 29 Mars - 2 Avril, 1993.*

**Monograph. Summaries of the discussions prepared by session co-chairs and rapporteurs, as well as some of the keynote speeches from the March 1993 Child Survival Forum.**