### ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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</thead>
<tbody>
<tr>
<td>ACSI</td>
<td>Africa Child Survival Initiative</td>
</tr>
<tr>
<td>A.I.D.</td>
<td>Agency for International Development</td>
</tr>
<tr>
<td>AIDS</td>
<td>Acquired Immunodeficiency Syndrome</td>
</tr>
<tr>
<td>AFRO</td>
<td>WHO Regional Office for Africa</td>
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<tr>
<td>BCG</td>
<td>Tuberculosis Vaccine (Bacillus Calmette-Guerin)</td>
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<tr>
<td>CAR</td>
<td>Central African Republic</td>
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<tr>
<td>CCCD</td>
<td>Combatting Childhood Communicable Diseases</td>
</tr>
<tr>
<td>CDD</td>
<td>Control of Diarrheal Diseases</td>
</tr>
<tr>
<td>CFR</td>
<td>Case Fatality Rate</td>
</tr>
<tr>
<td>DPT</td>
<td>Diphtheria, Pertussis, Tetanus Vaccine</td>
</tr>
<tr>
<td>EPI</td>
<td>Expanded Program on Immunization</td>
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<td>HEALTHCOM</td>
<td>Communication for Child Survival Project</td>
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<tr>
<td>HIS</td>
<td>Health Information System</td>
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<tr>
<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
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<td>IHPO</td>
<td>International Health Program Office, CDC</td>
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<tr>
<td>IMR</td>
<td>Infant Mortality Rate</td>
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<tr>
<td>LGA</td>
<td>Local Government Area</td>
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<tr>
<td>MCH</td>
<td>Maternal and Child Health</td>
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<tr>
<td>MIS</td>
<td>Management Information System</td>
</tr>
<tr>
<td>MLM</td>
<td>Mid-level Managers</td>
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<tr>
<td>MOH</td>
<td>Ministry of Health</td>
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<tr>
<td>MPH</td>
<td>Master in Public Health</td>
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<td>MUHS</td>
<td>Mortality and Use of Health Services Survey</td>
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<td>OCCGE</td>
<td>Organisation de Coordination et Cooperation pour la lutte contre les Grandes Endemies</td>
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<tr>
<td>OPV</td>
<td>Oral Poliomyelitis Vaccine</td>
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<tr>
<td>ORS</td>
<td>Oral Rehydration Salts/Solution</td>
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<tr>
<td>ORT</td>
<td>Oral Rehydration Therapy</td>
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<tr>
<td>PASA</td>
<td>Participating Agency Service Agreement</td>
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<tr>
<td>PHC</td>
<td>Primary Health Care</td>
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<tr>
<td>PRITECH</td>
<td>Technologies for Primary Health Care Project</td>
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<tr>
<td>REACH</td>
<td>Resources for Child Health Project</td>
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<tr>
<td>Rx</td>
<td>Treatment</td>
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<td>TOT</td>
<td>Training of Trainers</td>
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<td>UNICEF</td>
<td>United Nations Childrens Fund</td>
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<td>USAID</td>
<td>United States Agency for International Development</td>
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<td>WHO</td>
<td>World Health Organization</td>
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AFRICA
CHILD
SURVIVAL
INITIATIVE

COMBATTING
CHILDHOOD
COMMUNICABLE
DISEASES

AFRICA REGIONAL PROJECT
(698-0421)

AGENCY FOR INTERNATIONAL DEVELOPMENT
In Cooperation With
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
CENTERS FOR DISEASE CONTROL
INTERNATIONAL HEALTH PROGRAM OFFICE
ATLANTA, GEORGIA 30333

Participating Agency Service Agreement
PASA No. 8AF 0421 PHC 2233
INTRODUCTION

"The A.I.D. Combatting Childhood Communicable Diseases (CCCD) project, authorized in September 1981, is maturing nicely and has been well received in Africa. Twelve countries have signed bilateral agreements and interest in the program is still growing. A.I.D. has a unique opportunity to contribute to an important international African health program. Continuation of the program over the next 5-10 years can make a major contribution to the reduction of African childhood morbidity and mortality."

- REPORT OF THE FOURTH YEAR EXTERNAL EVALUATION OF THE CCCD PROJECT, 1986

A.I.D. implemented a recommendation of the evaluation with a project amendment increasing the authorized ceiling of bilateral projects from 12 to 14; authorizing a 2-year extension (through Fiscal Year 1991); and increasing life of project funding from $47 million to $89 million. Late in the year, the 13th – and largest – bilateral project was initiated in Nigeria. The amendment also renamed CCCD as the AFRICA CHILD SURVIVAL INITIATIVE—COMBATTING CHILDHOOD COMMUNICABLE DISEASES (ACSI–CCCD). For brevity, the traditional "CCCD" will be used throughout this report.

The Third CCCD Consultative Meeting was held in Brazzaville in March. In recognition of WHO's designation of 1986 as AFRICA IMMUNIZATION YEAR, the meeting emphasized immunization activities and was jointly sponsored by CCCD and WHO. This year's meeting was the largest yet, with nearly 200 participants. The presentations were of great interest and high quality, stimulating animated discussion and demonstrating both the impressive progress the national child survival programs are achieving and the challenges which must be met if further gains are to be made.

Some of these challenges were presented in the CCCD 1985 Annual Report in the pages devoted to "MAJOR CONSTRAINTS AND REMEDIAL ACTIONS." New and continuing challenges as well as examples of how project countries are facing these challenges will be found throughout the 1986 report. Because of the fundamental importance to successful project implementation which some of these challenges represent, this year's report includes sections specifically devoted to SUSTAINABILITY, PROGRAM MANAGEMENT, and IMPACT MONITORING. The growing threat of Acquired Immunodeficiency Syndrome (AIDS), though not directly a CCCD challenge, is of particular importance in Africa and a special section is included to describe how CCCD is dealing with the AIDS problem.

As the premier, pioneering, and largest A.I.D. Child Survival project, CCCD has a special responsibility to seek solutions to problems faced by health workers and others engaged in Child Survival programs everywhere. We hope the reader will find information and experiences in the following pages which will be useful in addressing similar challenges. Comments and suggestions which could make future reports more useful will be welcome.
<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>TOTAL POPULATION (000)</th>
<th>START</th>
<th>FINISH</th>
<th>USAID BUDGET $ (000)</th>
<th>LOCAL BUDGET $ (000)</th>
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</thead>
<tbody>
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<td>Zaire</td>
<td>35 300</td>
<td>8/82</td>
<td>12/91</td>
<td>6 849</td>
<td>4 167</td>
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<tr>
<td>Togo</td>
<td>3 100</td>
<td>4/83</td>
<td>7/88</td>
<td>1 140</td>
<td>373</td>
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<td>Liberia</td>
<td>2 390</td>
<td>8/83</td>
<td>8/88</td>
<td>830</td>
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</tr>
<tr>
<td>CAR</td>
<td>2 630</td>
<td>5/84</td>
<td>5/89</td>
<td>691</td>
<td>217</td>
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<tr>
<td>Lesotho</td>
<td>1 522</td>
<td>5/84</td>
<td>5/88</td>
<td>664</td>
<td>375</td>
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<tr>
<td>Malawi</td>
<td>7 279</td>
<td>6/84</td>
<td>3/88</td>
<td>1 423</td>
<td>1 331</td>
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<tr>
<td>Rwanda</td>
<td>6 040</td>
<td>6/84</td>
<td>5/88</td>
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<td>1 920</td>
<td>6/84</td>
<td>6/88</td>
<td>667</td>
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<tr>
<td>Swaziland</td>
<td>700</td>
<td>6/84</td>
<td>6/88</td>
<td>703</td>
<td>285</td>
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<td>Guinea</td>
<td>6 100</td>
<td>6/85</td>
<td>12/87</td>
<td>885</td>
<td>650</td>
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<tr>
<td>Cote d'Ivoire</td>
<td>11 000</td>
<td>6/85</td>
<td>4/89</td>
<td>1 691</td>
<td>5 014</td>
</tr>
<tr>
<td>Burundi</td>
<td>4 800</td>
<td>9/85</td>
<td>3/86</td>
<td>834</td>
<td>233</td>
</tr>
<tr>
<td>Nigeria</td>
<td>99 000</td>
<td>12/86</td>
<td>9/91</td>
<td>14 450</td>
<td>28 957</td>
</tr>
<tr>
<td>Total</td>
<td>181 781</td>
<td></td>
<td></td>
<td></td>
<td>Proposed</td>
</tr>
</tbody>
</table>
THE CCCD PROGRAM

OBJECTIVE
Reduce morbidity and mortality of African children by strengthening national capacity to:

- Immunize infants and women of childbearing age
- Provide appropriate case management, including Oral Rehydration Therapy, for children with diarrhea
- Provide appropriate treatment of children with fever/malaria
- Provide malaria chemoprophylaxis to pregnant women

STRATEGY
Promote and follow World Health Organization (WHO) policies and procedures and provide program support through the following intercountry and bilateral services:

- Training
- Operational Research
- Health Information Systems
- Health Education
- Technical Cooperation

INDICATORS AND SPECIFIC TARGETS IN CCCD OPERATIONAL AREAS:

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Baseline Levels</th>
<th>End of Project Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant Mortality</td>
<td>100–200/1000</td>
<td>25% Decrease</td>
</tr>
<tr>
<td>1–4 Mortality</td>
<td>10–20/1000/Year</td>
<td>25% Decrease</td>
</tr>
<tr>
<td>Neonatal Tetanus Mortality</td>
<td>5–20/1000</td>
<td>25% Decrease</td>
</tr>
<tr>
<td>Measles Mortality</td>
<td>2–8/1000</td>
<td>50% Decrease</td>
</tr>
<tr>
<td>Vaccination Coverage (&lt;1 year age group)</td>
<td>10%</td>
<td>80%</td>
</tr>
<tr>
<td>Newborn Tetanus Protection</td>
<td>5%</td>
<td>50%</td>
</tr>
<tr>
<td>Health Facility Use of ORT</td>
<td>1%</td>
<td>50%</td>
</tr>
<tr>
<td>Community Use of ORT</td>
<td>1%</td>
<td>20%</td>
</tr>
<tr>
<td>Appropriate malaria treatment in health facilities</td>
<td>50%</td>
<td>90%</td>
</tr>
<tr>
<td>Appropriate malaria treatment in communities</td>
<td>30%</td>
<td>80%</td>
</tr>
</tbody>
</table>
IMMUNIZATION

OBJECTIVES
- Reduce morbidity and mortality of childhood diseases preventable by immunization
- Administer each injection with a sterile needle and sterile syringe
- Achieve 80% vaccine coverage with BCG, measles, 3 doses of DPT and 4 doses of OPV by 1 year of age
- Achieve 80% coverage with 2 doses of tetanus toxoid in pregnant women by the time of delivery

INDICATORS
- Percent of injections administered with a sterile needle and sterile syringe
- Number of vaccinations administered
- Percent of children fully vaccinated by 1 year of age
- Number of reported cases and deaths from target diseases
- Polio and measles vaccine efficacy

ACHIEVEMENTS
- National sterilization guidelines developed
- Training conducted in correct equipment sterilization procedures
- 1.7 million children under 1 year of age vaccinated with DPT1 and 1.2 million children with measles vaccine
- Increased vaccination coverage in 8 of 12 countries
- Major polio vaccine efficacy study of killed and live poliomyelitis vaccines

INSTITUTIONALIZATION
- Expanded Program on Immunization units functioning in the Ministry of Health of all bilateral countries
- Capability at the national level of most CCCD countries to conduct vaccination coverage surveys
- Faster routine reporting and analysis of cases of vaccine-preventable disease and the number of immunizations given in 5 countries
- Public recognition and support of immunization programs by heads of state

PROBLEMS
- Limited access and coverage in rural areas
- Potential for community participation not fully realized
- Measles occurring in children less than 9 months of age
- Inadequate sterilization of injection equipment
- Epidemic poliomyelitis in vaccinated populations
- High percentage of children fail to complete the vaccination series
- Difficulty documenting the impact of immunizations on disease
TOTAL DOSES OF DPT1 AND MEASLES VACCINE GIVEN TO CHILDREN < 1 IN EIGHT COUNTRIES WITH CCCD PROJECTS (BY YEAR) SINCE 1984*

* CAR, CONGO, LESOTHO, LIBERIA, MALAWI, RWANDA, TOGO, ZAIRE

APPROXIMATE PERCENTAGE** OF CHILDREN RECEIVING MEASLES VACCINE BEFORE THEIR FIRST BIRTHDAY IN CCCD COUNTRIES SINCE THE PROJECT AGREEMENT DATE THROUGH 1986

**Doses administered to children under one divided by estimated number of births
DIARRHEAL DISEASE CONTROL

OBJECTIVES
○ Reduce mortality due to dehydration secondary to acute watery diarrhea
○ Improve clinical management of diarrheal disease at health facilities
○ Prevent dehydration through the promotion of appropriate home management of acute diarrhea

INDICATORS
○ Proportion of diarrhea cases appropriately managed in health facilities
○ Hospital case fatality rates for acute diarrhea
○ Proportion of cases of diarrhea appropriately managed at home
○ Diarrhea-associated mortality in children < 5 years of age

ACHIEVEMENTS
○ Surveys of diarrhea case management practices at home and in facilities conducted in 5 countries
○ Analyses of sugar-salt solutions identified problems in current strategy and the need to develop alternate approaches
○ At Mama Yemo, the mean quantity of fluid administered for each treatment plan increased, and the time required for rehydration decreased

INSTITUTIONALIZATION
○ National CDD policies adopted or drafted in 11 countries
○ ORT demonstration and training units functioning in 8 countries (as compared to 5 in 1985)

PROBLEMS
○ Full-time program coordinators not designated in 7 countries
○ Insufficient emphasis on hands-on training of health personnel at peripheral levels
○ Inadequate application of appropriate case management techniques in the home
○ Greater emphasis needed on nutritional aspects of diarrheal disease prevention and treatment
○ Strategies not developed for the management of specific causes of high mortality, such as chronic diarrhea and dysentery
SUMMARY OF ORT OPERATIONAL INDICATORS
MEAN VALUES, BY QUARTER AND BY TREATMENT PLAN
MAMA YEMO HOSPITAL, KINSHASA, ZAIRE, 1986

PERCENT OF CHILDREN HOSPITALIZED WITH
MILD/MODERATE DEHYDRATION
TREATED WITH ORS AND NO IV FLUIDS OR ANTIBIOTICS
KAMUZU CENTRAL HOSPITAL, LILONGWE, MALAWI
JULY 1, 1981 – JULY 1, 1986

MEAN IV FLUID VOLUME, HOSPITALIZED
CHILDREN WITH DIARRHEA
KAMUZU CENTRAL HOSPITAL, LILONGWE, MALAWI,
JULY 1, 1981 – JULY 1, 1986

TWELVE MONTH INTERVAL
MALARIA

OBJECTIVES
- Reduce deaths due to malaria in children < 5 years old
- Reduce maternal and infant morbidity and mortality due to malaria during pregnancy
- Develop effective national strategies for clinical management of malaria at health facilities and for presumptive treatment in communities
- Develop sentinel surveillance for malaria parasite drug sensitivity

INDICATORS
- Number of countries with national malaria policies
- Number of countries with sentinel surveillance for drug sensitivity
- Number of severe malaria cases and deaths reported from sentinel facilities
- Percentage of health facilities using recommended treatment procedures for malaria
- Percentage of fever cases in the community treated appropriately

ACHIEVEMENTS
- Studies measuring in vivo response to chloroquine carried out in 6 countries
- Treatment recommendation of 25 mg/kg of chloroquine adopted in most CCCD countries
- Studies of response to chloroquine and other drugs among pregnant women and of use of chloroquine during pregnancy carried out in 2 countries
- Feasibility of investigating the effect of antimalarial drugs during pregnancy on birthweight and infant survival demonstrated during preliminary studies in Malawi
- Practices in the treatment of children with fever/malaria in health facilities and at home assessed in 3 countries
- Health staff from Burundi, Guinea, and OCCGE trained during Cote d'Ivoire study and training exercise

INSTITUTIONALIZATION
- National malaria control plans developed in 11 of 12 malaria endemic countries
- Previously trained malaria staff carried out drug response studies in 4 countries

PROBLEMS
- Impact of CCCD interventions on severe disease and death not documented
- Limited effectiveness of recommended chloroquine prophylaxis during pregnancy because of drug resistance and poor compliance
- Decreased chloroquine sensitivity detected in West Africa
- Higher cost of second line drugs
SPREAD OF CHLOROQUINE RESISTANT PLASMODIUM FALCIPARUM IN AFRICA

1980 - 1986

IMPLICATIONS OF INCREASING RESISTANCE OF PLASMODIUM FALCIPARUM ON COST OF ANTIMALARIAL DRUGS IN AFRICA

ESTIMATED COSTS OF MALARIA DRUG TREATMENT BY YEAR, 1984-1996, AND BY DRUG

Adapted from D. Clyde
TRAINING

OBJECTIVES

- Improve skills of health workers in delivering curative and preventive services
- Strengthen countries' capabilities to plan, conduct, and evaluate training
- Assist countries in assessing training needs and identifying training resources
- Integrate appropriate technical information into curricula of health training institutions

INDICATORS

- Number of countries with:
  - national training plans
  - decentralized training
  - continuing education plans
- Number of countries conducting training needs assessments to measure both the need for and the effectiveness of training
- Number of health workers trained

ACHIEVEMENTS

- Developed training plans in 3 countries
- Completed local adaptation of peripheral level training materials in 4 countries
- Carried out training needs assessments in 3 countries
- Initiated decentralized training in 9 countries

INSTITUTIONALIZATION

- Allocation of core group of trainers to provide peripheral training in 4 countries
- Decentralized training instituted in 1 country

PROBLEMS

- Inadequate plans and/or implementation of regular continuing education for peripheral personnel (12 countries)
- Slow or no integration of national technical guidelines into curricula of training institutions
- Lack of coordination of training with the availability of equipment, supplies, and drugs needed to utilize the training
- Lack of supervisory system to evaluate performance, assess effectiveness of current training, and identify training needs for facilities
### PERSON-DAYS OF TRAINING

#### 1985-1986

![Bar chart showing person-days of training for 1985 and 1986 with categories: Other, Peripheral, and Mid-level.]

### STATUS OF CCCD TRAINING ACTIVITIES, BY COUNTRY

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>BURUNDI</th>
<th>C.A.R</th>
<th>CONGO</th>
<th>COTE D'IVOIRE</th>
<th>GUINEA</th>
<th>LESOTHO</th>
<th>LIBERIA</th>
<th>MALAWI</th>
<th>RWANDA</th>
<th>SWAZILAND</th>
<th>TOGO</th>
<th>ZAIRE</th>
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<tbody>
<tr>
<td>Identify Training Coordinator</td>
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<tr>
<td>Develop 1 Year Training Plan (1987) with specific consultant needs and coordination with other agencies involved in training</td>
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<tr>
<td>Adaptation of Training Materials for Peripheral-level Workers</td>
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<tr>
<td>Training of Trainers (Core Trainers)</td>
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<tr>
<td>Decentralization of Training</td>
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<tr>
<td>Needs Assessment Conducted Prior to Peripheral Level Training</td>
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<td>Continuing Education Plan</td>
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<td>Review of Schools of Health Science Curricula in CCCD Context</td>
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<tr>
<td>Evaluation of Peripheral Level Training</td>
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<tr>
<td>Reports Submitted on Number of Person-Days of Training</td>
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<td>●</td>
<td></td>
<td>●</td>
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<td>●</td>
<td>●</td>
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</tr>
</tbody>
</table>

- ● FULLY COMPLETED
- ○ PLANNED/STARTED
HEALTH EDUCATION/PROMOTION

OBJECTIVES

- Maximize utilization of EPI, CDD, and malaria treatment services at health facilities
- Facilitate adoption of specific behaviors in the home/community
  - during episodes of diarrhea and fever
  - before and after the use of vaccination services

INDICATORS

- Number of countries conducting formative research for health education planning
- Number of countries with organized health education activities
- Vaccination coverage rates
- Percent of diarrhea and fever episodes appropriately treated at home with some form of ORT and antimalarial drugs

ACHIEVEMENTS

- Formative research conducted in 7 countries
- Special EPI promotional campaigns carried out in 6 countries
- Educational materials produced in 8 countries
- Practical training in patient education integrated into Mama Yemo ORT Center curriculum
- Cooperative Agreements signed with University of North Carolina for intercountry training in health education planning and management and with University of South Carolina to develop and refine guidelines for educational diagnosis

INSTITUTIONALIZATION

- Health Education Unit staff person recognized as member of CCCD central team
- Educational materials pretested prior to mass production and distribution
- Formative research for health education planning and monitoring considered important although not systematically implemented

PROBLEMS

- Insufficient resources in relation to individual country needs
- Lack of public education programs about malaria treatment and chemoprophylaxis during pregnancy
- Lack of routine reporting of health education activities or home-based treatment practices for evaluation
HOME TREATMENT OF DIARRHEA AND MALARIA BY COUNTRY

DIARRHEA EPISODES TREATED AT HOME WITH ORT AT START OF 10 BILATERAL PROJECTS

FEVER EPISODES TREATED AT HOME WITH AN ANTIMALARIAL AT START OF 8 BILATERAL PROJECTS

STATUS OF HEALTH EDUCATION/PROMOTION
CCCD BILATERAL PROJECTS
1982 - 1986

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>BURUNDI</th>
<th>C.A.R</th>
<th>CONGO</th>
<th>CÔTE D'IVOIRE</th>
<th>GUINEA</th>
<th>LESOTHO</th>
<th>LIBERIA</th>
<th>MALAWI</th>
<th>RWANDA</th>
<th>SWAZILAND</th>
<th>TOGO</th>
<th>ZAIRE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-programming visit by IHPO Health Education Specialist</td>
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- FULLY COMPLETED
- PARTIALLY COMPLETED
- NA NOT APPLICABLE
HEALTH INFORMATION SYSTEMS

OBJECTIVES
- Strengthen local, regional, and national systems of data collection, collation, analysis, use, and feedback
- Develop, test, and use selected indicators to monitor performance
- Measure disease-specific morbidity and mortality
- Measure effectiveness of interventions in reducing disease-specific morbidity and mortality
- Measure impact of interventions on increasing child survival

INDICATORS
- Number of countries with systems to:
  - inventory and maintain adequate supplies of vaccines, ORS, chloroquine, supplies, and equipment
  - assess community health practices
  - measure number of services delivered by health system
  - monitor coverage of at-risk populations
  - measure disease morbidity and mortality
  - monitor quality, completeness, and timeliness of disease surveillance
- Number of countries with regular feedback of data to reporting units

ACHIEVEMENTS
- Microcomputer capability established in 12 of 13 countries
- Local staff trained in use of microcomputers in 10 countries
- Software developed and used for reporting annual project data
- Health practices survey methodology developed and field tested in Guinea
- Health practices survey training materials and software developed by US Bureau of the Census
- Facility survey methodology developed in 3 countries

INSTITUTIONALIZATION
- Microcomputer capability established with national staffs in 10 countries
- Lag time between collection and analysis of data reduced in 5 countries
- Graphics capability being used to monitor EPI activities in 12 countries

PROBLEMS
- MIS software not currently available in French
- Lack of feedback at country and intercountry level
IMPACT MONITORING

STRATEGY:
In partnership with CCCD national programs, Health Information Systems have been developed to provide essential management data to answer 5 programmatic questions. These 5 questions, methods used to answer the questions, and examples of data are presented below.

Question 1: What are the maternal, family, and community knowledge, attitudes and practices about immunization, treatment of diarrhea, and treatment of malaria?
Methods: Health Practices Survey (e.g., Guinea)
100 Household Survey (e.g., Zaire)
Sentinel Surveillance (e.g., Malawi)
Focus Group Interviews (e.g., Rwanda)
Add-on questions to cluster survey (e.g., Zaire)
Example: In Conakry, Guinea, a cluster survey was carried out in 1986 to assess current community health practices. Findings on current sources of treatment for fever and diarrhea are summarized below.

TREATMENT PRACTICES FOR FEVER
CONAKRY, GUINEA, JUNE 1986

- No Rx (18%)
- Facility Rx (4%)
- Home/Facility Rx (38%)
- Home Rx (41%)

TREATMENT PRACTICES FOR DIARRHEA
CONAKRY, GUINEA, JUNE 1986

- Facility Rx (5%)
- No Rx (31%)
- Home/Facility Rx (32%)
- Home Rx (32%)

Question 2: How many at-risk populations are being reached by the health system?
Methods: Annual reporting of:
- Total vaccinations given
- Total vaccinations given to children < 1 by antigen
- Percentage of children < 1 receiving each antigen
- Cases and deaths of target diseases seen by sentinel health facilities, or where available, from all facilities
Example: Annually CCCD countries provide data on vaccinations given and target disease morbidity and mortality in tabular format and in graphic presentation. Two examples are reproduced:
Question 3: What is the quality of health services being provided at health facilities?

Methods: Facility Surveys (e.g., Rwanda)
Training needs assessment (e.g., Liberia)
Health Facility Survey (e.g., Cote d'Ivoire)
Supervisory checklists (e.g., Zaire)

Example: Rwanda has developed a supervisory system in which central teams visit the regions two times per year. Visits collect data on quality of services being provided; assess training effectiveness and the need for further training; and instruct regional teams on methods of supervision. Data collected from 6 regions on measles coverage, appropriate malaria treatment, and correct ORS preparation are presented below.

![Supervisory Assessment of CCCD Services](image)

Example: In Côte d'Ivoire 140 facilities were visited to obtain similar information. Two examples of data obtained are summarized below.

![Facilities Using ORS for Diarrhea and Dehydration, Côte d'Ivoire, 1986](image)

![Chloroquine Treatment Practices](image)
Question 4: How effective are interventions in reducing disease specific morbidity and/or mortality?

Methods: Vaccine efficacy studies (e.g., Measles-Congo, Polio-The Gambia)
Inpatient diarrhea case fatality (e.g., Zaire, Lesotho)
Malaria case fatality at sentinel facilities

Example: At the Mama Yemo Hospital in Kinshasa, Zaire, monitoring of severe dehydration cases, cases requiring admission, and deaths provides a measure of impact.

OUTCOME OF SEVERE DEHYDRATION CASES
ADMITTED TO MAMA YEMO, KINSHASA ORT UNIT
1984–1986

Example: During the poliomyelitis investigation in The Gambia, vaccine efficacy by number of doses administered was determined.

ORAL POLIO VACCINE EFFICACY BY DOSE
THE GAMBIA, 1986

Question 5: What is the impact of disease specific mortality reductions on overall child survival?

Method: Baseline levels of mortality and use of health services have been measured in 3 countries: Liberia, Togo, Zaire. Follow-up mortality surveys will be carried out in 1988. Mortality data obtained in the baseline surveys are shown below.
OPERATIONAL RESEARCH (*)

OBJECTIVES
- Identify and solve operational problems limiting the achievement of CCCD targets and objectives
- Develop African capability to conduct operational research

INDICATORS
- Number of projects designed, started, and completed
- Impact of research projects on program operations and child health

ACHIEVEMENTS
- Active projects in 1986: 109
- Projects completed: 66
  (see country summaries of projects completed, pp. 44–45)

INSTITUTIONALIZATION
- Research review committees established in 5 countries

PROBLEMS
- Lack of operational research activities in CCCD countries with small populations
- Need clearer definition of operational research priorities to guide operational research activities

(*) Redefined to include both regionally funded operational research and special studies dealing with operationally important issues
COUNTRIES WITH CCCD SPONSORED OPERATIONAL RESEARCH ACTIVITY, 1986

NUMBER OF PROJECTS PER COUNTRY

- Burkina Faso: 2
- Burundi: 6
- CAR: 5
- Congo: 3
- Côte d'Ivoire: 11
- Gambia: 1
- Guinea: 9
- Kenya: 5
- Lesotho: 4
- Liberia: 3
- Malawi: 25
- Niger: 2
- Rwanda: 8
- Senegal: 1
- Sudan: 1
- Swaziland: 2
- Togo: 4
- Zaire: 14
- Zambia: 1
- Zimbabwe: 2

OPERATIONAL RESEARCH PROJECTS SUPPORTED BY CCCD IN 1986, BY SUBJECT AND ACTIVITY STATUS

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<tr>
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<td>Malaria Treatment</td>
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<td>Measles</td>
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<td>Malaria in Pregnancy</td>
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<td>Gastrointestinal</td>
<td>5</td>
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<tr>
<td>Other</td>
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Legend:
- Black bar: WITH ACTIVITY
- White bar: COMPLETED
SUSTAINABILITY

OBJECTIVES

- Ensure political commitment and social demand for Child Survival programs
- Strengthen management capabilities
- Ensure adequate financing of program activities

INDICATORS

- Official government endorsement of child survival policies
- Number of countries with management training
- Number of cost recovery studies
- Number of countries with national cost recovery policies
- Percentage of recurrent costs assumed by countries as compared to scheduled assumption of costs

ACHIEVEMENTS

- Cost recovery studies done in 9 countries
- Cost recovery systems established in 6 countries
- Long term cost recovery projects proposed for 2 countries
- Government contributions exceeded project targets by more than 30% in 3 countries
- Financial management modules developed and used in 3 countries
- Presidential support demonstrated in 5 countries
- Active community participation in health activities in 7 countries

PROBLEMS

- Inflation, foreign exchange, and budget constraints make it increasingly difficult for countries to meet target financial contributions
- Reluctance of some countries to consider cost recovery systems
- Life of project too short to allow for adequate development of sustainable systems
- Lack of integration of curative and preventive services in some countries
COST STUDIES COMPLETED, 1983–1986

COST RECOVERY MECHANISMS ESTABLISHED

GUINEA
LIBERIA
TOGO
CONGO
Zaire
MALAWI
SWAZILAND
CENTRAL AFRICAN REPUBLIC

GUINEA
LIBERIA
TOGO
CONGO
Zaire
BURUNDI

COST RECOVERY MECHANISMS ESTABLISHED IN CCCD COUNTRIES

<table>
<thead>
<tr>
<th></th>
<th>BURUNDI</th>
<th>C. A. R</th>
<th>CONGO</th>
<th>COTE D'IVOIRE</th>
<th>GUINEA</th>
<th>LESOTHO</th>
<th>LIBERIA</th>
<th>MALAWI</th>
<th>RWANDA</th>
<th>SWAZILAND</th>
<th>TOGO</th>
<th>Zaire</th>
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<tr>
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<tr>
<td>VACCINATION CARD FEE</td>
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</table>
PROGRAM MANAGEMENT

OBJECTIVES
- Strengthen program managers' skills
- Improve planning and problem solving
- Ensure program development and continuity

INDICATORS
- Number of countries with:
  - Program management training
  - Management information system
- Number of program managers trained
- Number of countries with work plans
- Number of countries with effective donor coordination groups

ACHIEVEMENTS
- Strategy or I position paper on training program managers submitted to A.I.D./W
- Technical Officers provided on-the-job management training to counterparts
- Management training modules developed in 3 countries
- Over 300 health workers trained in program management in 3 countries
- National CCCD Symposium conducted for 350 health professionals in Zaire
- Inventories of management training resources completed in 12 countries
- EPI, CDD, and Malaria work plans approved or pending approval in 12 CCCD countries
- Computerized Management Information System (MIS) established in 10 of 12 countries
- Donor coordination groups functioning in 12 countries

INSTITUTIONALIZATION
- Cadre of trained computer users in 10 countries
- Training collaboration established with universities and other institutions in 3 countries
- MOH commitments to inservice training in 5 countries
- Cost recovery systems established in 6 countries

PROBLEMS
- Inadequate inservice training for program managers
- Ineffective coordination of donor activities in some countries
## CCCD Partners

<table>
<thead>
<tr>
<th>Collaborating Body</th>
<th>Specialty</th>
<th>CCCD Countries</th>
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<tbody>
<tr>
<td>WORLD HEALTH ORGANIZATION</td>
<td></td>
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<tr>
<td>UNICEF</td>
<td></td>
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<tr>
<td>COOPERATION FOR DEVELOPMENT IN AFRICA (CDA)</td>
<td></td>
<td>Congo (France), The Gambia (UK)</td>
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<td>Belgium, UK, Canada, France, Italy, FRG, USA</td>
<td></td>
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<tr>
<td>PEACE CORPS</td>
<td>Training, Health Education (72 Volunteers working in CCCD projects)</td>
<td>CAR, Lesotho, Liberia, Malawi, Togo, Zaire</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRITECH</td>
<td>Planning and Implementation of ORT Programs</td>
<td>Congo, Cote d'Ivoire, Guinea, Nigeria, Rwanda</td>
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<td></td>
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</tr>
<tr>
<td>HEALTHCOM</td>
<td>Communications, Social Marketing, Behavior Analysis</td>
<td>Burundi, Cote d'Ivoire, Lesotho, Liberia, Malawi, Nigeria, Rwanda, Swaziland, Zaire</td>
</tr>
<tr>
<td></td>
<td></td>
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<tr>
<td>REACH</td>
<td>Immunization Programs, Health Care Financing</td>
<td>CAR, Guinea, Liberia, Rwanda, Zaire</td>
</tr>
<tr>
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<td></td>
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<tr>
<td>BUREAU OF THE CENSUS</td>
<td>Health Information Systems</td>
<td>Cote d'Ivoire, Liberia</td>
</tr>
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</table>
WHO REGIONAL OFFICE FOR AFRICA (AFRO)

The initial 1985 grant from A.I.D. authorized $4 million to AFRO. A 1986 grant amendment provided $1 million for Africa Immunization Year and for additional resources to strengthen regional activities in training, HIS, and malaria.

ACHIEVEMENTS

CCCD funds supported 7 training courses and 3 program managers' meetings for 191 nationals from 20 countries.

The Regional Director approved the proposed development of a new intermediate-level epidemiology training course.

Renovation of Zaire's Intercountry ORT Training Center at Mama Yemo Hospital was funded.

WHO/AFRO supported accelerated Africa Immunization Year activities in member countries.

Evaluation of the effectiveness of WHO/AFRO training courses was started.

WHO/AFRO participated in the CCCD program evaluations in Liberia and Rwanda.

An external evaluation of AFRO's CCCD activities was conducted.

PROBLEMS

- Slow progress toward an agreement on improving the regional HIS.
- Delays in publishing AFRO's Epidemiology Bulletin.
The Technical Officer arrived at post in April 1986.
The MOH approved national plans of operation for EPI, CDD, Malaria, and HIS.

Results of the 1986 national EPI vaccination coverage survey showed the following:

![Vaccination Coverage Chart]

The MOH adopted a National Policy on Sterilization and Injection Practices.

An ORT demonstration and training unit was established.

The MOH completed a training needs assessment and 1986-87 training plan and calendar.

Forty-five MOH personnel participated in the first MLM course concentrating on EPI.

An in-depth review of the disease surveillance system was completed.

An Operational Research Review Committee was established.

The First Year Internal Review, conducted in early October, found the project to be off to a good start.
A full-time Technical Officer was assigned in January 1986. The MOH adopted national five-year plans for malaria and CDD. The MOH planned and conducted a national measles vaccination campaign.

![Graph showing measles vaccinations and number of live births from 1980 to 1986.](image)

An ORT demonstration and training center was opened in Bangui. The first ORT training course was conducted using a nationally-prepared training guide. An in vivo chloroquine sensitivity study conducted in Bambari showed low levels of resistance of P. falciparum parasites. The Midterm Evaluation team recommended project extension and increased funding levels.
The Government hosted the Third CCCD Consultative Meeting. The MOH adopted national plans for malaria and CDD. The President launched the national vaccination program in December. Public participation exceeded expectations as did vaccination coverage.

**MEASLES VACCINATIONS: DOSES < 12 MONTHS AND NUMBER OF LIVE BIRTHS**

<table>
<thead>
<tr>
<th>YEAR</th>
<th>DOSES (THOUSANDS)</th>
<th>LIVE BIRTHS</th>
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<tr>
<td>1983</td>
<td>40</td>
<td>80</td>
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<tr>
<td>1984</td>
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<td>100</td>
</tr>
<tr>
<td>1985</td>
<td>80</td>
<td>120</td>
</tr>
<tr>
<td>1986</td>
<td>100</td>
<td>140</td>
</tr>
</tbody>
</table>

Reported measles cases continued to decline in 1986.

**MEASLES CASES REPORTED BY YEAR**

<table>
<thead>
<tr>
<th>YEAR</th>
<th>MEASLES CASES (THOUSANDS)</th>
</tr>
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<tr>
<td>1980</td>
<td>14</td>
</tr>
<tr>
<td>1981</td>
<td>12</td>
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<td>1982</td>
<td>8</td>
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<td>4</td>
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<td>1984</td>
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<td>1985</td>
<td>8</td>
</tr>
<tr>
<td>1986</td>
<td>4</td>
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</table>

An EPI sterilization practices survey was carried out. A study on the persistence of maternal antibodies for measles in children < 1 year of age was completed. Expenditures of bilateral funds were suspended temporarily pending the Government of Congo's budgetary contribution.
The MOH drafted national plans for CDD, malaria, and health education.
The EPI program became operational in all health sectors.
An ORT demonstration and training unit was established at the Port Bouet MCH Center.
An Intercountry malaria in vivo training course was completed.
The MOH developed a strategy, work plan, and job aids for training.
Four trainers participated in an Intercountry TOT course in Togo.
Fifty-five peripheral health staff and 18 mid-level managers were trained.
The US Bureau of the Census conducted an initial evaluation and formulated plans for improving the national HIS.
The MOH established an Operational Research Review Board.
Formative research on EPI, CDD, and malaria was completed.
A measles antibody study in children ages 4 to 9 months was carried out.
A health facilities survey of 140 facilities (49 in Abidjan and 91 in rural areas) was conducted.
Survey data from the 140 health facilities surveyed in 1986 indicated:

- 30% provide immunization services
- 16% immunize sick children
- 8% use a sterile needle and a sterile syringe for each vaccination injection
- 68% recommend chemoprophylaxis to pregnant women
The MOH, CCCD, UNICEF, and WHO collaborated in a national EPI review which resulted in a revised national plan.

The Malaria Program Director drafted a national malaria strategy. An accelerated vaccination campaign was completed in Conakry. A vaccination coverage survey in Conakry showed the following:

<table>
<thead>
<tr>
<th>Antigen</th>
<th>Pre-Campaign</th>
<th>Post-Campaign</th>
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</thead>
<tbody>
<tr>
<td>DPT1</td>
<td>100</td>
<td>80</td>
</tr>
<tr>
<td>DPT3</td>
<td>60</td>
<td>50</td>
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<tr>
<td>OPV1</td>
<td>40</td>
<td>20</td>
</tr>
<tr>
<td>OPV3</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Measles Fully</td>
<td>5</td>
<td>20</td>
</tr>
</tbody>
</table>

Donka Hospital, Conakry, established ORT demonstration centers in its outpatient clinic and pediatric ward.

The first TOT course in EPI trained 15 health personnel.

The first field test of the CCCD Health Practices Survey was conducted to assess community practices relating to CCCD interventions.

Studies were completed on:
- neonatal tetanus
- a cholera outbreak
- EPI sterilization practices

A consultant developed a model for analysis of cost recovery options for the MOH.
The 1986 Immunization survey showed increases in coverage:

An EPI sterilization practices survey was carried out.
A plan was developed to ensure the use of a sterile needle and a sterile syringe for each injection.
A measles epidemiology study was carried out.
An ORT demonstration and training center was established at the Queen Elizabeth II Hospital (QE II) in Maseru.
A diarrhea mortality study at QE II showed a decrease in the CFR from 9.4 to 6.3 in 1984 and 1985, respectively.
Preliminary data (QE II) for 1986 shows a CFR of 6.5 with a 41% decrease in diarrhea-related pediatric ward admissions.

ORT units were established in 10 of the 18 Health Service Area hospitals.
The MOH assumed responsibility for decentralized training.
More than 2,000 peripheral health workers were trained in EPI and CDD through CCCD-sponsored courses.
The 1986 External Evaluation team concluded: "The CCCD Project is basically well run and making good progress in achieving its stated goals."
The project expanded to 5 additional counties; 55% of the total population now has access to CCCD services.

The CCCD Project Manager successfully lobbied for annual operating funds from the Development Budget Fund (PL-480).

A unique motorcycle distribution plan was implemented allowing health workers to purchase motorcycles at reduced cost for outreach work.

The MOH approved a national malaria control policy.

The National Vaccination Weeks media campaign and increased availability of vaccinations at fixed facilities combined to result in the following coverage:

An ORT-demonstration and training center was established at Redemption Clinic; another center for treating severely dehydrated children was created at JFK Hospital.

A CCCD consultant completed a training needs assessment in the project area.

Revolving drug funding systems were implemented in 3 counties.

Training workshops on implementing fee-for-service procedures were conducted.
National five year plans (1986–1990) for EPI, CDD, and malaria were developed.

The MOH developed a plan for improving EPI sterilization practices.

Success in making the transition from I.V. use to ORS was demonstrated at the 'Amuzu Central Hospital with a seven-fold decrease in I.V. usage from 1982 to 1986.

ORT treatment centers were operational in all 44 hospitals in the country and in 95% of the 600 static health facilities.

Operational research studies showed limited effectiveness of chloroquine against *P. falciparum* malaria among pregnant women and limited use of chemoprophylaxis during pregnancy.

A mass communications project with HEALTHCOM was implemented to improve community participation in health services delivery.
A.I.D. reviewed and approved the project proposal.

The 5-year project provides for a collaborative technical assistance effort among the MOH, CDC, UNICEF, PRITECH, and HEALTHCOM.

A.I.D. granted funds to UNICEF for commodities, training, communications, and program monitoring and evaluation.

Technical assistance is being provided in:

- health information systems
- operational research
- pharmaceutical supply and distribution
- financial planning and management
- health communications and mobilization

The MOH and its collaborating partners established the implementation plan for 1987.

VACCINATION COVERAGE
in children 12–23 months of age

VACCINATION COVERAGE SURVEY RESULTS
FROM LOCAL GOVERNMENT AREA CAPITALS,
NIGERIA, SEPTEMBER, 1986

<table>
<thead>
<tr>
<th>Antigen</th>
<th>Percent</th>
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<tbody>
<tr>
<td>MEASLES</td>
<td>60%</td>
</tr>
<tr>
<td>DPT-3</td>
<td>62%</td>
</tr>
<tr>
<td>OPV-3</td>
<td>61%</td>
</tr>
<tr>
<td>BCG</td>
<td>83%</td>
</tr>
<tr>
<td>FULLY</td>
<td>50%</td>
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COUNTRY–WIDE VACCINATIONS REPORTED
COMPARSED TO ESTIMATED TARGET POPULATION
OCTOBER, 1985–NOVEMBER, 1986

<table>
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<th>Antigen</th>
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<tr>
<td>MEASLES</td>
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<td>DPT-3</td>
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<tr>
<td>OPV-3</td>
<td>14%</td>
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<tr>
<td>BCG</td>
<td>30%</td>
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</tbody>
</table>
The MOH strengthened project management by assigning three medical assistants and one physician to the CCCD program.

The MOH drafted national CDD and malaria plans.

An intensified program of supervision, ensuring frequent visits by central level staff, has identified and solved training problems.

National vaccination coverage increased in 1986.

ORT demonstration and training centers were established at the Central Hospital, Kigali, and in 4 regions.

Two protocols were prepared for long-term chloroquine and amodiaquine sensitivity studies.

CCCD in collaboration with UNICEF funded an EPI national training course for 40 EPI supervisors and hospital directors.

Formative research provided planning information for an EPI promotion campaign.

A 3-month EPI promotion campaign was conducted using person-to-person contact, radio messages, flyers, posters, and newspaper articles.

A cost recovery study was completed.
The 1986 vaccination coverage survey demonstrated increases in coverage.

The MOH adopted a strategy of providing daily vaccination services. The vaccine distribution system was decentralized to regions. An EPI sterilization practices survey was conducted. An ORT demonstration and training center began operations in the capital city of Mbabane. An increase in malaria deaths was investigated. CCCD and WHO co-sponsored a PHC workshop for 65 physicians and nurses. An External Evaluation team recommended extension of the project.
The President launched the accelerated Immunization activities which will continue throughout 1987.

Reported incidence of vaccine-preventable diseases declined to the lowest levels ever.

An EPI sterilization survey was completed.

In vivo studies showed no decreased sensitivity of \( P. \) falciparum to chloroquine.

Plans were completed for the computerization of the National Health Statistics Office, and computers were ordered.

The Technical Officer was reassigned to CCCD/Atlanta.
The Technical Officer was reassigned to CCCD/Atlanta in June and a replacement was posted in November.

Over 350 health professionals attended Zaire's first national CCCD Symposium, which was financed through private and public funds. A senior staff epidemiologist returned after completing CCCD-funded studies at Johns Hopkins University.

The MOH inaugurated the national ORT demonstration and training center at Kinshasa's Mama Yemo Hospital.

One WHO Intercountry and 2 national ORT training courses were conducted.

A training videotape on diarrhea case management with ORT was produced.

Three regional ORT training centers were established with core staff trained at the Mama Yemo Center.

Data on clinical outcome of cases treated with ORT from 1984 to 1986 indicated decreases in hospitalizations and deaths.

Pediatric deaths attributed to malaria increased significantly during the first and second quarters at Mama Yemo Hospital.

PEDiatric DEATHS ATTRIBUTed TO MALARIA AT
MAMA YEMO HOSPITAL, KINSHASA, ZAIRE, 1982-1986

Two in vivo chloroquine sensitivity courses were conducted.

The antimalarial drug sensitivity monitoring network was expanded. University personnel collaborated with CCCD staff to study:

- response of P. falciparum parasites to antimalarial drugs in pregnant women
- women's attitudes and practices toward malaria chemoprophylaxis.

The first issue of the quarterly CCCD publication "Sauvons Les Enfants" was published.
AIDS IN AFRICA

EPIDEMIOLOGY
Human Immunodeficiency Virus (HIV) infection is endemic in central and eastern Africa. The World Health Organization estimates that 5 million individuals may already be infected.

Acquired Immunodeficiency Syndrome (AIDS), the uniformly fatal sequela of HIV infection, is estimated to occur at a rate of 1.3 cases per 100 person-years of HIV infection. 30,000–50,000 new AIDS cases will develop in 1987.

Epidemiologic studies have identified four high risk groups for HIV infection:
- Heterosexuals with multiple sexual partners
- Recipients of blood transfusions
- Infants of HIV infected mothers
- Recipients of injections/scarifications with nonsterile instruments

ACTIONS BEING TAKEN BY AFRICAN COUNTRIES
With leadership from WHO, countries are establishing multisectoral AIDS committees to establish priorities, policies, and practices including:
- Development of HIV screening capability
- Upgrading of blood bank operations to include HIV screening
- Screening of high risk groups
- Development of counseling capability and policies
- Promotion of standard policy of sterile needle and sterile syringe for each injection
- Education on safe sexual practices

ACTIONS BEING TAKEN BY CCCD
CCCD has established as a priority the implementation of the WHO policy of a single sterile syringe and a single sterile needle for each injection.

Health practice surveys in 12 CCCD countries documented deficiencies due to problems in supply, training, sterilization, and supervision.

Supplies of needles and syringes have been increased (reusable plastic syringes and stainless steel needles as recommended by WHO in 11 countries and disposable syringes and needles in 1 country).

Pressure cooker sterilizers are being procured for each vaccination unit.

Increased priority has been given to training/retraining.

Supervisory assessment of sterilization practices is being increased.
HIV POSITIVITY IN PREGNANT WOMEN IN KINSHASA ZAIRE

Source: Science. 1986; 234:956-963

USE OF STERILE INJECTION EQUIPMENT
RESULTS OF IMMUNIZATION PRACTICE SURVEYS IN 9 CCCD COUNTRIES

STERILE NEEDLE

STERILE SYRINGE

- NEVER
- SOMETIMES
- USUALLY
# CCCD Staff

**AFRICA**

**USAID BILATERAL PROJECTS**

<table>
<thead>
<tr>
<th>Country</th>
<th>National Coordinator</th>
<th>Technical Officer</th>
<th>USAID Project Officer</th>
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<tbody>
<tr>
<td>Zaire</td>
<td>Mambu Ma-Disu</td>
<td>John Paul Brennan</td>
<td>Glen Post</td>
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<tr>
<td></td>
<td></td>
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<td>Felix Awantang</td>
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<tr>
<td>Togo</td>
<td>Karsa Tchasseu</td>
<td>(Vacant)</td>
<td>Ernie Popp</td>
</tr>
<tr>
<td>Liberia</td>
<td>Eugenia Kromah</td>
<td>Jim Thornton</td>
<td>Betsy Brown</td>
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<tr>
<td>Malawi</td>
<td>Jean Kalilani</td>
<td>Reggie Hawkins</td>
<td>Charles Gurney</td>
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<td>Lesotho</td>
<td>M.M. Motetee</td>
<td>John Nelson</td>
<td>Carol Tyson</td>
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<td>Swaziland</td>
<td>G. Matsebulu</td>
<td>John Nelson</td>
<td>Alan Foose</td>
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<tr>
<td>Congo</td>
<td>Gabriel Madzou</td>
<td>Brian Fitzgibbon</td>
<td>Felix Awantang</td>
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<td></td>
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<td>Pierre Eozou (FAC)</td>
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<tr>
<td>C.A.R</td>
<td>Jean I. Mbassa</td>
<td>Katherine Montgomery</td>
<td>Hugh Smith</td>
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<tr>
<td>Rwanda</td>
<td>A. Ntiligamunda</td>
<td>Maryanne Neill</td>
<td>Carina Stover</td>
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<td>Guinea</td>
<td>Souleyman Diallo</td>
<td>Dianna Gerski</td>
<td>Mark Wentling</td>
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<td>Côte d’Ivoire</td>
<td>L. Bla Toh</td>
<td>Bob Weierbach</td>
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<td>Burundi</td>
<td>F. Bizimana</td>
<td>Cyril Pervilhac</td>
<td>Charles Gordon</td>
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<td>Nigeria</td>
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<td></td>
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<td>Larry Eicher</td>
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## Field Epidemiologists

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<th>Country</th>
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<tbody>
<tr>
<td>Malawi</td>
<td>David Heymann</td>
<td>Zaire</td>
<td>Melinda Moore</td>
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<tr>
<td>Côte d’Ivoire</td>
<td>Connie Davis</td>
<td>Burkina Faso</td>
<td>Alain Roisin</td>
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## WHO/AFRO

<table>
<thead>
<tr>
<th>Role</th>
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<tbody>
<tr>
<td>CCCD/AFRO</td>
<td>E. Beausoleil</td>
</tr>
<tr>
<td></td>
<td>L. Arevshatian</td>
</tr>
<tr>
<td></td>
<td>D. Buriot</td>
</tr>
<tr>
<td>Liaison Officer</td>
<td>David Bassett</td>
</tr>
</tbody>
</table>
CCCD STAFF
UNITED STATES

A.I.D./WASHINGTON
CHIEF, HEALTH, POPULATION, NUTRITION, AFR/TR
CCCD PROJECT MANAGER
ASST. PROJECT MANAGER

G. VAN DER VLUGT
*WENDY ROSEBERRY
*(VACANT)

CDC INTERNATIONAL HEALTH PROGRAM OFFICE
DIRECTOR, IHPO
ASST. DIRECTOR
CCCD TECHNICAL COORDINATOR
DEPUTY CCCD TECHNICAL COORDINATOR
EPIDEMIOLOGY COORDINATOR
TRAINING COORDINATOR
AREA CHIEF, EAST AFRICA
AREA CHIEF, CENTRAL AFRICA
AREA CHIEF, WEST AFRICA
HEALTH EDUCATION SPECIALIST
DIARRHEAL DISEASE COORDINATOR
HEALTH INFORMATION SYSTEMS COORDINATOR
IMMUNIZATION COORDINATOR
TRAINING OFFICER
ADMINISTRATIVE OFFICER

BILLY GRIGGS
STANLEY FOSTER
*ANDREW AGLE
*JEAN ROY
T. STEPHEN JONES
JASON WEISFELD
DENNIS OLSEN
*KEVIN MURPHY
*RUSSELL CHARTER
*KATHY PARKER
RONALD WALDMAN
WILLIAM TAYLOR
MICHAEL DEMING
ANNIE VOIGT
CAROL GOETTL

CDC MALARIA BRANCH
CHIEF
CCCD MALARIA COORDINATOR

KENT CAMPBELL
JOEL BREMAN

PEACE CORPS/WASHINGTON
DIRECTOR, CCCD/PC
ASST. DIRECTOR

*COLLEEN CONROY
*GAIL SPENCE

*FULL TIME CCCD
OPERATIONAL RESEARCH PROJECTS COMPLETED IN 1986

BURUNDI

Epidemiology of diarrhea among children hospitalized with diarrhea — Bujumbura
One year follow-up of hospitalized and OPD measles cases
Health information systems review

CAR

EPI sterilization practices survey
Review of birthweights by health region
In vivo response to chloroquine — Bambari
Household contributions to health financing

CONGO

Response to chloroquine of P. falciparum malaria in children — Brazzaville
Measles antibodies (maternal) in children 4–10 months old — Brazzaville
EPI sterilization practices survey

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OPERATIONAL RESEARCH PROJECTS COMPLETED IN 1986

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Accuracy of mixing sugar salt solutions by mothers at health facilities
Efficacy of Fansidar in childhood malaria
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Repeat in vivo response to chloroquine of \textit{P. falciparum} infection in children
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THESE DOCUMENTS ARE AVAILABLE AT CDC. FOR SPECIFIC REFERENCES, WRITE:

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